

Implementation of WHO guidelines on management of severe malnutrition in hospitals in Africa

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Objective To investigate the problems, benefits, feasibility, and sustainability of implementation of WHO guidelines on management of severe malnutrition.

Methods A postal survey invited staff from 12 African hospitals to participate in the study. Five hospitals were evaluated and two were selected to take part in the study: a district hospital in South Africa and a mission hospital in Ghana. At an initial visit, an experienced paediatrician reviewed the situation in the hospitals and introduced the principles of the guidelines through a participatory approach. During a second visit about six months later, the paediatrician reviewed the feasibility and sustainability of the introduced changes and helped find solutions to problems. At a final visit after one year, the paediatrician reassessed the overall situation.

Findings Malnutrition management practices improved at both hospitals. Measures against hypoglycaemia, hypothermia, and infection were strengthened. Early, frequent feeding was established as a routine practice. Some micronutrients for inclusion in the diet were not locally available and needed to be imported. Problems were encountered with monitoring of weight gain and introducing a rehydration solution for malnutrition.

Conclusion Implementation of the main principles of the WHO guidelines on severe malnutrition was feasible, affordable, and sustainable at two African hospitals. The guidelines could be improved by including suggestions on how to adapt specific recommendations to local situations. The guidelines are well supported by experience and published reports, but more information is needed about some components and their impact on mortality.

Keywords Child nutrition disorders/therapy; Infant nutrition disorders/therapy; Hypothermia/therapy; Hypoglycemia/therapy; Fluid therapy; Diet therapy; Hospitals; World Health Organization; Practice guidelines; Guideline adherence; Africa (*source: MeSH, NLM*).

Mots clés Troubles nutrition enfant/thérapeutique; Malnutrition infantile/thérapeutique; Hypothermie/thérapeutique; Hypoglycémie/thérapeutique; Traitement par apport liquidien; Diétothérapie; Hôpital; Organisation mondiale de la Santé; Ligne directrice pratique médicale; Adhésion à directive; Afrique (*source: MeSH, INSERM*).

Palabras clave Trastornos de la nutrición del niño/terapia; Trastornos de la nutrición infantil/terapia; Hipotermia; Hipoglicemia/terapia; Fluidoterapia; Dietoterapia; Hospitales; Organización Mundial de la Salud; Pautas prácticas; Adhesión a directriz; África (*fuentes: DeCS, BIREME*).

الكلمات المفتاحية: اضطرابات تغذية الأطفال، معالجة تغذية الأطفال، اضطرابات تغذية الرضع، معالجة تغذية الرضع، نقص سكر الدم، معالجة نقص سكر الدم، المعالجة بالنظم الغذائية، المستشفيات، منظمة الصحة العالمية، دلائل إرشادية للممارسة، الالتزام بالدلائل الإرشادية، أفريقيا (المصادر: رؤوس الموضوعات الطبية، المكتب الإقليمي لشرق المتوسط).

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يمكن الاطلاع على الملخص بالعربية على الصفحة ٢٤٣.

Introduction

Children with severe malnutrition present as complicated, and often frustrating, cases to health workers in developing countries. Much has been learned about the pathophysiology of malnutrition and the requirements for successful rehabilitation, but case-fatality rates remain high. A survey of treatment

centres worldwide showed outmoded and conflicting teaching manuals, potentially fatal practices, and inappropriate diets (1).

Reductions in mortality and improvements in weight gain have been achieved on implementation of a standardized treatment protocol (2–5). Avoidance of intravenous rehydration, routine use of broad-spectrum antibiotics, cautious refeeding with low-sodium diets, and other changes in case

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management are credited with improved outcomes. It has been suggested that the mere presence of a standardized protocol increases discipline and attention to detail and results in fewer errors by health workers (6). As long as severe malnutrition is prevalent, efforts to improve its treatment and outcome remain a priority. Implementation of a standard in-hospital treatment protocol is an essential first step (6–7).

WHO published guidelines for the inpatient management of severe malnutrition in children (8, 9). The difficulties that arise from implementation, as well as the potential benefits, needed to be documented through formal evaluation. A randomized trial of the guidelines was not appropriate, because withholding the potential benefits from the control group would be difficult to justify and because blinding was not possible. A qualitative study in African hospitals was conducted to document the process of implementation and the feasibility and sustainability of each component of the guidelines.

Methods

Selection of hospitals

We searched the literature for articles on severe malnutrition in developing countries published during the past five years. The authors of identified articles and other recommended experts in malnutrition management were asked to suggest hospitals, including those they were affiliated with, in which this study could take place.

Health workers of the suggested hospitals were invited to participate in the study and to submit background information about admission patterns, the frequency of malnutrition, and current practice. Hospitals were chosen for a preliminary visit on the basis of this information. The basic requirements for selection included: a system of recording admissions of and outcomes for children; documentation of a case-fatality rate >20% for severely malnourished children <5 years of age over a period of at least one year; administrative support for food supply, essential drugs, and staff allocation; and interest and commitment of the health care staff to improve the management and outcome of severe malnutrition.

Paediatricians with experience in improving care practices for severe malnutrition in African hospitals (*J.L.D.*, *A.P.*) carried out a preliminary visit to hospitals in which implementation of the guidelines was considered feasible. The local situation was assessed on the basis of the above criteria, and a final selection of hospitals was made.

Implementation of the guidelines

The guidelines were implemented by a paediatrician (*J.L.D.*) who visited the selected hospitals three times during a one-year period. A participatory approach was taken to give the hospitals' staff a feeling of ownership and responsibility in the process and outcome (10).

During the initial visit, which lasted two weeks, admission and death records were reviewed and current practices in the management of severe malnutrition were evaluated. Possible reasons for the high case-fatality rate for severely malnourished children, the guidelines, and how the guidelines could be adapted to the local setting were discussed with individuals or small groups. The visiting paediatrician showed how height and weight-for-height should be measured, weights charted, daily weight gain computed, and drinking cups standardized. She then checked how the staff carried out the procedures. Preparation of special formulae

(starter formula, 75 kcal/100 ml; catch-up formula, 100 kcal/100 ml) and oral rehydration salt (ORS) solution for the severely malnourished (ReSoMal; one packet WHO-ORS plus 2 l of water, 45 ml of 10% potassium chloride solution, and 50 g sugar) was also demonstrated and checked. The health workers were encouraged to put into practice components of the guidelines that could be applied readily and then to gradually introduce new components. The health workers formulated an institutional protocol on the basis of the available resources. The one-page protocol was distributed to the health staff and posted in the admitting area and ward. The visiting paediatrician observed the efforts made, gave suggestions, and helped find solutions to questions or problems.

About six months after the initial visit, an interim visit of 3–5 days was used to identify persistent or new problems, note improvements, and discuss questions that had arisen from the implementation of the guidelines. The visiting paediatrician encouraged staff to evaluate their current management, develop possible solutions, and continue the improved care practices.

A final visit of 3–5 days was carried out at the end of the study year to evaluate which components of the guidelines were still in place and the extent of adherence to the individualized protocol. Reasons for non-implementation or non-continuation were documented.

Data collection

A structured survey instrument used in a previous study (11) was modified and field-tested. The modified instrument consisted of data recording forms used by the visiting paediatrician to conduct interviews, observe activities in the ward, and review hospital charts and records (Table 1).

Analysis

The design of the study and its sampling strategy meant that formal statistical testing was not possible.

Ethics

The relevant national and ethical institutions in South Africa (Northern Province Department of Health and the Committee for Research in Human Subjects at the University of Witwatersrand) and in Ghana (Regional Directorate, Ministry of Health, Volta Region, Ho, and the executive board of the Archdiocese of Accra) approved the study.

Results

Selection of hospitals

A postal survey was sent to 16 hospitals recommended in Africa; 12 of these completed and returned the questionnaires. The estimated case-fatality rate for severely malnourished children admitted to these hospitals ranged from 15% to 40% (median, 24%). The average in-hospital stay for children with severe malnutrition ranged from 14 to 21 days. Five hospitals in Ethiopia, the Gambia, Ghana, Nigeria, and South Africa were visited.

Specific problems were identified at three hospitals not selected for implementation of the guidelines. At one hospital, resource and bed space limitations meant that severely malnourished children were admitted only if they had another severe illness (e.g. malignancy or disseminated tuberculosis). At another hospital, nutritionists had administered special

Table 1. Data recording forms used by the visiting paediatrician during initial, interim, and final visits to assess management of severe malnutrition

Forms used to collect data	Methods used to collect data
Diagnosis and emergency treatment of severe malnutrition	Interview of doctors and nurses Observation as children are assessed and managed in the outpatient department Review of inpatient charts
Inpatient management of severe malnutrition	Interview of doctors and nurses Observation during rounds and ward visits Review of inpatient charts
Patient vignettes	Review of hospital records of children with severe malnutrition who recently died
Supplies and equipment	Interview of doctors and nurses Observation during visits to the outpatient department and wards
Pharmacy	Review of medication sheets in the patient charts Interview of pharmacist
Laboratory	Review of laboratory results in the patient charts Interview of laboratory personnel
Food supply	Interview of nurses, dietician, and kitchen staff Observation during visits to the wards
Assessment of the existing situation	Individual or small-group discussion to summarize health workers' impressions
Monthly report of severe malnutrition	Collated and submitted by the paediatrician at each study hospital

formulae not optimal for severely malnourished children for over 20 years, and they were not open to change. At this same hospital, a recently implemented cost-recovery scheme had resulted in a decrease in the number of admissions and days of hospitalization. At all three hospitals the patients' families had to pay for food and medicines during hospitalization.

The two hospitals chosen for implementation of the guidelines were Mapulaneng Hospital in the Northern Province of South Africa, recruited in September 2000, and Battor Hospital in the Volta Region of Ghana, recruited in April 2001. Mapulaneng is a general district hospital with 58 paediatric beds (excluding beds for healthy newborns). The paediatric ward had two doctors (one paediatrician and one junior doctor), six nurses on the morning and afternoon shifts, and four nurses on the night shift. The paediatrician, rotational general doctors, and junior doctors provided paediatric outpatient assessment and emergency care. Food and medicines were provided for inpatients. Battor is a general mission hospital with 80 paediatric beds (excluding beds for healthy newborns). The paediatric ward had two doctors (one paediatrician and one junior doctor), eight nurses on the morning and afternoon shifts, and three nurses on the night shift. The paediatrician and one junior doctor were responsible for the paediatric outpatient, emergency, and inpatient care. Food and medicine were provided for inpatients.

Comparison of mortality rates

During the 12 months leading up to implementation of the guidelines, a retrospective review of the paediatric discharge logbook showed that 29 children were admitted with severe malnutrition to Mapulaneng and 81 to Battor. During this pre-study period, the case-fatality rate for severely malnourished children was 10/29 (35%) at Mapulaneng and 16/81 (20%) at Battor, with average hospital stays of 2 and 3–4 weeks, respectively. During the study period, the case-fatality rate for severely malnourished children was 23/125 (18%) at Mapulaneng and 7/39 (18%) at Battor, with an average hospital stay of 4 weeks at both hospitals.

Implementation of the guidelines

Table 2 classifies the components of the guidelines into those that were feasible and sustained, feasible with adaptation or special provision, feasible but implemented inconsistently or not sustained, or not feasible at all. Table A compares the case management practices at each study hospital during the first visit and during the year of guideline implementation (web version only, available at: <http://www.who.int/bulletin/>).

Feasible and sustained guideline components

At Battor, triage, urgent management, and routine admission of severely malnourished children; measures against hypoglycaemia and hypothermia; restricted use of intravenous fluids; and delaying the administration of supplemental iron were already in practice. At Mapulaneng, much more work on improving management was needed.

Most of the guideline components were feasible and sustained throughout the study year (Table 2). Adaptation of the guidelines based on the available resources helped make the recommendations feasible locally. At Mapulaneng, the special formulae were made with dried milk, sugar, and oil in accordance with the instructions in the guidelines. At Battor, milk is expensive, but wheat soy blend is donated regularly to the hospital, so an appropriate amount of wheat soy blend, based on its nutritional content, was used in place of milk (with adjustments in the sugar and oil content) to make the special formulae.

Guideline components feasible with adaptation or special provision

The guidelines state that 130 ml.kg⁻¹day⁻¹ of special formula should be given initially in the form of feeds two-hourly, then three-hourly and then four-hourly all day and throughout the night. At Mapulaneng, the feeding schedule was simplified to 130 ml.kg⁻¹day⁻¹ divided into three-hourly feeds, because a single schedule was considered more feasible to implement. At Battor, the feeding schedule was very similar to WHO recommendations, because nurses carried out the daytime feeding. Frequent feedings throughout the night were a problem at both hospitals. At Mapulaneng, mothers were able to give one or two feedings between 18:00 and 08:00 hours, while at Battor, mothers fed the children once or twice between 20:00 and 08:00 hours.

The guidelines recommend premixed or individual electrolytes, minerals, and vitamins for severely malnourished children. The pharmacy at Mapulaneng, but not that at Battor, was capable of making a 10% solution of potassium chloride to be added to the special formulae, as recommended by the guidelines. At Battor, extended-release tablets containing 8 mEq of potassium chloride were available, and a single daily dose could be given to provide 0.8–1.6 mEq potassium/kg/

Table 2. Summary of the feasibility and sustainability of the main components of the WHO guidelines for the management of severely malnourished children

Category	Battor Hospital and Mapulaneng Hospital	Battor Hospital	Mapulaneng Hospital
Feasible and sustained	Routine admission of all severely malnourished children Using key signs, oedema of both feet or severe visible wasting, for the diagnosis Measurement of height and calculation of weight-for-height Measures against hypoglycaemia, e.g. early feeding on admission, nasogastric tube feeding when necessary Measures against hypothermia, e.g. blankets, heaters, keeping the children dry Restricting the use of intravenous fluids only to those with shock or severe dehydration Preparation and use of starter (75 kcal/100 ml) and catch-up (100 kcal/100 ml) formulae Delaying the administration of supplemental iron	Triage, urgent assessment and management	Allowing mothers to stay with the children all day and night Routine administration of oral antibiotics to those without complications
Feasible with adaptation or special provision	Frequent feeding, all day and night Supplemental electrolytes, minerals, and vitamins	Routine administration of antibiotics to those without complications	
Feasible, but implemented inconsistently or not sustained	Measurement and recording of feeding Daily measurement and charting of weights Transition from starter (75 kcal/100 ml) to catch-up (100 kcal/100 ml) formula		
Not feasible	Preparation and use of rehydration solution for the severely malnourished (ReSoMal) Calculation of weight gain in g/kg/day Target case-fatality rate of 5–10%	Allowing mothers to stay with the children all day and night	Triage, urgent assessment and management

day for children weighing 5–10 kg. The preparation of magnesium sulfate (50% solution for intramuscular use) recommended by the guidelines was available at Mapulaneng but not at Battor, which only had a 10% solution. Folic acid and iron were available at both hospitals, but multivitamin preparations had been excluded from their essential drug lists. At Battor, the supply of vitamin A was irregular. The health workers at both hospitals tried to obtain the other recommended micronutrients (e.g. zinc, copper, selenium, and iodine) but were unsuccessful. A commercial therapeutic vitamin and mineral complex was obtained by the WHO from Nutriset (Malaunay, France) and was provided at no cost to the hospitals during the study period.

Much discussion surrounded the recommendation for routine administration of oral antibiotics for severely malnourished children without signs of infection or complication. Concerns were raised about the evidence for the benefit of cotrimoxazole, oral versus parenteral antibiotics, and the use of the same antibiotic regimen for children with marasmus and with kwashiorkor. The staff at Mapulaneng decided to give oral antibiotics routinely to all severely malnourished children without complications on admission. The staff at Battor routinely administered parenteral ampicillin and gentamicin to all severely malnourished children on admission.

Guideline components feasible, but implemented inconsistently or not sustained

Measurement and recording of feeding was variable and incomplete. Initially, weights were measured and charted daily,

but this was not sustained. Instead, weights were measured once or twice a week and charted rarely. The guidelines recommend a transition from the starter formula during the stabilization phase to the catch-up formula during the rehabilitation phase and then gradual replacement by enriched food. At both hospitals, the timing, and even occurrence, of changeover from starter to catch-up formula was variable. Often, starter formula was given during the first week or two and enriched hospital food was added gradually to the diet.

Guideline components not feasible

The routine use and preparation of ReSoMal was thought to be too complicated and not worth the effort when the relatively small number of severely malnourished children who needed the special rehydrating solution at any one time was considered. The staff opted to provide the usual oral rehydration solution plus breast milk, water, and other fluids. At both hospitals, a large proportion of severely malnourished children were motherless, positive for infection with human immunodeficiency virus (HIV) or seriously ill on arrival, so that trying to decrease case-fatality rates to 5–10% was considered impossible.

Although most of the guideline components were implemented, we were unable to change certain hospital policies and the attitudes and practices of some health workers. At Battor, mothers of severely malnourished children were allowed in the wards only during brief daytime visiting periods and from 20:00 to 08:00 hours. This policy remained in place despite its potential impact on the care and sensory stimulation

of severely malnourished children. At Mapulaneng, improved care practices were implemented in the ward, but lack of interest or motivation of rotating junior doctors at the outpatient department seriously hampered the initial assessment and management of severely malnourished children. Also at Mapulaneng, the nurses refused to initiate a triage process because they feared accusations of accepting bribes or preferentially treating some patients.

Discussion

Whether the WHO guidelines on management of severe malnutrition work in practice is an important and relevant question. The process used in this study is one model of how the guidelines can be implemented at hospitals in developing countries. It depended on the availability of authoritative guidelines, an external support system, a participatory approach, and a willingness to change on the part of the institutions.

One study evaluated the clinical management of severely malnourished children in two rural district hospitals in South Africa (12), but this is the first published report to describe the assessment, implementation process, and outcome. Implementation of most of the main principles of the WHO severe malnutrition guidelines was feasible, sustained over a one-year period, and affordable to the institutions. Although relatively labour intensive, the process was successful because the hospital staff were involved in planning of the changes from the outset, logistical limitations were acknowledged, and local modifications to the generic protocols were developed. The success also can be attributed to the enthusiasm of the resident paediatricians and the follow up by the visiting paediatrician. It was encouraging to note how reorganization and changes in care practices were incorporated comfortably into the usual functioning of the wards. As the resources for implementation came from the hospital budgets (except for a supply of mineral-vitamin pre-mix), financial sustainability is likely. The strong sense of ownership and pride in the implementation augurs well for the long-term viability of the process. The study is limited because it involved only two hospitals; nevertheless, the results describe successes and failures in efforts to implement the guidelines, and the study may serve as a useful guide for follow-up research.

Whether the WHO guidelines, once implemented, are effective is another important and relevant question. Other studies showed reductions in mortality and improved weight gain (2–5). In this study, the case-fatality rates before and after implementation of the guidelines were compared, but this was not a primary outcome because the use of historical data is problematic. First, case-fatality rates may be reduced artificially by early discharge; although at both sites, the average hospital stay increased as definite interventions became available. Second, during the study year, the diagnosis of severe malnutrition was more precise and the criteria for admission were revised. At Battor, the mortality was unchanged, possibly because diagnoses of severe malnutrition were more precise during the study year: this is supported by a decrease in the number of admissions classified as severely malnourished from 81 before to 39 during the study. At Mapulaneng, the mortality halved; this may have been because all cases of severe malnutrition, not only those with complications, were admitted, as suggested by the increase from 29 cases before to 125 during

the study. Third, the study was not blinded, so some bias in the reporting may have occurred during the study year.

Comparisons aside, some would still regard the 18% fatality rate from severe malnutrition at both hospitals during the study period as unacceptably high when considering the guidelines' target mortality rate of 5–10% (8, 9). The belief that this target is attainable was based on published (4, 5) and unpublished data. In contrast, other studies showed that fatality rates remain >20% even when health workers are trained in the management of severe malnutrition and when improved case practices are implemented (13, 14). Differences between study sites in criteria for admission and discharge, definitions used for severe malnutrition, and profiles and severity of associated illnesses (e.g. persistent diarrhoea or HIV) make real comparisons between sites impossible.

Guideline components that were not implemented or sustained at Mapulaneng and Battor may have been crucial in providing further decreases in case-fatality rates. Guideline practices believed to be in place may have been implemented inconsistently or poorly in reality. During each visit, the consultant paediatrician reviewed deaths among severely malnourished children. These reviews were used to evaluate clinical practice and suggest how errors or shortcomings in practice might be avoided in the future. The study hospitals' non-research setting, which was characterized by a minimum of recording and laboratory work-up, however, meant that it often was not possible to determine with certainty the exact cause of each death. The influence of HIV on malnutrition mortality was not measured specifically. The primary cause of death in some severely malnourished children was probably advanced acquired immunodeficiency syndrome (AIDS), in which case the deaths would not have been preventable. Deaths that occurred within a few hours of arrival also emphasised the importance of access to care, referral patterns, and late presentation.

Although the guidelines had not been tested previously in small hospitals in Africa, experts with extensive field experience originally developed, reviewed, and designed them for use in developing country settings. It is unlikely that the guidelines could be simplified substantially without compromising their effectiveness, but they could be improved by providing more suggestions on how to adapt specific recommendations to local situations. For example, the guidelines could suggest the option of a single extended-release potassium tablet daily for hospitals in which preparation of a 10% solution of potassium chloride is not possible. Alternative recipes for the special formulae, which incorporate various common ingredients, are also needed.

Hospital staff questioned the evidence base of some of the guideline components and felt that the evidence behind some of the recommendations — such as the single approach for managing marasmus and kwashiorkor; feeding frequencies; routine antibiotics; and micronutrients other than vitamin A, folic acid, and zinc — was considered inadequate. A feasibility study such as this is unable to contribute towards establishing what constitutes best practice. Documentation of the technical basis of these specific recommendations or research to provide the necessary evidence would promote the wider acceptance of the guidelines.

The study intentionally selected two general hospitals that seemed to have a good chance of implementing the guidelines. Although the findings cannot be generalized to all

small hospitals in Africa, this study gives an idea of what may and may not be implemented feasibly with a minimum of intervention. It is difficult to predict whether similar African hospitals would have the same success in improving care management practices by following the guidelines, particularly without external consultant support. Conversely, more intensive input and support might allow implementation of all components of the guidelines but with less assurance of sustainability.

At the three hospitals excluded after the initial review, economic realities and hospital policies did not allow for guideline implementation. Larger regional and academic centres should be able to introduce changes more easily, but resistance to “outside interference” and the idiosyncrasies of senior staff may hamper acceptance. Finding ways to overcome these obstacles is crucial, because these institutions train young doctors and nurses and also serve as referral hospitals.

Conclusions

Implementation of most components of the WHO guidelines on management of severe malnutrition was feasible, affordable, and sustainable in the short term (12 months) in two African hospitals. Wider implementation of the guidelines in similar settings is possible, but it will require recognition of the difficulties involved and an active commitment to change. The guidelines could be improved by including additional

information on how to adapt specific components to local situations. The guidelines are well supported by experience and published reports, but more information is needed about some components and their impact on mortality. ■

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Conflicts of interest: none declared.

Résumé

Mise en œuvre des directives OMS sur la prise en charge hospitalière de la malnutrition sévère en Afrique

Objectif Examiner les difficultés, les avantages, la faisabilité et la viabilité de la mise en œuvre des directives OMS sur la prise en charge de la malnutrition sévère.

Méthodes Lors d'une enquête réalisée par voie postale, le personnel de 12 hôpitaux africains a été invité à participer à l'étude. Cinq hôpitaux ont été évalués et deux ont été sélectionnés, un hôpital de district en Afrique du Sud et un hôpital de mission au Ghana. Lors d'une première visite, un pédiatre expérimenté a examiné la situation dans les deux hôpitaux et a présenté les principes des directives selon une approche participative. Lors d'une deuxième visite environ six mois plus tard, il a examiné la faisabilité et la viabilité des changements apportés et a aidé le personnel à trouver des solutions aux problèmes. Lors de sa visite finale au bout d'un an, il a réévalué la situation générale.

Résultats Les pratiques de prise en charge de la malnutrition se sont améliorées dans les deux hôpitaux. Les mesures destinées à

combattre l'hypoglycémie, l'hypothermie et l'infection ont été renforcées. La réalimentation précoce avec des prises fréquentes a été adoptée comme pratique courante. Certains micronutriments devant être incorporés à l'alimentation n'étaient pas disponibles sur place et ont dû être importés. Des difficultés ont été rencontrées au niveau de la surveillance de la prise de poids et de l'introduction d'une solution de réhydratation contre la malnutrition.

Conclusion La mise en œuvre des principes généraux des directives OMS sur la malnutrition sévère était réalisable techniquement et financièrement et s'est révélée viable dans deux hôpitaux africains. Les directives pourraient être améliorées par des suggestions sur la manière d'adapter certaines recommandations à la situation locale. Elles sont bien étayées par les données d'expérience et les rapports publiés, mais il faudra recueillir davantage d'informations sur certains de leurs éléments ainsi que sur leur impact sur la mortalité.

Resumen

Aplicación de las directrices de la OMS sobre el manejo de la malnutrición grave en hospitales de África

Objetivo Investigar los problemas, los beneficios, la viabilidad y la sostenibilidad de la aplicación de las directrices de la OMS sobre el manejo de la malnutrición grave.

Métodos Mediante una encuesta postal se invitó a participar en el estudio a personal de 12 hospitales africanos. Se evaluaron cinco hospitales, entre los cuales se seleccionó a dos: un hospital de distrito de Sudáfrica y un hospital de misión de Ghana. En la visita inicial, un pediatra experimentado examinó la situación en los hospitales e introdujo los principios de las directrices mediante un enfoque participativo. En la segunda visita, efectuada unos seis

meses más tarde, el pediatra examinó la viabilidad y la sostenibilidad de los cambios introducidos y ayudó a encontrar soluciones a los problemas. En la última visita, pasado un año, el pediatra reevaluó la situación general.

Resultados Las prácticas de manejo de la malnutrición mejoraron en los dos hospitales. Se fortalecieron las medidas contra la hipoglucemia, la hipotermia y las infecciones. La administración pronta y frecuente de alimentos se convirtió en una práctica sistemática. Algunos micronutrientes a incluir en la dieta no se podían conseguir localmente y tenían que ser importados. Surgieron

problemas en relación con la vigilancia del aumento de peso y con la introducción de una solución de rehidratación para la malnutrición. **Conclusión** Los principios básicos de las directrices de la OMS sobre la malnutrición grave se pudieron aplicar de manera viable, asequible y sostenible en dos hospitales africanos. Las directrices

podrían mejorarse incluyendo sugerencias respecto a la forma de adaptar recomendaciones concretas a las situaciones locales. Aunque están satisfactoriamente respaldadas por la experiencia y por diversos informes publicados, se necesita más información sobre algunos componentes y sobre su impacto en la mortalidad.

ملخص

تنفيذ الدلائل الإرشادية لمنظمة الصحة العالمية حول التدبير العلاجي لسوء التغذية الوخيم في المستشفيات في أفريقيا

الموجودات: لقد تحسنت ممارسات التدبير العلاجي لسوء التغذية في كلا المستشفيات، واتخذت إجراءات لتعزيز المعالجة لتقص سكر الدم ولانخفاض حرارة الجسم وللعدوى، وقد تم ترسيخ الإطعام المتكرر واعتبار ذلك من الممارسات الروتينية، وقد كان هناك بعض المغذيات الزهيدة المقدار التي ينبغي إدراجها في النظم الغذائية لم تكن متوفرة محلياً وكان لا بد من استيرادها، وقد صودفت بعض المشكلات المتعلقة برصد اكتساب الوزن وإدخال محاليل تعويض السوائل في معالجة سوء التغذية. **الاستنتاج:** لقد كان تنفيذ المبادئ الرئيسية للدلائل الإرشادية لمنظمة الصحة العالمية حول التدبير العلاجي لسوء التغذية مجدياً، ويمكن تحمل نفقاته، وكان مضمون الاستمرار في اثنين من المستشفيات الأفريقية، ويمكن تحسين الدلائل الإرشادية بتضمينها باقتراحات حول كيفية تبني توصيات خاصة ببعض الأوضاع المحلية. وقد تعززت الدلائل الإرشادية تعزيزاً جيداً بالخبرات وبالتقارير التي نشرت حولها، وتتمس الحاجة لمزيد من المعلومات حول بعض المكونات وتأثيرها على معدلات الوفيات.

الغرض: استقصاء المشكلات والمنافع والجدوى وقابلية الاستمرار لتنفيذ الدلائل الإرشادية لمنظمة الصحة العالمية حول التدبير العلاجي لسوء التغذية.

الطريقة: أرسلت استمارات بريدية إلى العاملين في ١٢ من المستشفيات الأفريقية للمساهمة في الدراسة؛ وقد تم تقييم خمس مستشفيات واختيار مستشفيين للمشاركة في الدراسة؛ إحداهما من مستشفيات مناطق جنوب أفريقيا، والثانية من مستشفيات الإرساليات في غانا. وقد قام طبيب اختصاصي بأمراض الأطفال بتمتع بخبرة واسعة بزيارة بدئية للمستشفيات لاستعراض الوضع فيها وإدخال المبادئ التي تتضمنها الدلائل الإرشادية من خلال أساليب للمساهمة، ثم قام بزيارة ثانية بعد مرور ستة شهور استعرض فيها الجدوى وضمان استمرار التعثرات التي قام بإدخالها، وساعد في إيجاد الحلول للمشكلات، وفي زيارته الأخيرة التي قام بها بعد مرور عام أجرى ذلك الطبيب الاختصاصي بأمراض الأطفال تقييماً عاماً للوضع.

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Table A. Severe malnutrition case management practices at Mapulaneng Hospital (South Africa) and Battor Hospital (Ghana)

Recommendations in WHO severe malnutrition guidelines (8, 9)	Case management practices			
	Mapulaneng Hospital		Battor Hospital	
	During first visit	During year of guideline implementation	During first visit	During year of guideline implementation
Diagnosis <i>Key signs</i>				
Oedema of both feet or severe wasting	Clinical signs or weight-for-age	Key signs and weight-for-height	Clinical signs or weight-for-age	Key signs and occasionally, weight-for-height measured
Less than -3 SD weight-or-height	Height not measured	Height board available, used routinely	Height not measured	Height board not available; height assessed with tape measure
Triage				
Identify priority signs	Not done	Not done	Nurses perform triage and severely malnourished children cared for immediately	As before guideline implementation
Prompt assessment and treatment				
Admission				
Routine for all severely malnourished	Depended on doctors' assessment	Routine	Routine	Routine
Initial emergency response				
Prompt assessment and treatment	Poor response	Much improved	Timely and appropriate response	As before guideline implementation, but increased recognition of potential complications
	Little recognition of potential complications	Some junior doctors resistant to change	Potential complications not always recognized	
Hypoglycaemia				
Early and frequent feedings	Feeding not started until the next regular hospital meal	Early and frequent feeding with special formula	Early and frequent feeding with thick gruel	Early and frequent feeding continued but using special formula
Intravenous glucose, if unconscious	Hypoglycaemia often not considered	Intravenous glucose, if unconscious	Intravenous glucose, if unconscious	Intravenous glucose, if unconsciousness continued
Measure blood glucose immediately, where possible	Blood glucose level sometimes ordered, usually results not seen until next day	Blood glucose levels seldom obtained	Blood glucose levels rarely obtained	Blood glucose levels rarely obtained
Hypothermia				
Keep child warm	Appropriate measures against hypothermia	As before guideline implementation	Appropriate measures against hypothermia	As before guideline implementation
Monitor temperature	Temperature taken and charted routinely		Temperature taken and charted routinely	
Dehydration				
Use oral ReSoMal	Rehydration using intravenous fluids common	Rehydration using oral rehydration solution plus other fluids	Rehydration using oral rehydration solution plus other fluids	As before guideline implementation
Intravenous fluids only for shock or severe dehydration		ReSoMal not prepared and used	Intravenous fluids used only for shock or severe dehydration	ReSoMal not prepared and used
		Intravenous fluids used only for shock or severe dehydration		
Electrolyte imbalance				
Limit sodium ions, provide extra potassium and magnesium ions	Extra potassium and magnesium ions not given	Potassium and magnesium ions present in the vitamin and mineral complex powder added to special formula	Extra potassium and magnesium ions not given	Potassium and magnesium ions present in the vitamin and mineral complex powder added to special formula
No diuretics	Diuretics not used	Diuretics not used	Diuretics not used	Diuretics not used

Recommendations in WHO severe malnutrition guidelines (8, 9)	Case management practices			
	Mapulaneng Hospital		Battor Hospital	
	During first visit	During year of guideline implementation	During first visit	During year of guideline implementation
Infection Use antibiotics routinely: oral co-trimoxazole if no complications, and parenteral ampicillin and gentamicin if with complications Modification as appropriate	No antibiotics for those without signs of infection Inappropriate initial antibiotics occasionally High level of recognition and treatment of sepsis, skin infection, and tuberculosis	Routine antibiotics: oral co-trimoxazole for those with no complications and parenteral ampicillin and gentamicin if with complications Modification as appropriate	No antibiotics for those without signs of infection High level of recognition and treatment of sepsis, skin infection, and tuberculosis	Routine antibiotics: parenteral ampicillin and gentamicin Modification as appropriate
Micronutrients Vitamin A and folic acid on day 1 Daily multivitamins, folic acid, zinc, copper No iron until weight gain	Vitamin A and folic acid given No other supplemental micronutrients available Iron sometimes started on admission	Vitamin A and folic acid given Vitamin and mineral complex powder added to special formula Iron usually delayed until weight gain	Vitamin A (when available) and folic acid given No other supplemental micronutrients available Iron delayed until weight gain	Vitamin A (when available) and folic acid given Vitamin and mineral complex powder added to special formula Iron delayed until weight gain
Initial feeding Early and frequent feeding Give starter formula: 130 ml.kg. ¹ day ¹ , starting with 2-hourly feeds, then 3-hourly then 4-hourly	Not started until the next regular hospital meal, usually porridge, milk, or "egg flip" (egg, milk, and sugar) given 3–5 times a day	Starter formula given early and frequently (16 ml/kg every 3 hours) during the first 1–2 weeks	A thick gruel given early and frequently, about every 2–3 hours	Starter formula given early and according to schedule recommended by the guidelines
Catch-up growth Transition from starter to catch-up formula, then ad libitum Continued frequent feeding Daily weight Calculate and record weight gain every 3 days as g.kg. ⁻¹ day ⁻¹	No distinction between initial and catch-up feeding Follow-up weights not measured or charted	Some children may make transition to catch-up formula, but more often go directly to eating enriched hospital food Weight measured once or twice a week and recorded Weights not charted Weight gain not calculated	No distinction made between initial and catch-up feeding Follow-up weights are recorded but not charted	Some children may make transition to catch-up formula, but more often go directly to eating enriched hospital food Weight measured once or twice a week and recorded Weights not charted Weight gain not calculated
Sensory stimulation Tender loving care Cheerful stimulating environment Structured play therapy Physical activity as soon as the child is well enough Maternal involvement as much as possible	No specific activities for sensory stimulation Children play with other children when well enough Mothers remain in wards, are provided with food and are responsible for care and feeding of their children	Occupational therapist briefly involved in play therapy, not sustained Otherwise, same	No specific activities for sensory stimulation Children play with other children when well enough Mothers allowed to visit children in the wards during specific hours and allowed to stay through the night	As before guideline implementation
Preparation for follow-up Criteria for discharge Diet education	Discharge when complications resolved Dietician or nurse counsels mothers prior to discharge	Discharge when complications resolved and gaining weight As before guideline implementation	Discharge when complications resolved and gaining weight Nurse counsels mothers prior to discharge	As before guideline implementation