
Integrated management of childhood illness by outpatient health workers: technical basis and overview

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This article describes the technical basis for the guidelines for the integrated management of childhood illness (IMCI), which are presented in the WHO/UNICEF training course on IMCI for outpatient health workers at first-level health facilities in developing countries. These guidelines include the most important case management and preventive interventions against the leading causes of childhood mortality—pneumonia, diarrhoea, malaria, measles and malnutrition. The training course enables health workers who use the guidelines to make correct decisions in the management of sick children. The guidelines have been refined through research studies and field-testing in the Gambia, Ethiopia, Kenya, and United Republic of Tanzania, as well as studies on clinical signs in the detection of anaemia and malnutrition. These studies, and two others from Uganda and Bangladesh, are presented in this Supplement to the Bulletin of the World Health Organization.

Introduction

Infant and young child mortality remains unacceptably high in developing countries, with about 12 million deaths occurring annually in under-5-year-old children; 7 in every 10 of these deaths are due to diarrhoea, pneumonia, measles, malaria or malnutrition, and often a combination of these conditions (Fig. 1), which are also the reason for seeking care for at least three out of four sick children who come to a health facility. Staff in such facilities are already treating these conditions and adequate clinical skills are essential to improve the care. Since potentially fatal illnesses in children are often brought to the

attention of health workers at first-level health facilities, the initial focus of the integrated management of childhood illness (IMCI) has been on improving their performance through training and support.

The lessons learned from disease-specific control programmes have been used to develop a single efficient and effective approach to managing childhood illness. A number of programmes in WHO^a and UNICEF^b have collaborated in developing this approach, which is described as integrated management of childhood illness (IMCI) but has also been referred to as integrated management of the sick child (1, 2). These efforts are coordinated by WHO's Division of Child Health and Development (CHD). The guidelines and training materials that have been developed are appropriate for application in the majority of developing countries where infant mortality is >40 per 1000 live births and where there is transmission of *Plasmodium falciparum* malaria. They represent an attempt to express as simply as possible what needs to be done in a first-level outpatient health facility by any health worker — doctors, medical assistants, nurses and literate paramedical workers, to treat children in order to reduce mortality or to avert significant disability (Table 1). In addition to the IMCI clinical training course, a course has been developed to improve drug supply

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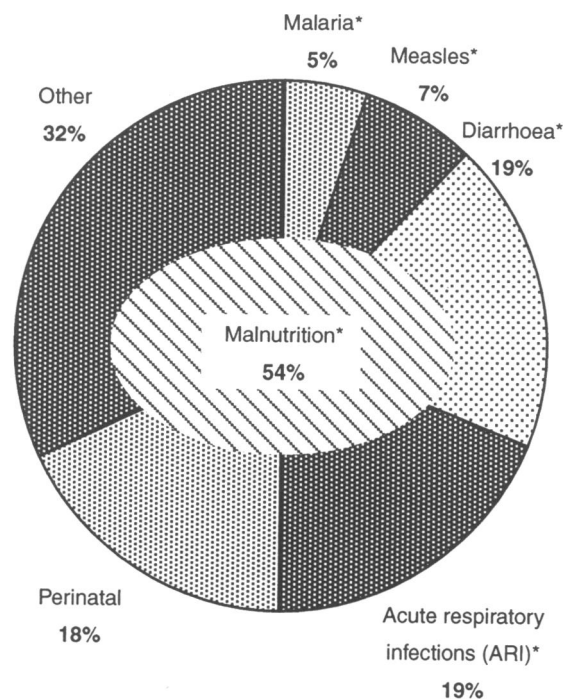
² The WHO Working Group on Guidelines for Integrated Management of the Sick Child includes staff from WHO/CHD and the following Programmes: Control of Acute Respiratory Infections (ARI) and the Diarrhoeal Disease Control Programme (CDD), both with the Division for the Control of Diarrhoeal and Acute Respiratory Disease (CDR), now reorganized as the Division of Child Health and Development (CHD); Expanded Programme on Immunization (EPI); the Division of Communicable Diseases (CDS); Action Programme on Essential Drugs (DAP); Global Programme on AIDS; Maternal and Child Health (MCH); Nutrition (NUT); Oral Health (ORH); Programme for the Prevention of Blindness (PBL); and the Malaria Unit, Special Programme for Research and Training in Tropical Diseases (TDR) and Control of Tropical Diseases (CTD).

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^a See footnote 2 on this page.

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Fig. 1. Distribution of causes of 11.6 million deaths among under-5-year-olds in all developing countries, 1995. Based on data from Murray CJL, Lopez AD. *The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*. Cambridge, MA, Harvard School of Public Health, 1996 (Global Burden of Disease and Injury Series, vol. I); and from Pelletier DL, Frongillo EA, Habicht JP. Epidemiologic evidence for a potentiating effect of malnutrition on child mortality. *American journal of public health*, 1993, 83: 1130–1133.



* Approximately 70% of all childhood deaths are associated with one or more of these 5 conditions

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management at first-level health facilities.^c Improvements in other aspects of health service infrastructure that are needed for effective management of childhood illness are also envisaged within the IMCI strategy. At the same time, work is ongoing

^c Drug supply management training. WHO/CHD and USAID BASICS project, 1997 (in draft).

Table 1: Child health interventions included in integrated management of childhood illness

| Case management interventions | Preventive interventions |
|--|---|
| <ul style="list-style-type: none"> • Pneumonia • Diarrhoea <ul style="list-style-type: none"> — Dehydration — Persistent diarrhoea — Dysentery | <ul style="list-style-type: none"> • Immunization during sick child visits (to reduce missed opportunities) |
| <ul style="list-style-type: none"> • Meningitis, sepsis • Malaria • Measles • Malnutrition • Anaemia • Ear infection | <ul style="list-style-type: none"> • Nutrition counselling • Breastfeeding support (including the assessment and correction of breastfeeding technique) |

on approaches to changing family behaviour in relation to sick children and the development of guidelines and training materials for hospital care at the referral level.

The IMCI guidelines rely on detection of cases based on simple clinical signs, without laboratory tests, and offer empirical treatment. A careful balance has been struck between sensitivity and specificity using as few clinical signs as possible, which health workers of diverse backgrounds can be trained to recognize accurately. The guidelines for the assessment and classification of childhood illness (often referred to as an algorithm) have been refined through research and field tests in the Gambia (3), Kenya (4), Ethiopia (5), and United Republic of Tanzania (6), as well as studies on the usefulness of certain clinical signs in the detection of anaemia (9, 10) and malnutrition (11). These studies and two others in Uganda (7) and Bangladesh (8) are presented in this Supplement of the *Bulletin of the World Health Organization*.

In the WHO/UNICEF training course for outpatient health workers, the integrated guidelines are presented on four wall charts, the contents of which have been reproduced as a booklet which can serve as a work aid. The case management process as laid out in the charts involves the following steps.

(1) The health worker first *assesses* the child by identifying any danger signs, asking about the four main symptoms in all children (cough or difficult breathing, diarrhoea, fever, and ear problem), carrying out further assessment if a main symptom is reported, and reviewing the nutritional and immunization status in all children.

(2) The health worker then *classifies* the child's illnesses. The classification of illness is based on a colour-coded triage system with which many health

workers are already familiar through use of the WHO case management guidelines for diarrhoea and acute respiratory infections (ARI). The disease classification tables from the chart on the assessment and classification of the sick child aged 2 months to 5 years are shown in Fig. 2; the left and middle columns show how the signs are used to classify the child's illness, while the right column indicates the treatments.^d Each illness is classified according to whether it requires:

- urgent referral;
- specific medical treatment and advice; or
- simple advice on home management.

Action-oriented classifications, rather than exact diagnoses, are used.

(3) After classification, *specific treatments* are identified. If the child has to be referred urgently to a hospital, the health worker gives only essential treatment before departure. Since most children have more than one illness classification, an integrated treatment plan is developed.

(4) Practical *treatment instructions* are carried out, including how to teach the mother to administer oral drugs (Fig. 3), to increase fluid intake during diarrhoea (Fig. 4), and to treat local infections at home.^d The mother is advised on the signs which indicate that the child should immediately be brought back to the clinic and when to return for routine follow-up.

(5) Feeding is assessed and *counselling* of mothers on feeding problems is provided (Fig. 5 and 6).^d

(6) *Follow-up* instructions for various conditions are given when the child returns to the clinic.

Development of the IMCI guidelines

The guidelines for integrated management of childhood illness are based on both expert clinical opinion and research results. A technical review of existing programme guidelines was carried out with the cooperation of 12 WHO technical programmes through the WHO Working Group on Guidelines for Integrated Management of the Sick Child.^e In

some cases, these guidelines were already clear and up to date. Often the details for outpatient management had not been spelled out, lacked the information required for developing outpatient training material, or needed to be updated. Some modifications were required to make the guidelines applicable by first-level facility health workers of varying backgrounds, with no laboratory support. Integration of several diseases required modifications of disease-specific guidelines to take into account more than one disease condition. Considerable compromise between technical programmes was required so that the guidelines fully integrated the several steps in managing a sick child: assessment, classification, treatment, and counselling of the mother. The draft guidelines were subsequently reviewed in several versions by clinicians and experts in specific diseases who had experience in clinical and public health work in developing countries, then examined in research studies and by field-testing the training course.

Research to validate and improve the guidelines

Sufficient data were not available to make several guideline decisions. Particular problems were encountered in choosing clinical signs to detect anaemia and to decide which children with fever in a low malaria risk setting do not need antimalarial treatment. In addition, it was felt important to assess the performance of the guidelines as a whole to answer the key questions relevant to mortality reduction — were children correctly treated, counselled or referred to hospital when health workers used the guidelines? Six studies were carried out; four of them compared a health worker's decisions, based on the IMCI case management guidelines, with that of an expert paediatrician or medical officer, with or without laboratory support. The study in Bangladesh used the final version of the algorithm to provide a computerized analysis of its performance, based on clinical signs observed by a paediatrician.

In the first two studies, in the Gambia and Kenya, an early draft of the IMCI guidelines for the assessment and classification of illness was used (Table 2). In these studies, only the draft assess/classify case management chart was used. Trainers taught research workers to recognize clinical signs, based on clinical practice sessions and the ARI and diarrhoeal disease training videos, and to classify the child's illness using the chart and an early version of the re-cording form, which also served as a data collection tool.

^d Fig. 2–6 are to be found at the end of this article on pages 17–24.

^e See footnote 2 on p. 7.

Table 2: Integrated management of childhood illness (IMCI) algorithm: changes in the draft, pretest, fieldtest and final versions

| Classification | Draft algorithm in Gambia and Kenya studies | Pretest of draft training materials in Gondar, Ethiopia. | Field test of the full training course in Arusha, United Republic of Tanzania, March 1995 | WHO/UNICEF training course. (Integrated Management of Childhood Illness), November 1995 ^a |
|---|--|---|--|---|
| General danger signs | <ul style="list-style-type: none"> History of convulsions Not able to drink Abnormally sleepy or difficult to wake up | | <ul style="list-style-type: none"> History of convulsions Not able to drink Lethargic or unconscious Vomits everything | |
| Diarrhoea with severe dehydration | Two or more of the following signs including the one in italics: <ul style="list-style-type: none"> Abnormally sleepy or difficult to wake Very sunken and dry eyes Very dry mouth and tongue Drinks poorly, or not able to drink <i>Skin pinch goes back very slowly</i> | | | Two of the following signs: <ul style="list-style-type: none"> Lethargic or unconscious Sunken eyes Not able to drink or drinking poorly Skin pinch goes back very slowly |
| Diarrhoea with some dehydration | Two or more of the following signs including at least one of those in italics: <ul style="list-style-type: none"> <i>Restless, irritable</i> Sunken eyes Absent tears Dry mouth and eyes <i>Thirsty, drinks eagerly</i> <i>Skin pinch goes back slowly</i> | | | Two of the following signs: <ul style="list-style-type: none"> Restless, irritable Sunken eyes Drinks eagerly, thirsty Skin pinch goes back slowly |
| In low malaria risk areas, a child is classified as malaria if the mother reports fever <i>and</i> the indicated signs | Fever $\geq 38^{\circ}\text{C}$ (rectal) in clinic with: <ul style="list-style-type: none"> intermittent fever or chills, sweats or shaking | Fever $\geq 38^{\circ}\text{C}$ (rectal) in clinic (or feels hot) <i>and</i> <ul style="list-style-type: none"> no runny nose or measles | Fever $\geq 37.5^{\circ}\text{C}$ (axillary) in clinic or feels hot <i>with</i> <ul style="list-style-type: none"> no runny nose no measles no other cause of fever | <ul style="list-style-type: none"> No runny nose and No measles and No other cause of fever |
| Malnutrition | <ul style="list-style-type: none"> Low weight-for-age (< -2 Z-score) or Foamy patches on the white of the eye | | Low weight-for-age | Very low weight-for-age (< -3 Z-score) |
| Anaemia | Conjunctival pallor | Conjunctival or palmar pallor | Palmar pallor | |

^a See Fig. 2 for the full classification tables.

Development and testing of the training course

The guidelines were modified based on results of the Gambian and Kenyan studies (Table 2). An 11-day training course was developed for first-level facility health workers who are able to read and learn from written materials. The course combines classroom work and hands-on clinical practice built around the integrated case management guidelines. The seven

training modules of the complete course incorporate individual feedback on exercises, group discussions, drills, role plays, and photo and video exercises. The course provides substantial clinical experience in assessment, classification, treatment and counselling over 10 clinical sessions. Every morning, the participants manage sick children under supervision in the outpatient clinic and assess and classify hospitalized children under the guidance of a skilled clinical instructor. Each participant sees 30–50 sick children

during the course. Communication skills are taught from the first day in each module and throughout the clinical practice, as well as in role playing exercises in the classroom.

A draft version of the course was pretested in Gondar, Ethiopia, in July 1994 (5), using the same guidelines and training materials as were subsequently used in the study in Uganda. The pretest provided feedback both on the adequacy of the clinical guidelines and on the draft training materials. The case management charts and the modules were revised based on this experience and on the results of additional studies and analyses to help identify the best clinical predictors of anaemia (9, 10) and malnutrition (11), and a separate case management chart and training module was added for young infants (1 week to 2 months old); the full course was field-tested in Arusha, United Republic of Tanzania, in February 1995 (16). Difficulties in training health workers with different backgrounds were identified and resulted in several significant simplifications in the guidelines (see Table 2) and improvements in the training modules and visual aides. These revised materials were made available to countries for closely monitored use in November 1995.

Updated WHO guidelines presented in the training course

The IMCI guidelines incorporate current WHO case management guidelines for pneumonia and ear infection (12), diarrhoea with dehydration (13), dysentery (14, 15) and persistent diarrhoea, and malaria. Several of these guidelines have taken into account recent research findings, the experience of national disease control programmes and clinical experience with previous guidelines. The clinical signs for the classification of dehydration have been simplified (see Table 2). Several of the updated guidelines are summarized below. The modifications in the malaria guidelines reflect changes made on the basis of the studies presented in this Supplement (3, 4, 10).

Significant simplifications have been made in the classification of nutritional status. Classifying severe malnutrition based only on clinically apparent visible severe wasting and signs of kwashiorkor was the approach used earlier in the ARI training materials and is supported by a study carried out in Kenya (11). The use of palmar pallor for detecting anaemia was based on a review of existing information and further data from the same two study sites (3, 9). Further information on the technical basis of specific IMCI guidelines can be found in the Adaptation Guide (16).

Treatment of persistent diarrhoea

The guidelines emphasize the nutritional therapy of persistent diarrhoea, stressing the importance of both adequate feeding and the use of micronutrient supplementation (13, 17, 18). The majority of children with persistent diarrhoea can be treated on an ambulatory basis with food available in the home; however, some require specialized care in hospital. In the IMCI guidelines, mothers are advised to replace animal milk with increased breast-feeding or a fermented product such as yoghurt, or to replace half of the milk with a nutrient-rich semisolid complementary food (Fig. 5). Following these guidelines temporarily reduces the amount of animal milk lactose in the diet; provides a sufficient intake of energy, protein, vitamins, and minerals to facilitate the repair process in the damaged gut mucosa and improve nutritional status; avoids giving foods or drinks that may aggravate the diarrhoea; and ensures that the child's food intake during convalescence is adequate to correct any undernutrition and prevent its recurrence. If the diarrhoea does not respond to 5 days of nutritional therapy at home, the child is referred to hospital.

Micronutrient deficiencies are common in children with malnutrition. All children with persistent diarrhoea should receive daily supplements of multivitamins and minerals for 2 weeks. Locally available commercial preparations are often suitable, the least costly being tablets that can be crushed and given with the food. These should provide as broad a range of vitamins and minerals as possible, including at least twice the recommended daily allowances (RDAs) of folate, vitamin A, iron, zinc, magnesium, and copper.

The integrated guidelines ensure that every child with persistent diarrhoea is also examined for important non-intestinal infections, such as pneumonia and otitis media. Persistent diarrhoea in such children will not improve until these infections have been diagnosed and treated correctly. Routine treatment of persistent diarrhoea with antimicrobials is not effective and should not be given. Young infants under 2 months of age or any sick child with persistent diarrhoea plus evidence of dehydration should be rehydrated (unless the child is severely malnourished) and referred to hospital for further management. These children may require special efforts to maintain hydration and replacement of animal milk with lactose-free milk formula.

Measles case management

Measles mortality and morbidity can be reduced by improved case management (19, 20), which can bring down the case-fatality rate to less than 1%. Despite

substantial success in improving immunization coverage in many developing countries, many measles cases and deaths continue to occur. Even with universal coverage efforts, some areas still have low coverage. In addition, measles vaccine has incomplete efficacy. Although the current vaccine is recommended to be given at 9 months of age, immunization is often delayed. In addition, many measles cases are seen at 6, 7 and 8 months of age, especially in urban and refugee populations. These facts led to increased attention on measles case management. The development of measles case management guidelines was a stimulus to the IMCI guidelines since measles requires good case management of a range of clinical problems. Measles deaths may occur from pneumonia, laryngotracheitis, diarrhoea, measles alone, and a few from encephalitis. Other, usually non-fatal complications, include conjunctivitis, otitis media and mouth ulcers. Significant disability can result from measles including blindness, severe malnutrition, chronic lung disease (bronchiectasis and recurrent infection), and neurological dysfunction. The case-fatality rate of measles can be reduced by using vitamin A and by good case management of the common complications.

Early complications from measles (during the first week) are usually due to the measles virus itself or to lack of vitamin A. Later complications are often from secondary viral and bacterial infections. Measles infection damages the epithelial surfaces, the immune system (for many weeks) and lowers vitamin A levels. This results in increased susceptibility to infections caused by the pneumococcus, Gram-negative bacteria, and adenovirus. Recrudescences of herpesvirus, candida and malaria can occur during measles infection. In high malaria risk settings, malaria treatment is given to children with measles with fever.

In the IMCI algorithm, acute (current) measles is detected based on fever with a generalized rash *plus* red eyes, runny nose or cough. The mother is also asked about the occurrence of measles within the last 3 months (measles increases the risk of pneumonia, persistent diarrhoea, failure to thrive, and malnutrition for a period of months after the acute infection). All cases of measles are given vitamin A, one dose in the clinic followed by another administered the next day by the mother. Urgent referral to hospital is recommended for those with severe pneumonia, stridor when calm (which may indicate life-threatening laryngotracheitis), corneal clouding, severe malnutrition, or general danger signs. Except for vitamin A administration, the management of pneumonia, diarrhoea, and ear infection complicating measles is the same as when they occur in a child

without measles. If a child with pneumonia fails to improve by the follow-up visit on day 2, that child is referred to hospital. In some countries, it may be possible to refer *all* children with measles plus pneumonia to hospital.

Stomatitis is a common problem in measles. In most children, this is limited to the early onset of a sore mouth without ulcers, which does not require specific treatment. Stomatitis with mouth ulcers which are not deep or extensive can be treated by cleaning with saline and then applying gentian violet. Severe stomatitis with deep or extensive mouth ulcers requires referral to hospital where nasogastric feeding may be required. Stomatitis can be due to the measles virus itself, herpes virus or candida.

Mebendazole for treatment of anaemia and prevention of malnutrition

A 500-mg dose of mebendazole is recommended for all children aged ≥ 2 years who are anaemic, if they live in areas where hookworm and/or whipworm are a significant public health problem and if they have not been treated with mebendazole in the last 6 months. Mebendazole can be given without microscopic examination of the stool. Hookworm (*Ancylostoma*) and whipworm (*Trichuris*) are significant contributors to anaemia, mainly due to gut leakage of blood, especially in heavily infected children. In areas of high transmission, high infection intensities may be reached already in preschool-age children. The age limit of 2 years for treatment was chosen based on the time for acquisition of a significant worm load.

In addition to anaemia, there is evidence that hookworm, whipworm and ascaris are contributors to malnutrition and treatment with antihelminthics can improve nutrient intake and growth in some settings (21, 22). In these countries, the guidelines can be adapted to recommend regular deworming with mebendazole every 4–6 months. Mebendazole is inexpensive and safe in young children.

Impact of IMCI interventions

The IMCI approach incorporates several child health interventions (Table 1). For some of these interventions there is substantial evidence of potential mortality reduction. Community-based intervention studies have demonstrated the impact of ARI case management (23), vitamin A administration (24), and measles immunization on mortality. Clinical trials have shown reduced mortality in young children with measles treated with vitamin A (25–27). For diarrhoeal disease (28, 29), pneumonia

(30), severe malaria (31), and severe malnutrition (32), the case-fatality rates have been observed to decrease following, respectively, oral rehydration therapy, standardized ARI case management, effective parenteral antimalarials, and effective guidelines for the management of severely malnourished children. Extensive clinical experience and several analyses of national diarrhoeal mortality rates (33–35) have also suggested an impact of oral rehydration therapy on diarrhoeal mortality related to dehydration. For other interventions, clinical experience but only limited published data indicate a relationship to mortality reduction (for example, oxygen treatment in severe hypoxaemia (36), glucose for hypoglycaemia, or the benefits of avoiding chilling in young infants). Mortality reduction can be expected if nutrition counselling to promote breast-feeding and energy- and nutrient-rich complementary foods is successful in improving infant and child feeding and growth. Demonstrating improved growth as a result of the adapted and focused IMCI nutrition counselling is currently the subject of research studies sponsored by WHO/CHD.

Improved case management by integration of disease-specific guidelines

Beyond the expected impact from each of the disease interventions included within IMCI are additional benefits which can be expected by dealing adequately with the overlap in clinical presentation and treatment of several important diseases, and by facilitating the treatment of children who present with multiple clinical problems. Guidelines and training materials focused on one disease can result in undertreatment of other conditions. Both pneumonia and malaria can present with fever, cough and fast breathing (37–40) or, when severe, with fever and chest-wall indrawing (41). Depressed consciousness can be due to diarrhoea with severe dehydration, meningitis, severe malaria, severe hypoxia, hypoglycaemia, or other conditions. Measles can be complicated by pneumonia, diarrhoea, laryngotracheitis, or otitis media and most deaths result from the first three conditions. Asking health workers to integrate disease-specific guidelines from several programmes when managing a sick child can result in inadequate care.

According to the World Bank's 1993 report on investing in health (42), the integrated management of childhood illness is likely to have the greatest impact in reducing the global burden of disease. IMCI ranks high among the most cost-effective health interventions in both low- and middle-income countries. In estimating the potential benefits of integrated management of childhood illness, both outpa-

tient treatment and inpatient management in a small hospital were considered but *not* the contributions to preventive interventions such as raising immunization coverage levels by avoiding missed opportunities, increasing the coverage of vitamin A supplementation by using sick child encounters to give supplements in areas with vitamin A deficiency, or improving infant and child feeding and growth by nutritional counselling. IMCI has the potential to contribute significantly to both the case management of illness and its prevention. The actual impact that will result from training health workers to use the IMCI guidelines and supporting them after training remains to be determined.

Résumé

Généralités et données techniques pour la prise en charge intégrée des maladies de l'enfant par les agents de santé opérant en ambulatoire

Formation, *Prise en charge intégrée des maladies de l'enfant*, utilisation des recommandations par les agents de santé.^a

Les enseignements tirés des programmes de lutte contre des maladies spécifiques ont aidé à élaborer un ensemble unique et plus opérant de recommandations, applicables à la prise en charge intégrée des maladies de l'enfant (IMCI). Un certain nombre de programmes de l'OMS et de l'UNICEF ont participé à cet effort, coordonné par la Division de la Santé et du Développement de l'Enfant (CHD). Le présent article résume les données techniques contenues dans les recommandations testées lors de cours de formation organisés par l'OMS/UNICEF, à l'intention des agents de santé opérant en ambulatoire dans les centres de santé de premier niveau des pays en développement. Les recommandations concernent la prise en charge et les interventions de prévention prioritaires pour faire face aux principales causes de mortalité infantile (diarrhée, pneumopathies, rougeole, paludisme et malnutrition).

Ces recommandations, applicables dans la majorité des pays en développement où la mortalité infantile est supérieure à 40 pour 1000 naissances vivantes, proposent une méthode très simple pour

^a *Prise en charge des maladies de l'enfant*. Document OMS non publié, qui peut être obtenu en s'adressant à: Division de la Santé et du Développement de l'Enfant, Organisation mondiale de la Santé, 1211 Genève 27, Suisse. Voir en particulier les tableaux des pages 7, 12, 18 et 19, qui correspondent aux figures 3 à 6 du présent article.

réduire la mortalité ou prévenir une grande partie des incapacités chez les enfants malades des centres de santé de premier niveau. Elles reposent sur la détection des cas d'après les signes cliniques, sans recourir aux examens de laboratoire, et sur le traitement empirique. Un bon équilibre entre sensibilité et spécificité a été trouvé, tout en utilisant aussi peu de signes cliniques que possible—signes que des agents de santé ayant des formations variées peuvent être entraînés à reconnaître correctement. Elles incorporent les recommandations actuelles de l'OMS pour la prise en charge des pneumopathies, de la diarrhée accompagnée de déshydratation, de la dysenterie, de la diarrhée persistante, du paludisme et des infections de l'oreille. Dans plusieurs domaines ces recommandations ont été remises à jour, pour tenir compte tant des dernières découvertes de la recherche que de l'expérience acquise en matière clinique et de programme. De plus, l'accent est mis sur l'allaitement au sein et le conseil diététique.

Les recommandations pour l'IMCI ont été affinées grâce aux recherches et aux essais de terrain menés en Gambie, au Kenya, en Ethiopie et en République-Unie de Tanzanie, ainsi qu'à deux études réalisées en Ouganda et au Bangladesh, présentées dans ce supplément du *Bulletin de l'Organisation mondiale de la Santé*. On trouvera également rapportées, des études sur la valeur de certains signes cliniques pour le dépistage de l'anémie et de la malnutrition. Pour former les agents de santé à l'utilisation de ces recommandations, un cours de 11 jours a été conçu, dont une partie a été testée en Ethiopie en juillet 1994; la totalité du cours a été testée sur le terrain à Arusha (République-Unie de Tanzanie) en 1995. Le compte rendu de ces essais figure aussi dans le supplément.

L'IMCI devrait avoir un impact considérable sur la mortalité infantile; concernant certaines interventions, on possède d'ores et déjà des arguments solides attestant une baisse potentielle de mortalité. Outre les avantages intrinsèques de chacune des interventions, l'IMCI devrait contribuer à augmenter les chances d'examiner et de traiter tous les problèmes de santé des enfants, et de ne pas négliger les occasions d'intervention préventive telles que les vaccinations et la supplémentation en vitamine A.

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Fig. 2. Classification tables for integrated management of childhood illness, based on four main symptoms and nutritional status.

| | | SIGNS | CLASSIFY AS | TREATMENT (Urgent pre-referral treatments are in bold print.) |
|---|-------------------------------------|---|--|--|
| <p>Classify COUGH or DIFFICULT BREATHING</p> | | <ul style="list-style-type: none"> Any general danger sign or Chest indrawing or Stridor in calm child | SEVERE PNEUMONIA or VERY SEVERE DISEASE | <ul style="list-style-type: none"> Give first dose of an appropriate antibiotic. Refer URGENTLY to hospital. |
| | | <ul style="list-style-type: none"> Fast breathing | PNEUMONIA | <ul style="list-style-type: none"> Give an appropriate antibiotic for 5 days. Soothe the throat and relieve the cough with a safe remedy. Advise mother when to return immediately. Follow-up in 2 days. |
| | | No signs of pneumonia or very severe disease | NO PNEUMONIA: COUGH OR COLD | <ul style="list-style-type: none"> If coughing more than 30 days, refer for assessment. Soothe the throat and relieve the cough with a safe remedy. Advise mother when to return immediately. Follow-up in 5 days if not improving. |
| <p><i>If the child is:</i></p> <ul style="list-style-type: none"> 2 months up to 12 months 12 months to 5 years <p><i>Fast breathing is:</i></p> <ul style="list-style-type: none"> ≥ 50 breaths per minute ≥ 40 breaths per minute | | | | |
| <p>Classify DIARRHOEA</p> | with DEHYDRATION | <p>Two of the following signs:</p> <ul style="list-style-type: none"> Lethargic or unconscious Sunken eyes Not able to drink or drinking poorly Skin pinch goes back very slowly. | SEVERE DEHYDRATION | <ul style="list-style-type: none"> If child has no other severe classification: <ul style="list-style-type: none"> Give fluid for severe dehydration (Plan C, see Fig. 4). OR If child also has another severe classification: <ul style="list-style-type: none"> Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise the mother to continue breastfeeding. If child is 2 years or older and there is cholera in your area, give antibiotic for cholera. |
| | | <p>Two of the following signs:</p> <ul style="list-style-type: none"> Restless, irritable Sunken eyes Drinks eagerly, thirsty Skin pinch goes back slowly. | SOME DEHYDRATION | <ul style="list-style-type: none"> Give fluid and food for some dehydration (Plan B, see Fig. 4). If child also has a severe classification: <ul style="list-style-type: none"> Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise mother to continue breastfeeding. Advise mother when to return immediately. Follow-up in 5 days if not improving. |
| | | Not enough signs to classify as some or severe dehydration. | NO DEHYDRATION | <ul style="list-style-type: none"> Give fluid and food to treat diarrhoea at home (Plan A, see Fig. 4). Advise mother when to return immediately. Follow-up in 5 days if not improving. |
| | and if 14 days or more of diarrhoea | <ul style="list-style-type: none"> Dehydration present. | SEVERE PERSISTENT DIARRHOEA | <ul style="list-style-type: none"> Treat dehydration before referral unless the child has another severe classification. Refer to hospital. |
| | | <ul style="list-style-type: none"> No dehydration. | PERSISTENT DIARRHOEA | <ul style="list-style-type: none"> Advise the mother on feeding a child who has PERSISTENT DIARRHOEA. Follow-up in 5 days. |
| | and if blood in stool | <ul style="list-style-type: none"> Blood in the stool. | DYSENTERY | <ul style="list-style-type: none"> Treat for 5 days with an oral antibiotic recommended for Shigella in your area. Follow-up in 2 days. |

Fig. 2. Continued

| | | SIGNS | CLASSIFY AS | TREATMENT |
|--|---|--|---|--|
| Classify FEVER | High malaria-risk area | <ul style="list-style-type: none"> Any general danger sign or Stiff neck. | VERY SEVERE FEBRILE DISEASE | <ul style="list-style-type: none"> Give quinine for severe malaria (first dose). Give first dose of an appropriate antibiotic. Treat the child to prevent low blood sugar. Give one dose of paracetamol in clinic for high fever (38.5 °C or above). Refer URGENTLY to hospital. |
| | | <ul style="list-style-type: none"> Fever (by history or feels hot or temperature $\geq 37.5^{\circ}\text{C}$). | MALARIA | <ul style="list-style-type: none"> If NO cough with fast breathing, treat with oral antimalarial. OR If cough with fast breathing, treat with cotrimoxazole for 5 days. Give one dose of paracetamol in clinic for high fever (38.5 °C or above). Advise mother when to return immediately. Follow-up in 2 days if fever persists. If fever is present every day for more than 7 days, refer for assessment. |
| If MEASLES now or within last 3 months | Low malaria-risk area | <ul style="list-style-type: none"> Any general danger sign or Stiff neck. | VERY SEVERE FEBRILE DISEASE | <ul style="list-style-type: none"> Give quinine for severe malaria (first dose) unless no malaria risk. Give first dose of an appropriate antibiotic. Treat the child to prevent low blood sugar. Give one dose of paracetamol in clinic for high fever (38.5 °C or above). Refer URGENTLY to hospital. |
| | | <ul style="list-style-type: none"> NO runny nose and NO measles and NO other cause of fever. | MALARIA | <ul style="list-style-type: none"> If NO cough with fast breathing, treat with oral antimalarial. OR If cough with fast breathing, treat with cotrimoxazole for 5 days. Give one dose of paracetamol in clinic for high fever (38.5 °C or above). Advise mother when to return immediately. Follow-up in 2 days if fever persists. If fever is present every day for more than 7 days, refer for assessment. |
| | | <ul style="list-style-type: none"> Runny nose PRESENT or Measles PRESENT or Other cause of fever PRESENT. | FEVER — MALARIA UNLIKELY | <ul style="list-style-type: none"> Give one dose of paracetamol in clinic for high fever (38.5 °C or above). Advise mother when to return immediately. Follow-up in 2 days if fever persists. If fever is present every day for more than 7 days, refer for assessment. |
| | | <ul style="list-style-type: none"> Any general danger sign or Clouding of cornea or Deep or extensive mouth ulcers. | SEVERE COMPLICATED MEASLES | <ul style="list-style-type: none"> Give Vitamin A. Give first dose of an appropriate antibiotic. If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment. Refer URGENTLY to hospital. |
| | <ul style="list-style-type: none"> Pus draining from the eye or Mouth ulcers. | MEASLES WITH EYE OR MOUTH COMPLICATIONS | <ul style="list-style-type: none"> Give Vitamin A. If pus draining from the eye, treat eye infection with tetracycline eye ointment. If mouth ulcers, treat with gentian violet. Follow-up in 2 days. | |
| | <ul style="list-style-type: none"> Measles now or within the last 3 months. | MEASLES | <ul style="list-style-type: none"> Give Vitamin A. | |

Integrated management of childhood illness by outpatient health workers

Fig. 2. Continued

| | SIGNS | CLASSIFY AS | TREATMENT |
|---------------------------------|--|------------------------------|---|
| Classify EAR PROBLEM | • Tender swelling behind the ear. | MASTOIDITIS | <ul style="list-style-type: none"> ▶ Give first does of an appropriate antibiotic. ▶ Give first dose of paracetamol for pain. ▶ Refer URGENTLY to hospital. |
| | <ul style="list-style-type: none"> • Pus is seen draining from the ear and discharge is reported for less than 14 days, or • Ear pain. | ACUTE EAR INFECTION | <ul style="list-style-type: none"> ▶ Give an antibiotic for 5 days. ▶ Give paracetamol for pain. ▶ Dry the ear by wicking. ▶ Follow-up in 5 days. |
| | • Pus is seen draining from the ear and discharge is reported for 14 days or more. | CHRONIC EAR INFECTION | <ul style="list-style-type: none"> ▶ Dry the ear by wicking. ▶ Follow-up in 5 days. |
| | • No ear pain and No pus seen draining from the ear. | NO EAR INFECTION | No additional treatment. |

| | SIGNS | CLASSIFY AS | TREATMENT |
|--|--|--|---|
| Classify NUTRITIONAL STATUS | <ul style="list-style-type: none"> • Visible severe wasting or • Severe palmar pallor or • Oedema of both feet. | SEVERE MALNUTRITION or SEVERE ANAEMIA | <ul style="list-style-type: none"> ▶ Give Vitamin A. ▶ Refer URGENTLY to hospital. |
| | <ul style="list-style-type: none"> • Some palmar pallor or • Very low weight for age. | ANAEMIA or VERY LOW WEIGHT | <ul style="list-style-type: none"> ▶ Assess the child's feeding and counsel the mother on feeding according to the FOOD box on the COUNSEL THE MOTHER chart. <ul style="list-style-type: none"> — If feeding problem, follow-up in 5 days. ▶ If pallor: <ul style="list-style-type: none"> — Give iron. — Give oral antimalarial if high malaria risk. — Give mebendazole if child is 2 years or older and has not had a dose in the previous 6 months. ▶ Advise mother when to return immediately. ▶ If pallor, follow-up in 14 days. ▶ If very low weight-for-age, follow-up in 30 days. |
| | • Not very low weight-for-age and no other signs of mainutrition. | NO ANAEMIA and NOT VERY LOW WEIGHT | <ul style="list-style-type: none"> ▶ If child is less than 2 years old, assess the child's feeding and counsel the mother on feeding according to the Food box on the Counsel the Mother chart. <ul style="list-style-type: none"> — If feeding problem, follow-up in 5 days. ▶ Advise mother when to return immediately. |

Fig. 3. Instructions to mothers on giving oral drugs at home.

TEACH THE MOTHER TO GIVE ORAL DRUGS AT HOME

Follow the instructions below for every oral drug to be given at home. Also follow the instructions listed with each drug's dosage table.

- ▶ Determine the appropriate drugs and dosage for the child's age or weight.
- ▶ Tell the mother the reason for giving the drug to the child.
- ▶ Demonstrate how to measure a dose.
- ▶ Watch the mother practise measuring a dose by herself.
- ▶ Ask the mother to give the first dose to her child.
- ▶ Explain carefully how to give the drug, then label and package the drug.
- ▶ If more than one drug will be given, collect, count and package each drug separately.
- ▶ Explain that all the oral drug tablets or syrups must be used to finish the course of treatment, even if the child gets better.
- ▶ Check the mother's understanding before she leaves the clinic.

▶ Give an Appropriate Oral Antibiotic

▶ FOR PNEUMONIA, ACUTE EAR INFECTION OR VERY SEVERE DISEASE:

| AGE or WEIGHT | CO-TRIMOXAZOLE (trimethoprim + sulfamethoxazole) | | | AMOXICILLIN | |
|---------------------------------|---|---|---|------------------|-----------------------------|
| | ADULT TABLET 80 mg trimethoprim + 100 mg sulfamethoxazole | PAEDIATRIC TABLET 20 mg trimethoprim + 100 mg sulfamethoxazole | SYRUP 40 mg trimethoprim + 200 mg sulfamethoxazole per 5 ml | TABLET 250 mg | SYRUP 125 mg per 5 ml |
| 2 to 12 months (4 < < 10 kg) | 1/2 | 2 | 5.0 ml | 1/2 | 5 ml |
| 12 months to 5 years (10-19 kg) | 1 | 3 | 7.5 ml | 1 | 10 ml |

▶ FOR DYSENTERY:

Give antibiotic recommended for shigella in your area for 5 days.

FIRST-LINE ANTIBIOTIC FOR SHIGELLA: _____

SECOND-LINE ANTIBIOTIC FOR SHIGELLA: _____

| AGE or WEIGHT | CO-TRIMOXAZOLE (trimethoprim + sulfamethoxazole) | | NALIDIXIC ACID | |
|-------------------------------------|---|--|------------------------------------|-----|
| | ▶ Give two times daily for 5 days | | ▶ Give four times daily for 5 days | |
| 2 to 4 months (4 - < 6 kg) | See doses above | | TABLET 500 mg | 1/4 |
| 4 months to 12 months (6 - < 10 kg) | | | 1/4 | |
| 12 months up to 5 years (10-19 kg) | | | 1/2 | |

▶ FOR CHOLERA:

Give antibiotic recommended for cholera in your area for 3 days.

FIRST-LINE ANTIBIOTIC FOR CHOLERA: _____

SECOND-LINE ANTIBIOTIC FOR CHOLERA: _____

| AGE or WEIGHT | TETRACYCLINE | | CO-TRIMOXAZOLE (trimethoprim + sulfamethoxazole) | | ERYTHROMYCIN | | FUROZOLIDONE | |
|-------------------------------------|------------------------------------|--|---|-----|------------------------------------|-----|------------------------------------|-----|
| | ▶ Give four times daily for 3 days | | ▶ Give two times daily for 5 days | | ▶ Give four times daily for 3 days | | ▶ Give four times daily for 3 days | |
| 2 to 4 months (4 - < 6 kg) | See doses above | | TABLET 250 mg | 1/4 | TABLET 250 mg | 1/4 | TABLET 100 mg | 1/4 |
| 4 months to 12 months (6 - < 10 kg) | | | 1/2 | 1/2 | 1/2 | | | |
| 12 months to 5 years (10-19 kg) | | | 1 | 1 | 1 | | | |

Fig. 4. Instructions for treating diarrhoea and dehydration.

GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING

(See FOOD advice on COUNSEL THE MOTHER chart)

▶ Plan A: Treat Diarrhoea at Home

Counsel the mother on the 3 Rules of Home Treatment: Give Extra Fluid, Continue Feeding, When to Return

1. **GIVE EXTRA FLUID** (as much as the child will take)
 - ▶ TELL THE MOTHER:
 - Breastfeed frequently and for longer at each feed.
 - If the child is exclusively breastfed, give ORS or clean water in addition to breastmilk.
 - If the child is not exclusively breastfed, give one or more of the following: ORS solution, food-based fluids (such as soup, rice water, and yoghurt drinks), or clean water.

It is especially important to give ORS at home when:

- the child has been treated with Plan B or Plan C during this visit.
- the child cannot return to a clinic if the diarrhoea gets worse.

- ▶ TEACH THE MOTHER HOW TO MIX AND GIVE ORS. GIVE THE MOTHER 2 PACKETS OF ORS TO USE AT HOME.

- ▶ SHOW THE MOTHER HOW MUCH FLUID TO GIVE IN ADDITION TO THE USUAL FLUID INTAKE:

- Up to 2 years 50 to 100 ml after each loose stool
- 2 years or more 100 to 200 ml after each loose stool

Tell the mother to:

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue giving extra fluid until the diarrhoea stops.

2. **CONTINUE FEEDING**

See COUNSEL THE MOTHER chart

3. **WHEN TO RETURN**

▶ Plan B: Treat Some Dehydration with ORS

Give in clinic recommended amount of ORS over 4-hour period

- ▶ DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS.

| AGE* | Up to 4 months | 4 months up to 12 months | 12 months up to 2 years | 2 years up to 5 years |
|--------|----------------|--------------------------|-------------------------|-----------------------|
| WEIGHT | < 6 kg | 6 – < 10 kg | 10 – < 12 kg | 12–19 kg |
| In ml | 200–400 | 400–700 | 700–900 | 900–1400 |

* Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75.

- If the child wants more ORS than shown, give more.
- For infants under 6 months who are not breastfed, also give 100-200 ml clean water during this period.

- ▶ SHOW THE MOTHER HOW TO GIVE ORS SOLUTION.

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue breastfeeding whenever the child wants.

- ▶ AFTER 4 HOURS:

- Reassess the child and classify the child for dehydration.
- Select the appropriate plan to continue treatment.
- Begin feeding the child in clinic.

- ▶ IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:

- Show her how to prepare ORS solution at home.
- Show her how much ORS to give to finish the 4-hour treatment at home.
- Give her enough ORS packets to complete rehydration. Also give her 2 packets as recommended in Plan A.
- Explain the 3 Rules of Home Treatment:

1. **GIVE EXTRA FLUID**

2. **CONTINUE FEEDING**

3. **WHEN TO RETURN**

See Plan A for recommended fluids and
See COUNSEL THE MOTHER chart

Fig. 4. Continued

GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING

(See FOOD advice on COUNSEL THE MOTHER chart)

► Plan C: Treat Severe Dehydration Quickly

► FOLLOW THE ARROWS. IF ANSWER IS "YES", GO ACROSS. IF "NO", GO DOWN.

START HERE

Can you give intravenous (IV) fluid immediately?

YES

NO

Start IV fluid immediately. If the child can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's Lactate Solution (or, if not available, normal saline), divided as follows:

| AGE | First give 30 ml/kg in: | Then give 70 ml/kg in: |
|------------------------------------|-------------------------|------------------------|
| Infants (under 12 months) | 1 hour* | 5 hours |
| Children (12 months up to 5 years) | 30 minutes* | 2-1/2 hours |

*Repeat once if radial pulse is still very weak or not detectable.

- Reassess the child every 1-2 hours. If hydration status is not improving, give the IV drip more rapidly.
- Also give ORS (about 5 ml/kg/hour) as soon as the child can drink: usually after 3-4 hours (infants) or 1-2 hours (children).
- Reassess an infant after 6 hours and a child after 3 hours. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

Is IV treatment available nearby (within 30 minutes)?

YES

NO

- Refer URGENTLY to hospital for IV treatment.
- If the child can drink, provide the mother with ORS solution and show her how to give frequent sips during the trip.

Are you trained to use a naso-gastric (NG) tube for rehydration?

YES

NO

- Start rehydration by tube (or mouth) with ORS solution: give 20ml/kg/hour for 6 hours (total of 120 ml/kg).
- Reassess the child every 1-2 hours:
 - If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly.
 - If hydration status is not improving after 3 hours, send the child for IV therapy.
- After 6 hours, reassess the child. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

Can the child drink?

YES

NO

Refer URGENTLY to hospital for IV or NG treatment.

IMMUNIZE EVERY SICK CHILD, AS NEEDED

NOTE:

- If possible, observe the child at least 6 hours after rehydration to be sure the mother can maintain hydration giving the child ORS solution by mouth.

Fig. 5. Feeding recommendations for children by age group, and for a child with persistent diarrhoea.

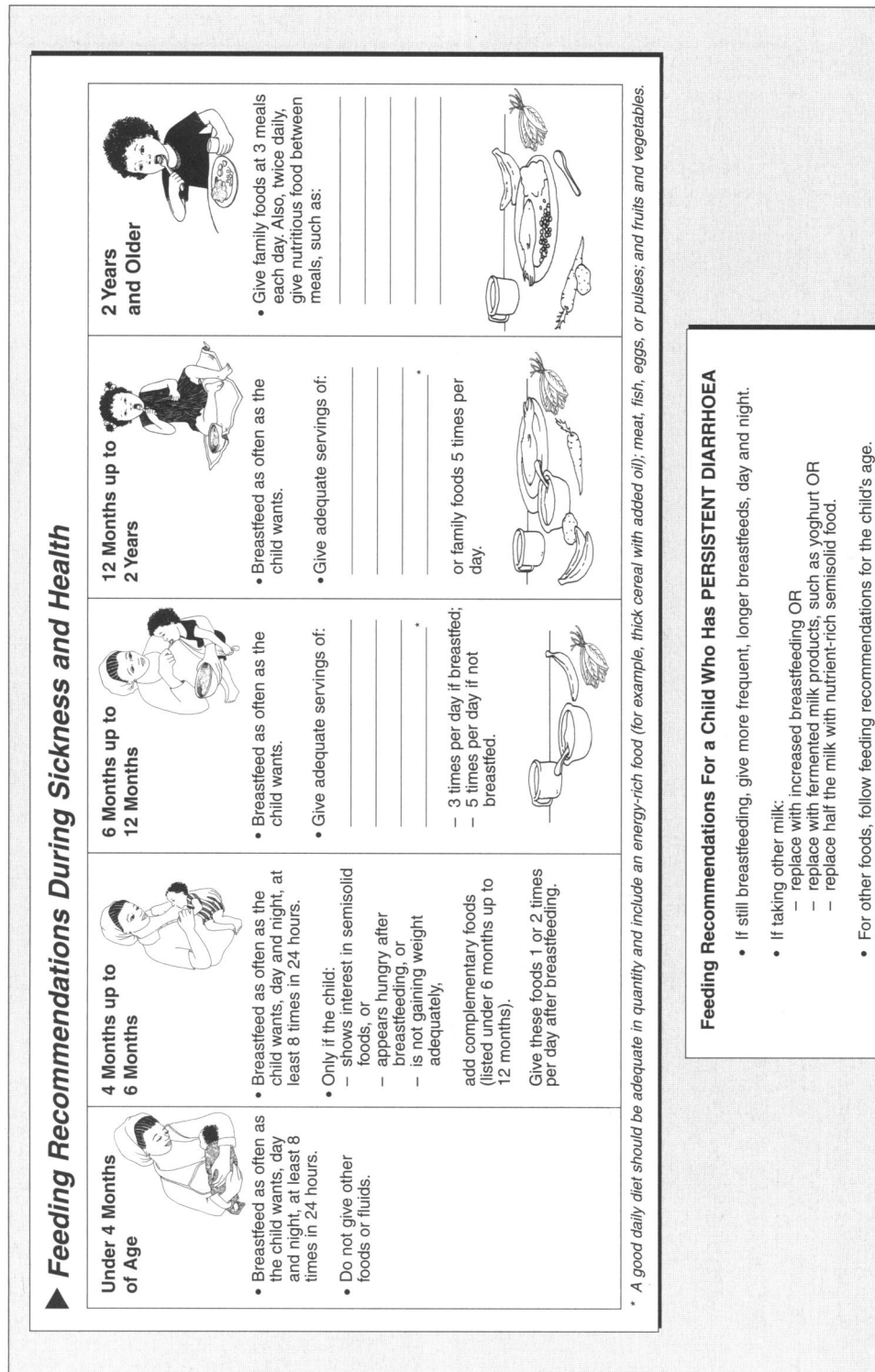


Fig. 6. Counselling the mother about feeding problems.

► **Counsel the Mother About Feeding Problems**

If the child is not being fed as described in the above recommendations, counsel the mother accordingly. In addition:

- If the mother reports difficulty with breastfeeding, assess breastfeeding. As needed, show the mother correct positioning and attachment for breastfeeding.
- If the child is less than 4 months old and is taking other milk or foods:
 - Build mother's confidence that she can produce all the breastmilk that the child needs.
 - Suggest giving more frequent, longer breastfeeds, day and night, and gradually reducing other milk or foods.
- If other milk needs to be continued, counsel the mother to:
 - Breastfeed as much as possible, including at night.
 - Make sure that other milk is a locally appropriate breastmilk substitute.
 - Make sure other milk is correctly and hygienically prepared and given in adequate amounts.
 - Finish prepared milk within an hour.
- If the mother is using a bottle to feed the child:
 - Recommend substituting a cup for bottle.
 - Show the mother how to feed the child with a cup.
- If the child is not being fed actively, counsel the mother to:
 - Sit with the child and encourage eating.
 - Give the child an adequate serving in a separate plate or bowl.
- If the child is not feeding well during illness, counsel the mother to:
 - Breastfeed more frequently and for longer if possible.
 - Use soft, varied, appetizing, favourite foods to encourage the child to eat as much as possible, and offer frequent small feedings.
 - Clear a blocked nose if it interferes with feeding.
 - Expect that appetite will improve as child gets better.
- Follow-up any feeding problem in 5 days.

