

MODEL CHAPTER FOR TEXTBOOKS

IMCI

Integrated Management of Childhood Illness



World Health Organization

Department of Child and Adolescent Health
and Development (CAH)



unicef

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Integrated Management of Childhood Illness

The inequities of child health

Although the annual number of deaths among children less than 5 years old has decreased by almost a third since the 1970s, this reduction has not been evenly distributed throughout the world. According to the 1999 *World Health Report*, children in low- to middle-income countries are 10 times more likely to die before reaching age 5 than children living in the industrialised world. In 1998, more than 50 countries still had childhood mortality rates of over 100 per 1,000 live births.¹

Every year more than 10 million children in these countries die before they reach their fifth birthday. Seven in 10 of these deaths are due to acute respiratory infections (mostly pneumonia), diarrhoea, measles, malaria, or malnutrition—and

often to a combination of these conditions (Figure 1).

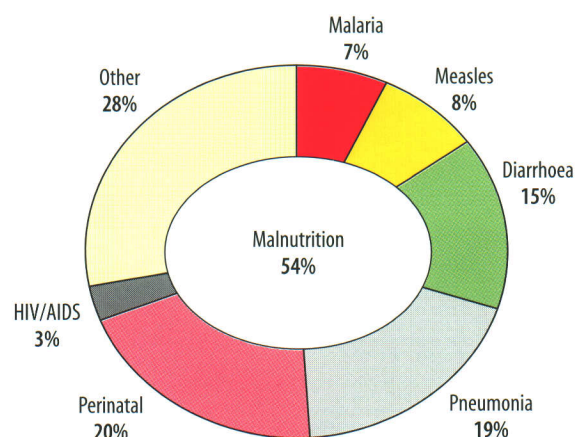
Projections based on the 1996 analysis *The Global Burden of Disease*² indicate that these conditions will continue to be major contributors to child deaths through the year 2020 unless significantly greater efforts are made to control them.

Infant and childhood mortality are sensitive indicators of inequity and poverty. It is no surprise to find that the children who are most commonly and severely ill, who are malnourished and who are most likely to die of their illness are those of the most vulnerable and underprivileged populations of low-income countries. However, even within middle-income and so-called industrialised countries, there are often neglected geographical areas where childhood mortality remains high. Millions of children in these areas are often caught in the vicious cycle of poverty and ill health—poverty leads to ill health and ill health breeds poverty.

Quality of care is another important indicator of inequities in child health. Every day, millions of parents seek health care for their sick children, taking them to hospitals, health centres, pharmacists, doctors, and traditional healers. Surveys reveal that many sick children are not properly assessed and treated by these health providers, and that their parents are poorly advised.³ At first-level health facilities in low-income countries, diagnostic supports such as radiology and laboratory services are minimal or non-existent, and drugs and equipment are often scarce. Limited supplies and equipment, combined with an irregular flow of patients, leave doctors at this level with few opportunities to practise complicated clinical procedures. Instead, they often rely on history and signs and symptoms to determine a course of management that makes the best use of available resources.

Providing quality care to sick children in these conditions is a serious challenge. Yet how can this situation be reversed? Experience and scientific

Figure 1. Distribution of 10.5 million deaths among children less than 5 years old in all developing countries, 1999



¹ World Health Organization. *World health report 1999 making a difference*. Geneva, WHO, 1999.

² Murray CJL and 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*. Geneva, World Health Organization, 1996.

³ World Health Organization. *Report of the Division of Child Health and Development 1996–1997*. Geneva, WHO, 1998.

Improvements in child health are not necessarily dependent on the use of sophisticated and expensive technologies.

evidence show that improvements in child health are not necessarily dependent on the use of sophisticated and expensive technologies, but rather on effective strategies that are based on a holistic approach, are available to the majority of those in need, and which take into account the capacity and structure of health systems, as well as traditions and beliefs in the community.

Rationale for an evidence-based syndromic approach to case management

Many well-known prevention and treatment strategies have already proven effective for saving young lives. Childhood vaccinations have successfully reduced deaths due to measles. Oral rehydration therapy has contributed to a major reduction in diarrhoea deaths. Effective antibiotics have saved millions of children with pneumonia. Prompt treatment of malaria has allowed more children to recover and lead healthy lives. Even modest improvements in breastfeeding practices have reduced childhood deaths.

A more integrated approach to managing sick children is needed to achieve better outcomes. Child health programmes need to move beyond addressing single diseases to addressing the overall health and well-being of the child.

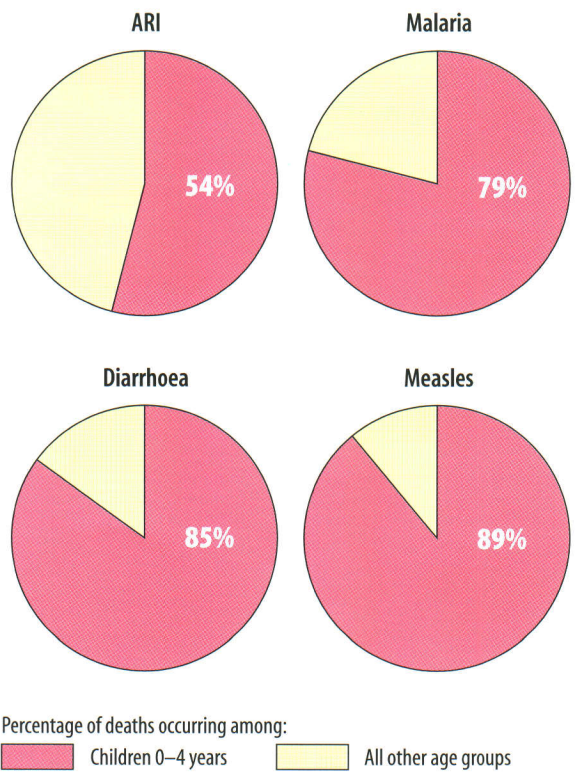
While each of these interventions has shown great success, accumulating evidence suggests that a more integrated approach to managing sick children is needed to achieve better outcomes. Child health programmes need to move beyond single diseases to addressing the overall health and well-being of the child. Because many children present with overlapping signs and symptoms of diseases, a single diagnosis can be difficult, and may not be feasible or appropriate. This is especially true for first-level health facilities where examinations involve few instruments, little or no laboratory tests, and no X-ray.

During the mid-1990s, the World Health Organization (WHO), in collaboration with UNICEF and many other agencies, institutions and individuals, responded to this challenge by developing a strategy known as the Integrated Management of Childhood Illness (IMCI). Although the major reason for developing the IMCI strategy stemmed from the needs of curative care, the strategy also addresses aspects of nutrition, immunization, and other important elements of disease prevention and health promotion. The objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development.

The IMCI clinical guidelines target children less than 5 years old—the age group that bears the highest burden of deaths from common childhood diseases (Figure 2).

The guidelines take an evidence-based, syndromic approach to case management that supports the rational, effective and affordable use of drugs and

Figure 2. Proportion of Global Burden of Selected Diseases Borne by Children Under 5 Years (Estimated, Year 2000)⁴



⁴ Adapted from Murray and Lopez, 1996.

diagnostic tools. Evidence-based medicine stresses the importance of evaluation of evidence from clinical research and cautions against the use of intuition, unsystematic clinical experience, and untested pathophysiologic reasoning for medical decision-making.⁵ In situations where laboratory support and clinical resources are limited, the syndromic approach is a more realistic and cost-effective way to manage patients. Careful and systematic assessment of common symptoms and well-selected clinical signs provides sufficient information to guide rational and effective actions.

An evidence-based syndromic approach can be used to determine the:

- Health problem(s) the child may have;
- Severity of the child's condition;
- Actions that can be taken to care for the child (e.g. refer the child immediately, manage with available resources, or manage at home).

In addition, IMCI promotes:

- Adjustment of the curative interventions to the capacity and functions of the health system; and
- Active involvement of family members and the community in the health care process.

Careful and systematic assessment of common symptoms and well-selected specific clinical signs provide sufficient information to guide rational and effective actions.

Parents, if correctly informed and counselled, can play an important role in improving the health status of their children by following the advice given by a health care provider, by applying appropriate feeding practices and by bringing sick children to a

doctor as soon as symptoms arise. A critical example of the need for timely care is Africa, where approximately 80 percent of childhood deaths occur at home, before the child has any contact with a health facility.⁶

Components of the integrated approach

The IMCI strategy includes both preventive and curative interventions that aim to improve practices in health facilities, the health system and at home. At the core of the strategy is integrated case management of the most common childhood problems with a focus on the most common causes of death.

The strategy includes three main components:

- Improvements in the case-management skills of health staff through the provision of locally-adapted guidelines on integrated management of childhood illness and activities to promote their use;
- Improvements in the overall health system required for effective management of childhood illness;
- Improvements in family and community health care practices.

The principles of integrated care

The IMCI guidelines are based on the following principles:

- All sick children must be examined for “**general danger signs**” which indicate the need for immediate referral or admission to a hospital.
- All sick children must be **routinely assessed for major symptoms** (for children age 2 months up to 5 years: cough or difficult breathing, diarrhoea, fever, ear problems; for young infants age 1 week up to 2 months: bacterial infection and diarrhoea). They must also be routinely assessed for **nutritional and immunization status, feeding problems, and other potential problems**.
- Only a **limited number of carefully-selected clinical signs** are used, based on evidence of their sensitivity and specificity⁷ to detect disease.

⁷ Sensitivity and specificity measure the diagnostic performance of a clinical sign compared with that of the gold standard, which by definition has a sensitivity of 100% and a specificity of 100%. Sensitivity measures the proportion or percentage of those with the disease who are correctly identified by the sign. In other words, it measures how sensitive the sign is in detecting the disease. (Sensitivity = true positives / [true positives + false negatives]) Specificity measures the proportion of those without the disease who are correctly called free of the disease by using the sign. (Specificity = true negatives / [true negatives + false positives])

⁵ Chessare JB. Teaching clinical decision-making to pediatric residents in an era of managed care. *Paediatrics*, 1998, 101 (4 Pt): 762–766

⁶ Oluwole D et al. Management of childhood illness in Africa. *British medical journal*, 1999, 320:594–595.

These signs were selected considering the conditions and realities of first-level health facilities.

- A combination of individual signs leads to a child's **classification(s) rather than a diagnosis**. Classification(s) indicate the severity of condition(s). They call for specific actions based on whether the child (a) should be urgently referred to another level of care, (b) requires specific treatments (such as antibiotics or anti-malarial treatment), or (c) may be safely managed at home. The **classifications are colour coded**: "pink" suggests hospital referral or admission, "yellow" indicates initiation of treatment, and "green" calls for home treatment.
- The IMCI guidelines address **most, but not all, of the major reasons a sick child is brought to a clinic**. A child returning with chronic problems or less common illnesses may require special care. The guidelines do not describe the management of trauma or other acute emergencies due to accidents or injuries.
- IMCI management procedures use a **limited number of essential drugs and encourage active participation of caretakers in the treatment** of children.
- An essential component of the IMCI guidelines is the **counselling of caretakers** about home management, including counselling about feeding, fluids and when to return to a health facility.

Adapting the guidelines to a country's situation

Ministry of Health) and incorporates decisions carefully made by national health experts. For this reason, some clinical signs and details of clinical procedures described below may differ from those used in a particular country. The principles used for management of sick children, however, are fully applicable in all situations.

The IMCI case management process

The case management of a sick child brought to a first-level health facility includes a number of important elements (see Figure 3).

Outpatient health facility

- Assessment;
- Classification and identification of treatment;
- Referral, treatment or counselling of the child's caretaker (depending on the classification(s) identified);
- Follow-up care.

Referral health facility

- Emergency triage assessment and treatment (ETAT);
- Diagnosis, treatment and monitoring of patient progress.

Appropriate home management

- Teaching the mother or other caretaker how to give oral drugs and treat local infections at home;

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