

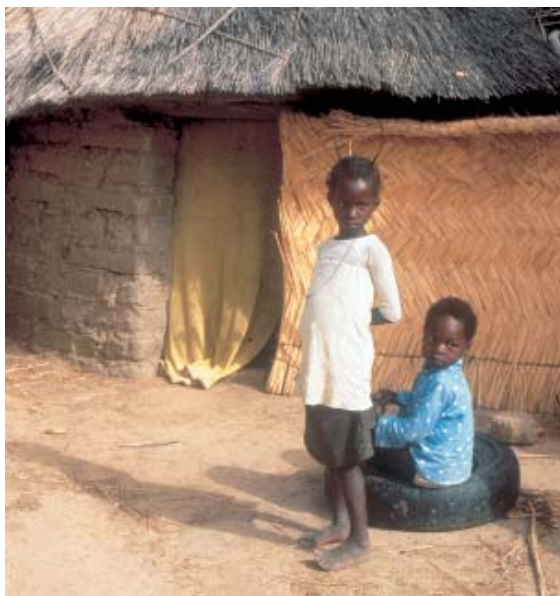
Child Health Research

A Foundation for Improving Child Health



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Foreword

Research makes a difference

Progress in public health depends on the systematic critical review and analysis of current practice with a view to doing things better in the future; this is the essence of research. The cycle of research, action, and evaluation leading on to more research, has provided the underpinning for many of the most remarkable achievements in global health exemplified by the dramatic declines in child mortality that have occurred over the past few decades.

Yet still today, there are many infants and children who have not benefited from such progress and for whom the fruits of research remain inaccessible. Of the five leading causes of premature death and disability in the world today, three are primarily or exclusively childhood diseases – respiratory infections, perinatal conditions and diarrhoeal diseases. Mortality rates among newly-born infants remain stubbornly high in many countries because mothers lack care during pregnancy and childbirth and babies do not receive essential newborn care. Each year, more than ten million children die before they reach their fifth birthday, most of them from just five conditions – respiratory tract infections, diarrhoea, malaria, measles and infections arising at birth. Underlying determinants include malnutrition, lack of access to health care and inadequate education, particularly in girls and women.

These deaths are all the more tragic because they are eminently avoidable given the widespread use of simple, cost-effective interventions such as integrated management of childhood illness and health care during pregnancy and childbirth. Research is essential to ensure that such interventions are made available to those in need. It provides the basis for the development of new and improved technologies and tools. It provides

answers to questions such as how to ensure that beneficial family and community practices are reinforced and harmful ones abandoned. In the final analysis, all efforts to improve the survival, health and development of infants and children must start with research.

Lessons learned through past research include the importance of exclusive breastfeeding for reducing infant and childhood illness and death; the role of vitamin A supplementation in overcoming blindness and susceptibility to infection in children; and the value of oral rehydration formulations in diarrhoea management. Research will continue to be vital as we address emerging issues such as how to prevent transmission of HIV from mother to infant and how to enable every child to grow and develop to their full potential.

The international public health community has taken great strides in fighting the diseases that threaten children. But there is an urgent need to invest further in research, building on the lessons learned and the advances that have occurred to tackle the challenges of the future. Without further investment in research millions of children will continue to suffer and die from preventable causes each year with all the loss in terms of human growth and potential such deaths imply. No society can afford not to be involved in research which provides the basis for the future health and well-being of individuals and communities and underpins all our development efforts.

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Executive Summary

Successful societies safeguard their future by continually striving to improve the well-being of their children. They understand that healthy, well-developed, educated and respected progeny ensure that past achievements serve as the foundation for continuing progress.

Although child health has improved overall, three of the ten most important conditions of the global burden of disease still are diseases of childhood – respiratory infections, perinatal conditions and diarrhoeal diseases – causing over half of child deaths. Consequently, initiatives to improve child health can have an enormous impact on reducing the global burden of disease. These initiatives must start with research findings that are tested in the field and fashioned into interventions that help those in need. These interventions in turn raise fresh questions that stimulate additional research, beginning the cycle anew.

Over the last few decades, research findings have led to some very significant improvement in child health:

- I. Diarrhoea Management.* In the past twenty years, child deaths from diarrhoea decreased from 4.6 million to 1.3 million. Following the discovery of the efficacy of oral rehydration salts (ORS), continued research resulted in wider application of ORS and training of health workers and others to allow ORS administration in the field. Ensuing research led to new ORS formulations and even more effective interventions.
- II. Breastfeeding Promotion.* The global community recognizes breastfeeding as the primary nutritional support for infants and young children. In the 1900's, social change resulted in widespread use of breast milk substitutes. By the 1970's, studies confirmed the important role of exclusive breastfeeding in reducing infant and childhood illness and death. Numerous countries initiated programmes to promote exclusive

breastfeeding. Recent research demonstrates that breastfeeding promotion programmes must go beyond the hospital setting and encourage community participation.

- III. Preventing Mother-to-Child Transmission (MTCT).*

In the last two decades, studies revealed that an estimated 30 percent of HIV-infected women transmitted HIV to their newborn babies. Research has found that a number of interventions could significantly reduce mother-to-child-transmission. In high income countries, for example, anti-retroviral (ARV) administered prior to and during delivery, in addition with increasing caesarean section deliveries and use of replacement feeding succeeded in reducing MTCT to less than 2 percent of children born to HIV-infected mothers. The challenge now is to ensure that activities to implement these remarkable research findings reach those at greatest risk.

- IV. Remedying Vitamin A Deficiency (VAD).*

VAD is a major cause of blindness in children and an underlying factor in death from diarrhoea and measles. In the 1980s, research found that children with eye infections linked to a lack of vitamin A died at a higher rate than their peers. Further investigation concluded that supplementing vitamin A in deficient children lowers their risk of death by 30 percent. The success of this body of research has led to global recognition of the perils of VAD, encouraged collaboration among health workers and resulted in the recognition of Vitamin A supplementation as one of public health's most cost-effective interventions.

Past research has also pinpointed some of the risk factors affecting child mortality and morbidity.

These risk factors are

1. low birth weight, 2. poor nutrition, 3. adverse environmental conditions, and 4. the impact of poverty, including the impact of being orphan, and the inequitable distribution of resources.

Specifically with regard to these risk factors, we must undertake the following:

- To address low birth weight, new research is critical to developing and implementing even more successful maternal nutrition education programmes. We must also strive to improve our understanding of how to better promote safe motherhood programmes and pre- and post-natal care.
- In the nutrition field, new research is necessary to broaden understanding of how micronutrients work, identify those with micronutrient deficiencies and ascertain how to address these deficiencies more effectively. Research is also necessary to develop effective strategies to improve complementary feeding while maintaining and sustaining breastfeeding.
- Research to further explore the threats to child health posed by polluted air and water is essential to promote collaboration among the many sectors – economic development, environmental and health – responsible for dealing with these areas.
- Finally, the expansion of drug and vaccine research is crucial to addressing problems arising from inequitable distribution of research spending and will assist in fighting disease specific to poverty-stricken regions and countries.

Despite the successes, we still face a number of challenges:

- Without future research, we may have to revise upward current projections of the burden of disease for 2020 for conditions affecting children.

- Neonatal survival rates have improved only very slowly. New research is needed to develop more effective interventions to address the leading causes of neonatal illness and death and enhance community-based care.
- We must learn more about the breadth of the HIV orphan problem so as to develop effective interventions and build consensus among stakeholders.
- Increased emphasis needs to be placed on conducting evaluation research to maximize the use of scarce funds and to prioritize child health interventions.
- We need research to develop innovative tools that enable health services planners to improve service delivery and better understand patterns of access to health care.
- Finally, we need research into various avenues of action to provide policymakers with greater knowledge regarding the programme options before them.



As this report details, the global effort to improve child health begins with research. Already, we have taken great strides to successfully deal with many of the conditions and diseases that threaten the

health and development of children. But there is a critical need to invest in further research to build on the advances already in place. Without such an investment, not only are these advances put at risk, but the larger goal before us – to significantly reduce the global burden of disease – may never again be so attainable.



Introduction

Successful societies safeguard their future by continually striving to improve the well-being of their children. They understand that healthy, well-developed, educated and respected progeny ensure that past achievements serve as the foundation for continuing progress.

But building a society that nurtures healthy children is neither easy nor inexpensive. Decision-makers and others understandably are looking for health interventions that are swift, cost-effective and easily implemented. But the reality is that sustainable advances take time to develop and mature, and are based on research findings that are tested in the field and successfully carried out, reaching those most in need. These interventions stimulate additional questions and new research, thus beginning another cycle of action/research in turn leading to enhanced knowledge and even more effective interventions.

The goal of this report is to highlight how over time new knowledge has stimulated action and action, in turn, encouraged research. At the same time, the report outlines a number of research activities that are needed to advance and strengthen achievements to date, and the critical need to foster and promote expanded research in specific child health and nutrition priority areas.

This report is based on a systematic review of literature, direct consultations with institutions and scientists involved in research and programme implementation and a survey of relevant stakeholders in child health research in both low and high income countries (February–March 2001). Additionally, child health experts provided valuable input as part of a 3-day workshop jointly organized by the Global Forum for Health Research and the Department of Child and Adolescent Health and Development of the WHO, held in Geneva from 18–20 April 2001.

The State of Child Health Today

Children, as one of our most vulnerable populations, face unusually high health risks as they grow. With still-developing immune systems, they are completely reliant on others for their survival. The obstacles to optimal health are greatest for children born into poverty; those are also the most likely to be exposed to infectious disease and unclean water, and at the greatest risk of malnutrition.

As the following table illustrates, three of the ten most important conditions of the global burden of disease are major childhood diseases. Acute respiratory infections are the single most important cause of mortality in children under five years,

accounting for two million deaths in this age group annually (1).

Particularly noteworthy is the fact that among the five most significant contributors to the burden of disease, three – lower respiratory infections, perinatal conditions and diarrhoeal diseases – are primarily or exclusively childhood diseases.

Although infectious diseases (respiratory tract infections, diarrhoea, malaria, measles and infections arising at birth) are the major killers of children, it should be noted that malnutrition contributes directly or indirectly to 60% of the more than ten million child deaths each year (3–5) (figure 1).

TABLE 1:
WORLD LEADING CAUSES OF DALYS¹⁾ IN 2000

All causes	Rank	% of total
Lower respiratory infections*	1	6.4
Perinatal conditions*	2	6.2
HIV/AIDS	3	6.1
Unipolar depressive disorders	4	4.4
Diarrhoeal diseases*	5	4.2
Ischaemic heart disease	6	3.8
Cerebrovascular disease	7	3.1
Road-traffic accidents	8	2.8
Malaria	9	2.7
Tuberculosis	10	2.4

*Primarily or exclusively childhood diseases

¹⁾ DALYs (Disability Adjusted Life-Years) are indicators of the time lived with a disability and the time lost to premature mortality.

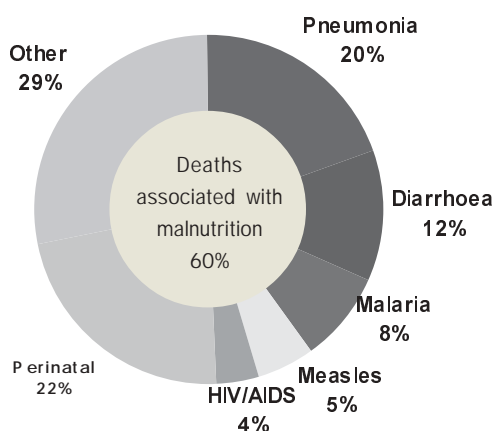


Figure 1: Major causes of deaths among children less than 5 years old in all developing countries, 2000.



Recognizing risk factors affecting child health

There is a limited list of factors that have the greatest impact on child health:

- Low birth weight
- Nutrition

Low Birth Weight

Research tells us that the health of a child is primarily shaped by the health of the mother, starting with birth weight. Children born with low birth weight often

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