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ACUTE RESPIRATORY INFECTIONS: A MAJOR CAUSE OF DEATH

It is now a widely recognized fact that some 15 million premature deaths occur each year in developing countries among children under five years of age. What is less well known is that nearly one-third of these deaths are caused by acute respiratory infections.

The international health community, spearheaded by the World Health Organization (WHO), now regards these infections as a major cause of both sickness and death among young children throughout the world. Consequently, the control of these diseases is an essential component of primary health care systems.

The principal objective of WHO’s Programme for the Control of Acute Respiratory Infections (ARI) is to reduce mortality from these diseases among young children by using a simple case-management strategy. This Programme is carried out in partnership with UNICEF and the United Nations Development Programme (UNDP), with the active support of numerous other agencies and governments.

Through these efforts, ARI has become one of the cornerstones of WHO’s strategy to achieve Health for All by the Year 2000 by providing primary health care to the great majority of the world’s population who still lack access to any permanent form of health care.
THE PROBLEM

Let us look more closely at the death toll caused by acute respiratory infections among children under 5 years of age in the developing countries. Out of the total of 15 million such premature deaths each year, some 25 to 30% are attributed to these infections, and of these, about 90% are caused by pneumonia alone.

Under-fives suffer between 4 and 8 episodes of acute respiratory infection a year; this means that there are at least 2,000 million episodes each year in the developing world.

The burden this imposes on the under-financed and over-stretched health services is enormous. Between 30% and 60% of paediatric consultations at health facilities and between 30% and 40% of admissions to hospital are attributable to acute respiratory infections.

Estimated causes of death in children under five, 1985

- Total: 14.6 million
- Diarrhoea: 27% (4 million)
- Other: 43% (6.3 million)
- ARI: 30% (4.3 million*)

* of which:
- measles and pertussis 1.5 million
- other ARI, primarily pneumonia, 2.8 million
The common acute infections of the upper and lower respiratory tract range from a simple cold or cough, through otitis media, sore throat, laryngitis and bronchitis, to bronchiolitis and pneumonia. Diphtheria, measles, and pertussis (whooping cough) are also respiratory infections.

The great majority of episodes of infection are mild and self-limiting, as in the case of coughs and colds. However, about one in every 30 to 50 episodes of cough will develop into pneumonia— inflammation and congestion of the lungs—and without treatment 10% to 20% of pneumonia cases will die.

Most cases of pneumonia can be treated easily and cheaply with oral antibiotics. The problem is how to bring these simple drugs within reach of all the children who need them.
CAUSES AND RISK FACTORS

An acute respiratory infection is the result of an interaction between three factors: the host, the infectious agent, and the environment.

About 80% of all pneumonia cases examined in hospitals in developing countries are caused by two bacteria: *Streptococcus pneumoniae* and *Haemophilus influenzae*. Bacteria are also responsible for pertussis, and diphtheria. Most other acute respiratory infections are of viral origin.

The “risk factors” in people and in the environment that encourage the spread of pneumonia include:

- low birth weight
- undernutrition
- poor breast-feeding practices
- specific nutritional deficiencies (vitamin A)
- chilling in young infants
- indoor air pollution (smoke from cooking fuels and tobacco)
- urban air pollution
- overcrowding

The most important of these are low birth weight and malnutrition, since there is a high risk of mortality from respiratory infections in children with these conditions.
With the new approaches to treatment that have been developed in recent years, it is possible to achieve an immediate and substantial reduction in the number of deaths from acute respiratory infections in children.

As long ago as May 1982, the Member States of WHO decided to take concerted action, within the framework of primary health care, to combat these infections. Today, WHO is assisting many countries to develop and implement control programmes focusing in particular on a simple strategy of case management, based on clinical signs, that can be carried out by health workers in health centres and health posts, and by community-based health practitioners.

At the same time, WHO is seeking to review the efficacy and feasibility of other measures for reducing both mortality and morbidity, and is promoting research to develop new and better tools for control, such as vaccines.

This combined action-and-research approach will ensure that new findings are rapidly applied in national control programmes.
Action must be taken now to reduce the severity of pneumonia and prevent deaths.

Correct case management is the central strategy to reduce mortality from pneumonia.

Immunization, on the other hand, is a specific strategy to prevent acute respiratory infections caused by measles, pertussis and diphtheria.

There are a number of other essential interventions that may reduce the incidence of pneumonia by controlling the risk factors. The importance of these factors and the feasibility and cost of suitable interventions are currently being analysed by the Programme, with the ultimate goal of identifying new ways to prevent pneumonia.

These approaches to the control of acute respiratory infections are described in the following pages:

1. Case management:
   - recognition of pneumonia
   - antibiotic treatment
   - supportive measures

2. Immunization:
   (against measles, pertussis, and diphtheria)

3. Other health care practices and environmental measures:
   - improved nutrition
   - prenatal care and family planning
   - prevention of chilling in young infants
1. CASE MANAGEMENT

Correct case management is the cornerstone of national programmes for the control of acute respiratory infections.

Death from pneumonia can be prevented by simple case management procedures.

These involve: early recognition of pneumonia by families and health workers, antimicrobial treatment at home or referral to hospital, and supportive measures.

Recognition of pneumonia

Cases of pneumonia can be identified by counting the respiratory rate and observing the chest for indrawing (that is, the lower part of the chest draws in when the child breathes in).

- Most children who have a cough do not breathe rapidly and do not have chest indrawing or other signs of severe illness. They have a simple cough or cold.

- Children with a cough and fast breathing (the definition depends on the age of the child) but with no chest indrawing, have pneumonia.

- A few children with a cough will also have chest indrawing. They have severe pneumonia. In young infants (less than 2 months) fast breathing or severe chest indrawing are signs of severe pneumonia.
1. CASE MANAGEMENT (continued)

Antibiotic Treatment

Most young children with acute respiratory infection have coughs and colds only. These are caused by viruses. Antibiotic treatment is often given to these children but this is inappropriate, costly, and may even accelerate the emergence of resistant bacteria.

Children with pneumonia require prompt antibiotic treatment. In most cases a standard, safe and inexpensive oral antibiotic can be used, and the child can be treated at home. A follow-up is needed after two days to check on progress.

Children with severe pneumonia should be urgently referred to hospital where injectable antibiotics, oxygen, and more intensive medical and nursing care should be available.
1. **CASE MANAGEMENT** (continued)

**Supportive Measures**

For the vast majority of episodes of acute respiratory infection, antibiotics are not needed and only supportive measures should be used.

Supportive measures include:

- provision of oral fluids to prevent dehydration
- breast-feeding, or giving small, frequent meals
- provision of simple remedies, e.g., herbal teas, to soothe the throat and relieve the cough
- administration of antipyretic drugs to reduce very high fever
- protecting the child from chills and draughts.

It is quite easy to teach mothers how to provide appropriate supportive measures in the home.

**The most important element of home care is for the mother to watch out for signs of pneumonia** (fast or difficult breathing or a sick child unable to drink), and to bring the child back *quickly* to the health worker if necessary.
2. IMMUNIZATION

Three acute respiratory diseases can be prevented by immunization.

These are measles, pertussis and diphtheria, which together account for 15% to 25% of all deaths associated with acute respiratory infections among children in developing countries.

Although the delivery of immunizations is the responsibility of national expanded programmes on immunization, it is the role of every health worker to encourage the timely vaccination of children as a means of preventing cases, and hence deaths, due to acute respiratory infections.

19-20. Measles can be prevented by immunization
3. OTHER HEALTH CARE AND ENVIRONMENTAL MEASURES

Acute respiratory infections are less likely to develop into pneumonia in children who are well nourished.

**Good nutrition** — including continued breast-feeding for at least the first 4-6 months of life, appropriate feeding thereafter, and vitamin A supplements where necessary — plays an important role in preventing pneumonia.

**Improving the condition of mothers** in respect of education, workload, nutrition, age on giving birth, and child spacing will also help to reduce the number of low-birthweight babies who are more prone to infections and to death from pneumonia.

**Protecting young infants from chilling** and exposure to cold and draughts will help to prevent infections.
WHO supports research aimed at developing and evaluating new interventions and tools for the control of acute respiratory infections.

Priority is being given to research that seeks to:

- determine the epidemiology and etiology of pneumonia, meningitis, and other bacterial infection in very young infants and malnourished children
- establish more precise clinical criteria to detect pneumonia and assess its severity
- evaluate strategies to promote early recognition of pneumonia by mothers and proper care-seeking behaviour
- determine the efficacy of simplified antibiotic regimens
- define risk factors that influence the incidence, severity or outcome of acute respiratory infections
- define the epidemiology and etiology of acute lower respiratory infections in preparation for vaccine trials
- evaluate new vaccines against the main causative agents of pneumonia.
The World Health Organization makes available:

- A training course for managers of national acute respiratory infections control programmes, as well as training modules for first-line supervisors of health workers in such programmes.
- Financial and advisory support for the planning, implementation and evaluation of national control programmes.
- Financial support for health services and biomedical research projects on acute respiratory infections.

Materials available for information and training include:

- Guidelines on case management
- Guide for directors of ARI training units
- Manuals for evaluation surveys
- Technical review papers.

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