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EVIDENCE BASE FOR THE COMMUNITY MANAGEMENT OF PNEUMONIA

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STOCKHOLM, SWEDEN

DEPARTMENT OF CHILD AND ADOLESCENT HEALTH AND DEVELOPMENT

WORLD HEALTH ORGANIZATION

1. Introduction

1.1 Background

Although the past 15 years have seen a decline in child mortality due to pneumonia, it remains a very important cause of death in developing countries. In Africa in particular, pneumonia and malaria are by far the most important causes of death for children under 5. The overall aim of this meeting was to help to define practical community approaches which could deliver a rapid reduction in this preventable mortality.

WHO has developed and supported the use of case management of pneumonia through the ARI Programme and later as a part of IMCI. The main focus for these initiatives has been the health facility, although much of the demonstration of the efficacy of the clinical interventions was carried out at community level, using community health workers. IMCI uses the same clinical methodology. Although IMCI stresses the promotion of care-seeking by families with sick children, in general, the clinical management of such children is offered at the first level health facility.

The importance of providing care without delay for children with malaria has led to the development and introduction, so far on a small scale, of interventions based in the community, either through a community health worker or directly by families, who are provided with packs of antimalarials.

These two diseases in childhood, pneumonia and malaria, have major overlaps in terms of clinical presentation, the requirements for their effective management and the feasibility of providing standardised care in the community. Technically sound and operationally manageable community interventions that tackled both conditions would offer a most valuable tool for use in the reduction in child mortality in developing countries.

1.2 Objectives of the meeting

- Review of the management of acute respiratory infections (ARI) in children.
- Review of published and unpublished evidence concerning community management of pneumonia and other childhood illness – including research and programme experience.
- Identification of gaps in knowledge and recommendations for addressing the gaps in knowledge (e.g., research) and management of pneumonia in the community.

1.3 Agenda

The agenda followed the objectives. The detailed agenda is attached as Annex 1.

1.4 Participants

The 30 participants were drawn from research institutions, countries with experience of community activities relating to pneumonia and malaria, and national and international agencies. The full list of participants is attached as Annex 2.

2. Proceedings

The main points of the presentations and the ensuing discussions are summarised below under each of the meeting's objectives.

2.1 Objective 1 – Review of the management of acute respiratory infection (ARI) in children

2.1.1 Management of children with ARI –the public health perspective. S. Qazi.

The case management of pneumonia developed and promoted by WHO is based on a number of premises:

- Pneumonia is a common cause of child mortality
- The majority of pneumonia in children in countries with high infant mortality is of bacterial origin – mostly *Streptococcus pneumoniae* or *Haemophilus influenzae* - which can be effectively treated using inexpensive antibiotics that can be administered at home
- Children with respiratory infections requiring antibiotic treatment at home or referral care can be recognised using signs (rapid respiration and lower chest indrawing) that can be learned and used by health workers with limited clinical training and no capacity for laboratory investigation or radiology.

The effective use of this clinical methodology depends on two things:

- The child must be recognised by the family or caretaker as needing clinical care and must be brought promptly to such care

- There must be access to appropriate care, including skills in case recognition and management, the availability of a suitable antibiotic and referral care for the child who has severe illness.

The main approach to putting these requirements in place has been through strengthening the public health services - particularly through training health workers and building the capacity at the first level health facility - and education of families and communities. These activities were initially carried out through national ARI programmes. They became part of the IMCI strategy from 1995. There has been little substantive effort to date to involve the private sector.

The WHO ARI programme tested the standard case management methodology mainly through community-based programmes, and in 1992 it introduced a training course in standard case management of ARI for community health workers. This course was not widely used, in part because of the reluctance of many national authorities to allow antibiotics to be distributed by such workers (some data on the outcome of the use of this course was presented at the meeting - see under objective 2 b).

The treatment of pneumonia demands that effective antibiotics should be available, and the monitoring of the efficacy of affordable antibiotics is therefore an important component of ARI control activities.

2.1.2 What do we know about the quality of care for ARI in health facilities? S. Aboubaker

Data from ARI health facility surveys between 1992 and 1997 gave a picture of the quality of care provided in first level health facilities by trained health workers. In general the results show that although training and the attention given to drugs supplies may improve care, the quality was variable. The table below summarises the major findings of 20 surveys of health facilities in 19 countries.

	% staff trained in ARI	% ARI cases managed correctly	% ARI cases to whom antibiotics were given unnecessarily	% facilities with antibiotics	% facilities with capacity to give ARI standard case management*
Minimum	18	2	8	27	2
Median	52	30	31	79	55
Maximum	88	73	70	100	87

*Facilities with at least one health worker trained in ARI and a continuous supply of suitable antibiotics.

Surveys done in a few countries following the introduction of IMCI have shown significant improvements in the capacity for and practice of appropriate case management for ARI in first level health facilities.

2.1.3 Symptom overlap for pneumonia and malaria in Ugandan under-fives seeking care at health centres. S. Peterson, K. Källander, J. Nsungwa-Sabiiti

In sub-Saharan Africa there are three episodes of malaria for every one episode of pneumonia in children. IMCI equates fever with malaria in malaria-endemic areas, and uses cough or difficult breathing and fast breathing as the signs of pneumonia. In this study 30% of children seen had both fever and were coughing and had fast breathing, and would thus receive treatment for both malaria and pneumonia. The symptom overlap was found to increase with the duration of both the fever and cough, and there is more overlap in younger children.

These data are from health facilities (used by only 8% of cases) and cannot be extrapolated to a community situation, but they do suggest that the overlap, which cannot be resolved without more sophisticated diagnostic procedures, is such that treatment for both conditions should be available within the community.

Overlap between clinical malaria and pneumonia is important both for the care of the individual child and for the development of child health strategies involving case management. The Meeting recommended further research to define more effective ways of managing children affected by this overlap, including the development of practical clinical algorithms which deal with the overlap.

2.2 Objective 2a. Review evidence concerning community management of ARI – research

2.2.1 Management of children with ARI – the family perspective. G. Pelto

Assuring the well-being and healthy development of children always involves a partnership between families and the larger society of which they are a part. Specific features of the family/society partnership are different for different types of diseases and for different aspects of disease prevention and management. In relation to ARI the family responsibilities are:

- to know and to recognise the signs of a potentially serious episode of ARI
- to seek help promptly from someone who knows what to do, can give the family advice and can provide medication
- to follow the advice and treat the child correctly, including returning for help as necessary

ARI focused ethnographic studies showed that there are often important gaps in the family's capacity to fulfil these tasks, in particular to recognise that a child has a serious respiratory problem, and that in working to improve care seeking and home treatment health workers must be aware of and respect the family's position and perceptions.

In many situations it is unrealistic to expect mothers and families to take the responsibility for recognizing the signs that a child requires specific treatment. This should change as levels of education and empowerment increase. At present, in the division of labour between families and society, society should normally assume responsibility for meeting the need of families for access to diagnostic skills and treatment. Lack of such access is the main determinant of the speed of care-seeking – itself a crucial determinant of survival for the child with severe pneumonia or malaria.

2.2.2 Meta-analysis of community-based trials of case management of pneumonia. R. Black

The results of seven concurrent trials were included in the analysis. The trials had taken place in Bangladesh, India (2), Nepal, Pakistan, Philippines and Tanzania. All had involved education of caretakers, either at home or in the clinic, in care seeking, and in six sites the community health workers undertook active case-finding. Mortality surveillance and verbal autopsy were used in all trials. The effects of these trials on mortality in their target populations are summarised below.

Summary of effects of pneumonia case management on mortality - concurrent, controlled trials. Odds ratios

Age group	Total mortality	Pneumonia-specific mortality
<1 month	0.70 (0.59, 0.84)	0.56 (0.37, 0.83)
<1 year	0.74 (0.63, 0.87)	0.63 (0.46, 0.86)
0 to 4 years	0.74 (0.64, 0.86)	0.63 (0.47, 0.86)

The main conclusions from the meta-analysis were:

- The trials resulted in a reduction of child mortality of 26% and a 37% reduction in mortality from pneumonia.
- This was accomplished by community health workers diagnosing the illness and providing oral antibiotics or referral as needed.
- Regular household visits were an important part of the intervention, but this may not be feasible everywhere. It was noted that many cases were brought to the health workers outside household visits.
- The health workers had been carefully selected, trained and supervised. Antibiotics were reliably available.

2.2.3 Early and appropriate home management of childhood fevers (malaria and ARI) in Uganda. B. Mpeka

Faced with slow progress in developing effective services to reduce under-5 mortality and morbidity care for children with malaria, WHO Tropical Disease Research is supporting studies to provide evidence and best practices for early management of malaria. Some of the countries involved have decided to take a broad approach. Uganda, Nigeria and Burkina Faso aim to increase the timeliness and appropriateness of treatment for malaria. Ethiopia is measuring mortality reduction, Burkina Faso plans to monitor reductions in severe disease and Kenya is focusing on improving the prescribing practices of shopkeepers.

In Uganda, unpaid female community volunteers have been given a three-day training to advise mothers of children with fever and provide them with antimalarial drugs made up in age-specific bubble packs, or refer them if necessary. In the small-scale test that has been carried out they were closely supervised by district health workers and the research team. The training includes the management of ARI. The training for case recognition of pneumonia does not include the counting of respiration. Instead, reliance is placed on the mothers' ability to recognize abnormal breathing and to use local terminology indicating severe illness. This has not been tested or shown to work elsewhere, but ethnographic studies have found a wide variation in the ability of mothers to recognise signs indicative of pneumonia (see 2.2.1 above).

It is planned that the exercise will be taken to scale in Uganda, covering much of the country. There is no direct association in this expansion with the community IMCI activities that are being developed and implemented in Uganda and which include community volunteer activities in some districts.

Discussion of the trial raised issues of the policy support needed for the use of drugs by minimally trained workers, and of the capacity of the health system to provide the technical support that these workers would need. Effective approaches to child survival call for simultaneous building on one hand of the capacity of the family for care seeking and home care and on the other of the capacity of the health system to provide support for case management and referral. The results of the small-scale trial that has been completed are promising, but future expansion of this community-based approach, as for other new interventions, should be carefully monitored to provide convincing evidence of efficacy.

2.2.4 Antimicrobial use and misuse in Acute Respiratory Infection. K. Holloway

Over-use of antibiotics is widespread and has serious public health consequences. Half or more of antibiotic prescription is unnecessary, viral ARI being one of the most common pretexts. In addition, antibiotic courses are often not completed. Between 50 and 90% of all antibiotics are

prescribed by the private sector. Poorly controlled use is associated with increasing resistance of respiratory pathogens. Studies show up to 70% of pneumococci resistant to penicillin.

The quality and effectiveness of treatment may be compromised by the combination of family poverty, which can reduce access to full treatment, and malnutrition, which may reduce its efficacy. Approaches are needed to ensuring effective treatment for poorer families without creating second-class care.

The treatment choices of health workers and families are affected by many factors and experience shows that practices can be changed. Although guidelines and regulations are usually not enough on their own, combinations of ongoing training and supervision have been shown to produce important changes. Some of the most rational use of antibiotics has been demonstrated in community programmes, but this may be put at risk when community workers are dependent on income from the sale of medicines.

Work is needed to introduce those interventions that are known to be effective for improving the rational prescription and use of antibiotics into the reality of the public/private health care systems.

2.3 Objective 2b. Review evidence concerning community management of ARI: programme experience

2.3.1 Evidence on the performance of CHWs trained in the management of ARI. S. Aboubaker

Community health workers were trained in several countries with the WHO ARI training course for CHWs. The follow-up showed encouraging evidence that, with suitable supervision and provision of medicines, CHWs could perform these tasks well. Data from the follow-up in China and Sudan are shown below.

Assessment 6 months after training