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PROGRAMME FOR THE CONTROL OF  
ACUTE RESPIRATORY INFECTIONS



Report of the  
sixth meeting of the  
**TECHNICAL ADVISORY GROUP**  
Geneva, 11-15 March 1991

This report contains the collective views of an international group  
of experts and does not necessarily represent the decisions  
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**WORLD HEALTH ORGANIZATION**

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## 1. INTRODUCTION

The sixth meeting of the Technical Advisory Group (TAG) of the WHO Programme for the Control of Acute Respiratory Infections (ARI) was held in Geneva on 11-15 March 1991. The meeting was opened by Dr R. Henderson, Assistant Director-General, who informed the participants that the Programme had expanded considerably since the last full TAG meeting two years earlier. Immediate benefits had been documented in some countries following implementation of the standard ARI case management strategy, and the World Summit for Children in September 1990 had agreed that it should be possible to reduce deaths due to ARI in children under 5 by one third by the year 2000. The Programme had generated high expectations among Member States, international development agencies, and the scientific community, and the TAG had the crucial task of advising the Secretariat on the most efficient means of achieving global implementation and attaining the planned reduction in mortality.

Dr J.M. Borgoño chaired the meeting.

## 2. STATUS OF THE PROGRAMME

The TAG reviewed the progress made by the Programme in 1990, as described in detail in the Interim Programme report for that year<sup>1</sup>, and noted the activities planned for 1991.

### 2.1 Global Programme

Further progress was made in the Programme's services and research activities, which are carried out in concert and are primarily directed towards reducing childhood mortality caused by pneumonia.

The major task of the health services component of the Programme is to collaborate with countries in the implementation of ARI case management activities. Among the technical guidelines and reviews completed during the year to assist countries in this effort were two treatment charts for first-level health facilities; revised guidelines for case management in small hospitals, intended for doctors and other senior health workers; and a review of antibiotics in the treatment of ARI in children. Further developmental work in the area of appropriate technology included the preparation of specifications for an electronic timer to count the respiratory rate and the field-testing of three prototypes in developing countries; and cooperation with industry in developing simple and robust oxygen concentrators.

By the end of 1990, 54 countries had prepared plans of operation and 47 had begun to implement ARI programmes. Of the latter, 34 are on the Programme's list of main target countries, which have an infant mortality rate greater than 40 per 1000 live births. High priority continued to be given to training. The modules for the Programme Managers' Training Course became available in English, Spanish, and French, and seven intercountry courses were held, attended by 199 participants from 62 countries. In addition, 66 national seminars and workshops on programme management were held in 15 countries with WHO participation. Training courses on case management for supervisors were held 112 times in 19 countries in 1990; most courses used the revised module on case management which includes a videotape showing respiratory signs in children. The Programme continued to support the establishment of ARI training units (ATUs), and by the end of the year 24 such units had been established in eight countries; a training package for use in these units is under development. Training materials for community-based health practitioners are also being prepared.

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<sup>1</sup> Document WHO/ARI/91.19.

Most of the activities undertaken to date in the area of evaluation have been developmental in nature. They included the selection of 14 priority indicators to determine access to and use of correct case management; the development of a household survey to assess ARI morbidity and treatment; the preparation of a country programme profile questionnaire; and the examination of approaches to measuring the use and cost of drugs. Initial evaluations based on existing records have shown positive changes in clinical practices and in the use of drugs as a result of training in standard case management.

In the research component, priority continued to be given to case management of pneumonia, behavioural research, and health systems research. Seventeen new projects and nine ongoing projects received support in 1990.

In the area of case management, preliminary results from several studies showed that a 30-second measurement of the respiratory rate may be adequate for the detection of pneumonia in children older than 2 months. A study of illness classifications by nursing students showed that these workers' ability to estimate illness in young infants correlated well with the paediatrician's classification of the degree of illness. A multicentre study was initiated to provide information on the clinical signs and etiological agents of pneumonia, sepsis, and meningitis in young infants in developing countries. Studies in two countries showed that cotrimoxazole is an effective antimalarial; thus it could be recommended as the sole drug for children with signs of pneumonia and fever in malarial areas.

Behavioural research was concerned with the development of a focused ethnographic study protocol to assess beliefs and practices related to pneumonia and other respiratory conditions, with a view to developing home care advice and other messages. Two courses have been held to train social scientists in the use of the protocol.

As regards health systems research, further evidence that the ARI case management strategy has an impact on pneumonia mortality became available during 1990 from studies in three countries. Two studies which explored the suitability of nasopharyngeal strains of Streptococcus pneumoniae and Haemophilus influenzae for the surveillance of antibiotic resistance found that strains isolated from the nasopharynx of children with signs of pneumonia are very similar in type and antimicrobial sensitivity to strains isolated from the blood. A meeting of experts reviewed these data and recommended the use of nasopharyngeal strains for the surveillance of bacterial drug resistance. The same meeting reviewed a draft manual on surveillance which is to be field-tested in 1991. The surveillance of invasive H. influenzae type b disease continued in the Gambia, in preparation for a vaccine efficacy trial in 1992; the age distribution observed indicates that H. influenzae type b attacks younger children in developing countries than in developed countries, and that it will be necessary to give the first dose of vaccine at 2 months of age.

## 2.2 Regional overviews

### Africa

ARI continue to be a major health problem in the African Region. It is only recently, however, that a commitment has been made to deal with the problem and give it the priority it deserves. ARI will be on the agenda of the forty-first session of the Regional Committee in 1991 and it is hoped that this meeting will help to accelerate action.

Of the 46 countries in the Region, nine had developed an ARI plan of operation by the end of 1990; Ethiopia, Namibia, and the United Republic of Tanzania developed their plans during 1990. As of December 1990, 10 countries had developed technical guidelines and six had implemented programme activities (Botswana, Ethiopia, Gambia, Lesotho, Namibia, and Zimbabwe). The first intercountry Programme Manager's Course for English-speaking countries took place in Zimbabwe in May 1990 (30 participants from 17 countries), and the first course for French-speaking countries in Rwanda in February 1991 (34 participants from 21 countries). During 1990, 129 participants were trained at nine national workshops and seminars. Ten courses on case management for supervisors, attended by 300 participants, were conducted in Ethiopia and Namibia. Zimbabwe established two ATUs which have been integrated in existing diarrhoea training units. Local training and educational materials were produced in Lesotho, Swaziland, and Zimbabwe, and WHO materials were in part translated into the local languages. Collaboration with schools of health sciences is being sought in Ethiopia, Namibia, and Zimbabwe with the objective of integrating ARI control in the curricula of such institutions. Lesotho has developed two monitoring tools: an ARI case management supervisory checklist, and a summary sheet for monitoring the ARI control programme. A review of the first year of operations will be conducted in March 1991 with the assistance of the Combating Childhood Communicable Diseases project.

#### Americas

Five countries of the Region have implemented nationwide ARI programmes. In the remaining countries, ARI control activities are being carried out in certain regions and are at different stages of development. To date, 24 countries have designated an ARI programme manager.

Three sub-regional courses on ARI programme management, two intercountry workshops, six national workshops (to update ARI guidelines for diagnosis and treatment), five national ARI Programme Managers' Courses, and 16 courses on case management for supervisors were held in 1990, involving 552 participants. Fifteen ARI training units have been established and have provided training courses for 303 health workers. Direct technical advisory services, involving 16 visits, were provided to 11 countries with the assistance of seven consultants and three associate professional officers. Initial steps were taken to create an Interagency Committee for the Control of ARI and to establish a similar national committee in every country to support the national programme.

It is planned in 1991 to introduce the revised WHO guidelines for ARI case management in all countries of the Region, advise on the preparation of national plans of operation, support national courses on ARI programme management, maintain cooperation with UNICEF and the United States Agency for International Development, promote (in coordination with the Diarrhoeal Disease Control Programme) improved teaching for medical and nursing schools, promote communication activities, and initiate evaluation of the progress of country programmes.

#### South-East Asia

ARI, and especially pneumonia, remain one of the leading causes of death among children and are responsible for most of the cases overloading outpatient departments. An increased awareness of the problem has stimulated countries to introduce ARI control as one of the most important components in their health plans. In 1990 and early 1991, long-term plans of action were prepared or updated by nine of the 11 countries of the Region. A national programme manager has been appointed in all these countries, and some have started to implement their programmes. The reduction of mortality from pneumonia is considered the main objective and priority of these national programmes. Some countries have amended their policy to focus training activities exclusively on pneumonia. In all

countries, policy matters have been discussed with paediatric associations and professors of paediatrics at the university level to seek their agreement and support for the programme; India alone held 40 meetings of the paediatric association, attended by 1400 participants. Thailand has been selected by UNICEF for an intensified ARI programme to which the Regional Office, along with The Johns Hopkins University, has given technical support.

Programme Managers' Courses were organized in India, Indonesia, Myanmar, Sri Lanka, and Thailand. Some of these were also attended by participants from other countries such as the Maldives. To date, courses on case management for supervisors have been organized only in India, where more than 1000 persons were trained, and Indonesia. Bangladesh and Thailand have produced their own modules and are initiating training activities, while Myanmar, Nepal, and Sri Lanka have started to translate the materials into local languages. An intercountry meeting on the "Prevention and Control of Acute Respiratory Infections" was held in Jakarta, Indonesia, in October 1990, and attended by programme managers, UNICEF representatives, and observers from NGOs.

In all countries of the Region, ARI control will be an integrated component of the primary health care programme.

### Europe

At least 50% of European children are born in countries with an infant mortality rate greater than 20 per 1000 live births. ARI are the first or second cause of death, accounting for almost one fifth of all deaths in children under 5. Among all ARI deaths, pneumonia is the most frequent cause. The participants in a meeting on pneumonia in children held in Zagreb on 16-28 September 1990 recommended a major effort to bring about a rapid reduction in child deaths from pneumonia in the countries concerned. The WHO policies and strategies for ARI control were considered to be suitable, with some adaptations, for conditions in Europe.

WHO will contribute technically to ARI programme planning in Albania, Romania, Turkey, USSR, and Yugoslavia. The programmes are expected to be formulated and reviewed by WHO in 1991. Their main objective, within the framework of target 4 of the Regional Strategy for Health for All 2000, will be to reduce mortality from pneumonia in children by at least 50%. The main control strategy of the programmes will be correct case management of pneumonia and other severe forms of ARI. A specific strategy for preventing ARI due to diphtheria, measles, pertussis, and other infections that are preventable through vaccination will be accelerated implementation of the regional Expanded Programme on Immunization. Nonspecific strategies such as the elimination of risk factors for acute lower respiratory infections will also be promoted.

All European Member States are being invited to review their current practices in respect of case management of pneumonia, drug therapy in the management of ARI, and surveillance and reporting of cases and deaths due to pneumonia and pneumonitis, bronchiolitis, laryngotracheobronchitis (croup), and epiglottitis in children under 5 years of age.

### Eastern Mediterranean

Sixteen of the 22 Member States in the Region have an infant mortality rate greater than 40/1000 live births, and ARI are either the first or the second leading cause of death in infants and young children, sharing these positions with diarrhoeal diseases. Twelve of these countries have taken some action to establish or further develop a national ARI programme: six of them have an operational programme (Egypt, Iran [Islamic Republic of], and Pakistan began operations in 1990) and in six other countries ARI

control activities are at various stages of planning (Djibouti, Iraq, and Pakistan developed a plan of operation in 1990 and Afghanistan, Libyan Arab Jamahiriya, and Somalia nominated an ARI programme manager and formed an advisory committee).

Training activities received priority support through direct assistance with training courses and the dissemination of manuals, guidelines, and new training materials. Programme Managers' Courses were conducted in 1990 for 99 senior and mid-level managers in Egypt, Iran, and Pakistan. Twelve national seminars and workshops were attended by 440 participants (leaders of medical opinion and programme staff). Eight courses using the revised module on ARI case management were conducted in Egypt, Iran, Morocco, and Sudan for 158 trainer-paediatricians and mid-level managers. Other courses in case management were conducted in Egypt, Iran, and Sudan for 3719 medical, paramedical, and community-based health staff using locally developed training materials and the ARI video film.

A high rate of access of the population to correct case management has been achieved in operational zones in Egypt (six governorates) and in Iran (three districts).

By 1993 all Member States that have an infant mortality rate greater than 40/1000 live births will have formulated an ARI programme plan, and supervisory and practical clinical training will have been provided to many more health workers. To give impetus to these activities, an intercountry meeting on ARI combined with a Programme Managers' Course will be organized in June 1991 in Tunisia. Clinical courses will be promoted and assisted at the two regional centres for ARI in Egypt and Tunisia, and at national ATUs.

#### Western Pacific

Of the total of 450 000 deaths from ARI in children under 5 in the Region, 440 000 (or 98%) are estimated to occur in the following nine countries with an infant mortality rate greater than 30/1000 live births: Cambodia, China, Kiribati, Lao People's Democratic Republic, Papua New Guinea, Philippines, Solomon Islands, Vanuatu, and Viet Nam. These are the priority countries for the implementation of ARI programmes. As of March 1991, ARI programmes were operational in 15 countries, including all those with an infant mortality rate greater than 30/1000 live births except Cambodia. So far, more than 130 000 health staff at the primary health care level have been trained in ARI case management. The proportion of the child population in developing countries in the Region with access to ARI standard case management has increased from 1% in 1989 to 10% in 1990.

Examples of some achievements are:

- In the Western Division of Fiji, the use of antibiotics for coughs and colds was reduced from 59.9% when the control programme began to 8.6% after one year; the use of antibiotics for all ARI cases was reduced from 48.8% to 20.5%.
- In Sichuan Province, China, the use of antibiotics for coughs and colds was reduced from 62% in 1989 to 28.7% in 1990, and the use of antibiotics for all ARI cases from 75.9% to 35.3%. Mortality from ARI and total mortality in children under 5 were also reduced during the same period.
- In Vanuatu, the numbers of ARI cases classified according to severity are now routinely collected every month from all hospitals and health centres and entered into a computer, so that the performance of case management at each health facility can be easily monitored at the national level.

To strengthen the case management of severe ARI cases, the training of physicians at referral hospitals was initiated in five countries: China, Lao People's Democratic Republic, Papua New Guinea, Philippines, and Viet Nam. In the Philippines, since June 1989, 15-20 physicians are being trained each month at the national ATU in San Lazaro Hospital, Manila. So far, approximately 300 physicians from hospitals in different parts of the country have been trained, and the practices in these hospitals have been monitored.

### 3. PROGRAMME TARGETS FOR 1995 AND 2000

The operational targets for the case management activities of the Programme are primarily concerned with access to and use of standard ARI case management as a whole, or with important and measurable activities related to standard case management (e.g., training). Since there are relatively few data available at this stage to help in establishing these targets, they have been based on a number of estimates. The Programme is currently developing instruments that will enable relevant data to be collected from developing countries with established ARI programmes so that progress can be evaluated more accurately and more precise targets developed.

In 1989 and 1990 the TAG endorsed the targets proposed by the Programme for 1995 and noted the efforts being made to develop instruments to measure progress towards their achievement. A further projection of these targets for the year 2000 was examined by the TAG at its current meeting. The list of targets included a reduction of one third (compared with 1990 levels) in ARI mortality in young children in developing countries by the year 2000; this target had been recommended to and adopted by the Bellagio IV Conference organized by the Task Force for Child Survival in Bangkok, and endorsed in the Declaration of the World Summit for Children in New York in 1990.

A major target is for operational control programmes to be established by 1995 in all countries with an infant mortality rate greater than 40 per 1000 live births per year; at present, 88 countries fall in this category. At the end of 1990, 34 (39%) of these countries had operational ARI programmes. Of the countries that have not yet established programmes, two thirds are located in the African Region. Another target is to train 5% of facility-based health workers in standard ARI case management by 1995 and 15% by 2000. If the training target is achieved, and improvements occur in the supply and distribution of antibiotics, it is expected that, by 1995, 50% of the population and, by 2000, 75% of the population will have access to a trained health worker and a source of free or affordable antibiotics. If national programmes develop as planned, a ("use") target of 40% (in 1995) and 60% (in 2000) of cases of childhood pneumonia treated with recommended antibiotics could also be reached.

### 4. 1991 WORKPLAN OF THE SERVICES COMPONENT

The TAG reviewed the services component's workplan for 1991.

The Programme plans to finalize six technical review papers and assess the effectiveness, feasibility, and cost of preventive strategies. A new video film on assessment of the child with cough or difficult breathing will be produced, for use in conjunction with the supervisory skills module on management of the young child with an acute respiratory infection. Efforts to prepare a package of lectures, videotapes, and guidelines for ATUs will continue. Materials for training community-based health practitioners will be developed and field-tested. The audiovisual materials for health education produced in the early years of the Programme will be updated to make them consistent with current technical guidelines. The Programme will continue to support the

field and laboratory testing of appropriate technologies (timers to count the respiratory rate, oxygen concentrators and accessories to administer oxygen, foot-pumps to administer nebulized bronchodilators), and recommendations will be issued jointly with UNICEF concerning the equipment that conforms to WHO specifications.

Assistance will be given to at least 24 countries in preparing or reviewing their programme plan, and guidelines will be developed for the short-term planning of control activities at the country level. Support to countries for programme managers', supervisory skills (in case management), and clinical training will be intensified through the provision of teaching materials developed by WHO. The Programme plans to pursue its efforts to develop instruments to measure the access, use, and impact indicators in national programmes. The questionnaires for the health facility survey will be field-tested. Information will be gathered from national programmes using a country profile questionnaire, and a global data base will be established. The manual for surveillance of bacterial drug resistance will be field-tested in three countries. The Programme will continue to provide support for the publication of ARI News.

#### 5. RESEARCH MANAGEMENT PLAN

The TAG reviewed the research management plan which has been in operation since its approval by the TAG in 1989. The plan has been successful in focusing research on priority topics and responding efficiently to the demands of the services component. Despite the limited staff and funds, priority questions are being answered within a short timeframe.

The research management plan is summarized in a document<sup>2</sup> and in the report of the fifth meeting of the TAG<sup>3</sup>. The research priorities established by the TAG in 1989 and reviewed in 1990 focus activity on a limited number of questions. Documents describing the case management and behavioural research priorities have been drafted with the help of experts and circulated to scientists working in those areas. The Programme currently has three groups of experts who serve as (i) a radiology working group to provide standardized reading of chest X-rays for research studies; (ii) study advisers for the multicentre study on clinical signs and etiological agents of pneumonia, sepsis, and meningitis in young infants; and (iii) study advisers for a set of studies aimed at solving methodological problems in the development of the ARI household morbidity and treatment survey. Similar groups of experts are being formed to advise on the design, implementation, and analysis of trials of simplified or cheaper regimens of antibiotics and to draft a description of health systems research priorities and relevant protocols. Research is being commissioned on the topic of oxygen administration, for which a protocol has been developed by consultants contracted by the Programme.

#### 6. 1991 WORKPLAN OF THE RESEARCH COMPONENT

The TAG reviewed the workplan for 1991 of the research component.

The Programme will continue to support projects in the priority areas. The final versions of documents describing the priorities in case management, behavioural, and health systems research will be printed and disseminated. The multicentre study to provide needed information on the clinical signs and etiological agents of pneumonia, sepsis, and meningitis in infants under 3 months of age is being coordinated in five sites; initial results will be available in 1992. Studies will be completed on the pharmacokinetics of chloramphenicol in severely malnourished children and of chloramphenicol and cotrimoxazole in young infants. Protocols for comparing simplified or cheaper antibiotic regimens with the current standard regimens and for assessing the

<sup>2</sup> Document ARI/RES/89.1 Rev. 2 (1991).

<sup>3</sup> Document WHO/ARI/90.6.

clinical predictors of severe pneumonia in young children will be finalized and several study sites identified. Data on the overlap in the clinical presentation and treatment of malaria and pneumonia will be reviewed and further studies planned if necessary. Work will continue to find safe and efficient methods of administering oxygen at small hospitals.

In the area of behavioural research, the Programme will complete the field-testing of the focused ethnographic study protocol for assessing maternal recognition of pneumonia, home treatment, and care-seeking, and will make a revised instrument available to national programmes. The results of ethnographic research will be used to adapt communication materials and the household morbidity and treatment survey. In health systems research, studies relevant to the design of the household survey will be reviewed to guide the further development of the survey instrument. Studies are planned to evaluate the effectiveness of the WHO ARI case management materials in training health workers at first-level facilities and in the community, in the context of national programmes; to evaluate the efficacy of the case management strategy in the first two months of life; to calculate the costs of various elements of stage 1 of ARI programme implementation; and to explore several questions relating to the implementation of national surveillance of bacterial drug resistance. An international monitoring committee is being formed and technical support given for a trial of a conjugate H. influenzae type b vaccine in the Gambia.

## 7. FINANCIAL MATTERS

The TAG examined a revised programme budget for the financial period 1990-1991, the current financial status of the Programme, and a proposed programme budget for 1992-1993.

### 7.1 Revised programme budget for 1990-1991

The revised budget for 1990-1991 takes into consideration both actual obligations for 1990 and expected activities during 1991. The final revised estimates do not result in any change in the total budget as revised in January 1990, but allow for the transfer of funds from underspent lines to other lines where the need for funding is larger than was originally foreseen. Increases are planned at the global level for the development of training courses, surveillance of bacterial drug resistance, preparation of educational materials, and analysis of the feasibility and effectiveness of preventive strategies. Decreases are planned for the development of guidelines, field-testing of managerial materials, and research contracts and commissioned studies. No changes have been introduced in the total budget allocated to the regional offices, though minor transfers of funds have been made among activities.

The financial position as at 1 March shows an estimated shortfall of US\$ 1.8 million for the biennium.

### 7.2 Proposed programme budget for 1992-1993

The proposed programme budget for 1992-1993<sup>4</sup> totals US\$ 11.041 million. This amount represents an 18% increase over the revised 1990-1991 budget, which is mainly to compensate for inflation and to strengthen research activities. The budget proposes increases of 12% for health services, 44% for research, and 6% for Programme management and support. No increases in staffing are foreseen. The distribution of the budget is as follows: 64% for health services (mostly allocated to the regional offices); 25% for research (managed at headquarters); and 11% for Programme management and support.

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<sup>4</sup> Document ARI/91.1.

## 8. CONCLUSIONS AND RECOMMENDATIONS

The following are the conclusions and recommendations of the Technical Advisory Group based on its review of the status and planned activities of the Programme.

### 8.1 General

8.1.1 The TAG welcomes resolution EB87.R1 on the control of acute respiratory infections adopted by the WHO Executive Board in January 1991 and hopes that member countries will lend it their full support at the Forty-fourth World Health Assembly in May 1991. It recommends that careful consideration be given to discussing this resolution as a separate agenda item at the Regional Committee meetings in 1991 in view of the fact that ARI are one of the major causes of morbidity and mortality in young children in the world.

8.1.2 The TAG recommends that the Programme make an increased effort in advocacy to secure political, professional, and public endorsement for ARI activities. Specifically, it suggests that emphasis be given to the fact that ARI are responsible for more than 4 million deaths in young children annually.\* The Programme should also emphasize the successful results of the ARI intervention studies which have now been completed (see item 8.5.1.1).

8.1.3 The TAG notes with satisfaction that close collaboration has been maintained between the WHO ARI Programme and the United Nations Development Programme (UNDP) and UNICEF both in policy formulation at the global level and, more importantly, in support to programme implementation at regional and country levels. It encourages the Programme to forge close links with other international agencies (such as the United Nations Fund for Population Activities and the World Bank), bilateral agencies, and NGOs that provide support to health programmes.

8.1.4 The TAG lends its full support to the International Consultation on the Control of Acute Respiratory Infections which is to be held in Washington, D.C., in December 1991. The main aim of this important meeting should be to highlight the magnitude of global mortality from ARI and the feasibility and effectiveness of the case management strategy and certain preventive interventions, with the intention of bringing this information to the attention of national decision-makers and agencies for international and bilateral cooperation.

8.1.5 The TAG encourages the Programme to promote the concept of ARI control as a vehicle that will enable countries to strengthen primary health care, and to stimulate coordination between child survival programmes. It recommends that the Programme continue to avail itself of every opportunity to build on the experience of the global Diarrhoeal Disease Control Programme and to explore and develop effective ways of working in collaboration with other WHO programmes related to child survival and primary health care.

8.1.6 The TAG recognizes that a number of important constraints have been identified by countries in implementing the case management strategy. These are:

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\* The most recent WHO mortality statistics estimate that ARI accounted for approximately 3.5 million deaths (27% of all deaths) in children under 5 years of age in 1990, a further 1.1 million deaths (8.5%) being due to pneumonia, sepsis, and meningitis in the neonatal period.

- lack of experience and guidance in organizing effective training in case management based on "hands-on" learning,
- lack of resources for supervision,
- irregular provision of essential antibiotics,
- insufficient basic information for deciding on the content and methods of communication, and
- difficulties in communication and transportation between the community and health facilities.

## 8.2 Objectives

8.2.1 The reduction of childhood mortality is one of the first priorities of national health programmes. The TAG reaffirms, therefore, that reduction of mortality from pneumonia is the primary objective of the WHO ARI Programme. Additional objectives are: (i) prevention of acute lower respiratory infections (ALRI), (ii) reduction of the severity of and complications from acute upper respiratory infections (AURI), and (iii) reduction of the inappropriate use of antimicrobials and other drugs for the treatment of ARI in children.

8.2.2 The TAG notes that the mortality reduction target of the Programme is in line with the Declaration of the World Summit for Children held in New York in September 1990, which calls for a reduction of one third, compared with 1990 levels, in ARI mortality in young children by the year 2000.

## 8.3 Strategies

8.3.1 The TAG reaffirms its support for the case management strategy as the principal focus of Programme activity at this stage. Continued emphasis on case management is essential if ARI mortality is to be reduced by one-third by the year 2000.

8.3.2 The TAG considers that preventive interventions are important for reducing ARI morbidity and mortality and endorses the existing priorities for research in this area (see 8.5.5).

8.3.3 A number of important risk factors for ALRI have been identified, including malnutrition, inadequate breast-feeding practices, low birth weight, chilling in young infants, exposure to domestic and outdoor air pollution and tobacco smoke, and vitamin A deficiency. The TAG notes with satisfaction that the effectiveness, feasibility, and cost-effectiveness of interventions to modify these risk factors are being addressed in a review of preventive strategies undertaken by the Programme (see 8.5.5.2). It recommends that national ARI programmes support and strengthen relevant educational messages of nutrition and maternal and child health/family planning programmes. The WHO Division of Environmental Health and the Tobacco or Health Programme should be encouraged in their efforts to promote the reduction of environmental air pollution and cigarette smoking.

8.3.4 The TAG recognizes that immunization against measles and pertussis is an important means of preventing pneumonia, and notes that the Programme stresses the benefits of vaccination against these two diseases for the prevention of morbidity from ALRI.

## 8.4 Health services component

### 8.4.1 Technical policies

8.4.1.1 The TAG commends the progress made in developing technical guidelines and welcomes the increasing global support for and adoption of these guidelines. It notes with satisfaction that research is being actively pursued to strengthen them.

8.4.1.2 The TAG notes with satisfaction the progress made in the preparation of technical review papers and welcomes the plan to prepare a paper on thermal control. It recommends that the Programme should collaborate with the WHO Maternal and Child Health and Family Planning Programme in preparing this review and that it should include an appraisal of traditional practices for keeping young infants warm. It encourages the Programme to prepare further technical papers as results become available from research studies and reviews of preventive strategies. These should be distributed widely to government health staff and also to practitioners and other health workers in the private sector.

#### 8.4.2 Programme implementation

8.4.2.1 The TAG strongly urges all countries with an infant mortality rate greater than 40/1000 to implement ARI programmes by 1995. It notes with satisfaction the progress made towards this target, namely, that 34 of these countries (which currently total 88)<sup>5</sup> now have operational ARI programmes and a further seven have started to plan their programme.

8.4.2.2 The TAG recognizes that the case management strategy is appropriate also for implementation in countries whose national infant mortality rate is below 40/1000 live births but which have areas with higher mortality. It recommends that such countries, in all regions, formulate plans of operation for the control of mortality from ARI and welcomes the initiatives already undertaken in a number of countries. WHO has a role to play in providing technical support for the planning process.

8.4.2.3 The TAG notes with satisfaction the progress made in establishing national ARI programmes in the African Region, where the problem is particularly severe, and welcomes the appointment in 1990 of a full-time WHO regional adviser for ARI. However, it is aware that a considerable challenge still faces the Region and recommends that the Programme reintensify its efforts and consider ways of accelerating activities. It expresses the hope that agencies for international collaboration will increase their financial support for the control of ARI in Africa.

8.4.2.4 The TAG strongly supports the emphasis given by the Programme to sound national planning, which involves the appointment and training of a programme manager; the formation of a coordinating committee; the formulation of objectives, essential ARI policies, and targets; and a phased expansion of the programme. The Programme should emphasize the importance of giving adequate consideration to linkages between the national and district level at all stages in the planning process.

8.4.2.5 The TAG states its strong support for the Programme's policy of staging the development and expansion of national ARI programmes. It notes that in some situations it may be most appropriate to fully develop the programme in a few districts or provinces before expanding into other areas. Local factors will dictate the most appropriate sequence of programme phasing in any given situation.

8.4.2.6 The TAG recommends that more importance be placed on short-term local planning to respond to the situation at district or provincial level and address issues such as local commitment, competing health care needs, and the availability of resources in terms of manpower, budget, facilities, and equipment. It recommends that the Programme develop guidelines to assist national programmes in such planning.

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<sup>5</sup> United Nations World Population Chart 1988. Population Division, United Nations, New York.

#### 8.4.3 Training

8.4.3.1 The TAG welcomes the final version of the training module on ARI case management for supervisors, and the accompanying new video and clinical instructor's guide, and notes with satisfaction the progress being made in the development of other training materials for ARI training units (ATUs) and district-level training courses.

8.4.3.2 The TAG recommends that increased emphasis be placed on supervisory and monitoring activities in national programmes, and that the Programme give priority to the development of a Supervisory Skills Course.

8.4.3.3 The TAG recognizes the importance of the training materials being developed for community-based health workers; supports the modular structure proposed, which will allow local adaptation; and recommends that national programmes make use of these prototype materials when they are ready to increase the access of the population to correct case management of pneumonia in children. It notes again the particular importance of monitoring and supervising control activities at the community level.

8.4.3.4 The TAG endorses the Programme's training policy which stresses the importance of acquiring the necessary case management skills through actual practice in assessing and treating children with signs of pneumonia. It recommends that national programmes should put more emphasis on the quality of training than on the number of health workers to be trained when they start to implement activities.

8.4.3.5 Recognizing the importance of monitoring the results of early training activities, the TAG welcomes the Programme's support to this activity in some countries and encourages it to support similar initiatives in other countries.

8.4.3.6 The TAG encourages the Programme to start preparing materials for undergraduate and postgraduate training activities at medical and nursing schools and paramedical training institutions.

#### 8.4.4 Communication and information

8.4.4.1 The TAG notes with satisfaction the progress made in developing a focused ethnographic study protocol and stresses the need for the Programme to evaluate early experiences in its application before encouraging its widespread use. Recognizing its potential importance, in particular, for the development of appropriate communication messages, the TAG further suggests that the instrument be made as simple as possible to allow its widespread use.

8.4.4.2 The TAG recommends that the Programme increase its efforts to develop prototype face-to-face communication materials (to facilitate communication between health workers and caretakers); it recognizes that their subsequent adaptation to local cultural conditions is essential to ensure good case management.

8.4.4.3 The TAG considers that the mass media should be utilized for communication only when access to a trained provider of standard case management and to an affordable source of antibiotics for pneumonia has reached a high level among the population for which the communication messages are intended.

8.4.4.4 The TAG recommends that training in communicating with mothers and other caretakers be included in the materials for ATUs, district-level training courses, and community-based health workers.

8.4.4.5 The TAG recommends that national programmes start to explore methods (such as the dissemination of printed materials, workshops, and seminars) of spreading knowledge on the correct case management of pneumonia among private practitioners, including doctors, pharmacists, and other categories of health workers.

8.4.4.6 The TAG recognizes the role played by ARI News in spreading information on the Programme's activities, and supports the efforts aimed at expanding its circulation, particularly those directed towards increasing the number of languages in which it is issued. It recommends that its usefulness and appropriateness be evaluated, as will be done for the sister publication Dialogue on Diarrhoea.

#### 8.4.5 Logistics

8.4.5.1 The TAG supports the collaboration with the WHO Drug Action Programme in the preparation of a guide for assessing the use and cost of drugs, and urges the Programme to stimulate and improve the coordination of ARI and essential drug activities at the country level.

8.4.5.2 The TAG recognizes that irregular provision of first-line antibiotics for the case management of pneumonia is a major constraint to programme implementation and recommends that ways of improving drug purchasing and distribution systems be explored.

8.4.5.3 The TAG emphasizes the importance of ensuring easy access of the population to trained providers of first-line antibiotics for the treatment of pneumonia. For this purpose health care providers, including, as appropriate, nurses, paramedical staff, and community health practitioners, should be appropriately trained in the standard case management of pneumonia and regularly supervised.

8.4.5.4 The TAG notes the existing initiatives to prepare special paediatric preparations of first-line antibiotics for the treatment of pneumonia as a measure to increase affordability, reduce misuse, and facilitate the monitoring of drug use, and encourages the Programme to further examine this issue.

8.4.5.5 The TAG reaffirms its support for the appropriate technology projects (to develop respiratory rate timers, oxygen concentrators, and foot-pump nebulizers) that have been undertaken by the Programme in collaboration with UNICEF, and notes with satisfaction the progress made.

#### 8.4.6 Evaluation

8.4.6.1 The TAG welcomes the country profile questionnaire and encourages the Programme to use the profiles to build up a data base of selected relevant information that can be used to monitor and evaluate global progress in ARI control, to assist in measuring the achievement of country targets, and to update the plans of operation of national programmes.

8.4.6.2 The TAG recommends that the Programme develop guidelines for conducting a comprehensive programme review to help standardize and guide the periodic formal review of national ARI programmes.

8.4.6.3 The TAG supports the plan to develop a guide for assessing the use and cost of drugs and recognizes its usefulness for logistic planning and for evaluating progress towards the objective of rationalizing the use of drugs in the treatment of ARI. The Programme should continue to document any evidence of a reduction in the misuse of antibiotics and cough and cold medicines in ARI control programmes.

8.4.6.4 The TAG notes the progress made in the development of household and health facility survey instruments. While it is conscious of the technical difficulties involved, it emphasizes that these instruments are needed by national programmes to enable them to evaluate ARI activities and urges the Programme to make them available as soon as possible.

8.4.6.5 The TAG reaffirms that resistance to first-line antibiotics among bacteria causing pneumonia in children should be monitored in national programmes in order to guide antibiotic policy. It welcomes the plan to field-test the draft manual for the surveillance of bacterial drug resistance.

## 8.5 Research component

### 8.5.1 Introduction

8.5.1.1 The TAG notes with satisfaction that the 10 ARI case management intervention studies, which have taken place in a wide range of developing country situations, using simple, inexpensive methods, have demonstrated a reduction in ARI mortality of 30% to 60%. The TAG urges that the new evidence of the importance of pneumonia as a cause of child mortality, and of the impact of the Programme on mortality, be summarized and publicized.

8.5.1.2 The TAG welcomes the documents describing the case management<sup>6</sup> and behavioural research priorities<sup>7</sup>.

8.5.1.3 The TAG considers that the research supported by the Programme should continue to address the important questions that remain with regard to delivery of the case management strategy at community and health facility levels. Such research falls in the areas of case management, behavioural, and health systems research. The TAG feels that, as a priority, the Programme should also engage in a review of potential preventive interventions (see 8.5.5.1).

### 8.5.2 Case management research

The term "case management research" is used here to cover a group of research issues that are concerned with the diagnosis and treatment of patients with pneumonia. For some of them there is currently little information available. The TAG emphasizes the importance of addressing these issues in the community as well as at first-level and referral facilities, through studies carried out at a number of different sites.

8.5.2.1 The TAG welcomes the initiation of the multicentre study on pneumonia, sepsis, and meningitis in the extended neonatal period, which it considers to be one of the highest priority areas for research. It emphasizes the importance of these studies to determine the microbial etiologies and assess the value of clinical symptoms and signs in predicting the presence of pneumonia, sepsis, or meningitis. The Programme should explore ways of adding study sites that allow the enrolment of sick young infants who are identified in the community.

8.5.2.2 The TAG recognizes that the Programme's guidelines for the treatment of pneumonia in the age group 2 months up to 5 years reflect the current state of knowledge in this area based on expert opinion and a limited number of clinical studies. In order to strengthen the basis for the current recommendations, high priority should be given to investigating, in patients presenting to health facilities, the relationship of clinical signs and symptoms to specific measures of severity of pneumonia such as the need for hospitalization, and the potential benefit that can be derived from care delivered at the small hospital.

8.5.2.3 The TAG encourages the Programme to study the performance of its training materials for community-level health workers (currently being developed), including the health workers' ability after training to detect and correctly classify children with pneumonia and severe pneumonia, and to measure the resulting antibiotic treatment and referral rates.

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<sup>6</sup> Document WHO/ARI/RES/90.1.

<sup>7</sup> Document WHO/ARI/RES/90.2.

8.5.2.4 The TAG welcomes the studies on clinical predictors and etiological agents of pneumonia in severely malnourished children in the Gambia. Since the pattern of malnutrition varies in different ecological settings, similar studies should be carried out in other areas. Attention should be paid to examining the extent to which feeding problems during an episode of ARI contribute to malnutrition.

8.5.2.5 The TAG requests the Programme to review the available data on the clinical signs of pneumonia at high altitudes and to organize further studies, if necessary.

8.5.2.6 The TAG awaits with interest the results of the meeting that will review data from studies in Malawi and the Gambia on the overlap in clinical presentation between pneumonia and malaria in children, and encourages further studies if necessary.

8.5.2.7 Given the importance of antibiotic treatment in the Programme's case management strategy, the TAG supports studies to (i) establish the safety and optimal dosage of cotrimoxazole and chloramphenicol in young infants and severely malnourished children; (ii) establish the clinical meaning of laboratory evidence of antibiotic resistance; (iii) simplify the laboratory procedures for national surveillance of antibiotic resistance; and (iv) explore the possibility of recommending a simpler and cheaper regimen of amoxicillin (e.g., with added probenecid to allow a smaller dose). While the Programme should keep itself informed of advances in the development of new drugs that might be useful for childhood pneumonia, it should not itself undertake the development or testing of new drugs.

8.5.2.8 The TAG recognizes the importance of research into the efficacy of cotrimoxazole as an antimalarial agent and awaits with interest the results of further studies supported by other agencies and the Special Programme for Research and Training in Tropical Diseases and the Malaria Control Programme.

8.5.2.9 The TAG urges the Programme to complete its studies related to the choice of oxygen delivery system, and the field use of oxygen concentrators, respiratory timers, and foot-pump nebulizers.

8.5.2.10 The TAG urges the Programme to introduce new immunological bacterial diagnostic methods in appropriate field studies, including assays for bacterial antigens, antibodies, and immune complexes.

8.5.2.11 The TAG recommends that the Programme investigate in due course whether there is any evidence that a reduction in chronic, long-term morbidity (such as chronic obstructive pulmonary disease, bronchiectasis, and asthma) is resulting from the efforts of ARI programmes.

### 8.5.3 Behavioural research (case management strategy)

8.5.3.1 The TAG commends the Programme for taking a leading role in applied behavioural research and welcomes the progress made in the focused ethnographic study of ARI. It urges the Programme to complete the field-testing of the instrument and to make it available as soon as possible to national programmes. Attention should be paid to the individual who (besides the mother) cares for the child, controls the resources, makes the decisions on care-seeking, implements the decisions, and evaluates the outcome at the family level.

8.5.3.2 The TAG urges the Programme to undertake multidisciplinary collaborative studies to examine the family's ability to recognize signs of severity in childhood illnesses, and to initiate studies on care-seeking and compliance with treatment.

8.5.3.3 The TAG emphasizes the need for studies on the behaviour of health providers and their interaction with families. Research is also required on effective communication between health workers and caretakers.

8.5.3.4 A rapid move into behavioural intervention studies is desirable, to test hypotheses on ways of improving the family's ability to recognize possible pneumonia, overcoming constraints to prompt care-seeking, or improving communication.

#### 8.5.4 Health systems research (case management strategy)

The TAG realizes that a number of important health systems research issues have become apparent following the implementation of national ARI programmes. These concern the feasibility and efficiency in practice of appropriate technologies, training of health workers, strategies to promote early recognition of pneumonia and prompt care-seeking, and methods of assessing programme performance. Health systems research must be carried out within a national programme that is being implemented in a realistic manner; it will therefore require close collaboration between the Programme's services and research staff on the one hand, and between Programme staff and those implementing ARI activities at the country level on the other. Health systems research also requires the development of appropriate evaluation instruments. These should include instruments that could become part of the normal system of recording.

8.5.4.1 The TAG recognizes the importance of studies to evaluate programme effectiveness and cost. Assessments of mortality and other health outcomes are essential but may be possible in only a few national programmes. Correct performance of ARI programmes in terms of their ability to deliver the recommended case management strategy is one indicator of effectiveness. Crucial elements of programme effectiveness studies are analysis of routine health information, monitoring of short- and long-term case-fatality rates for pneumonia and severe pneumonia at inpatient facilities, and periodic assessment of key indicators through surveys in the community and at health facilities.

8.5.4.2 Although no further programme efficacy studies are needed in children 2 months up to 5 years of age, the TAG points out the importance of demonstrating efficacy in infants under 2 months of age.

8.5.4.3 The TAG urges the Programme to undertake studies to explore the changes in expenditure on drugs and other costs incurred by the family and the health system, before and after the introduction of a national ARI programme.

8.5.4.4 The TAG awaits with interest the results of studies that will evaluate the impact of the training materials for first-level facilities on the practices (particularly the rate of referral) of various categories of health workers.

8.5.4.5 The TAG recommends that priority be given to the validation of evaluation methods, including the household morbidity and treatment survey, in view of the need for these both in national programmes and in programme effectiveness studies.

#### 8.5.5 Disease prevention research

8.5.5.1 The TAG endorses the Programme's efforts to carry out a comprehensive review of potential interventions to reduce morbidity and mortality from pneumonia including the epidemiological evidence of association and causality, potential impact, feasibility, and cost. The research priorities resulting from the review should be circulated to the members of the TAG and considered at the next meeting, after which the Programme should proceed with the development and testing of the most promising interventions. The TAG notes that implementation research on outdoor air pollution and cigarette smoking is being carried out by the Division of Environmental Health and the Tobacco or Health Programme. Studies of bacterial conjugate vaccines and vitamin A supplementation should proceed at the same time as they are being reviewed. Studies to explore feasible interventions to reduce indoor air pollution and estimate their impact on childhood pneumonia should follow a rapid review of the information on this measure.

8.5.5.2 The TAG requests the Programme to review the results of the current case-control studies of risk factors for pneumonia and to design studies aimed at identifying other, modifiable behavioural risk factors.

8.5.5.3 The TAG calls attention to the important role that WHO can play in providing technical and political leadership in evaluating the suitability of vaccines against ARI for use in developing countries. Two new bacterial vaccines are expected to become important tools for the prevention of ARI and might be incorporated as a combined multivalent vaccine in the context of the Expanded Programme on Immunization: they consist of the capsular polysaccharides of H. influenzae type b and of the most important serotypes of S. pneumoniae, which in each case are conjugated to a carrier protein. Such H. influenzae type b vaccines have already proved to be effective against systemic infection (mostly meningitis) in industrialized countries, and it is probable that a S. pneumoniae vaccine will be available in a few years. While there is ample commercial interest in developing and testing these vaccines in industrialized countries, their testing in developing countries is unlikely without the input of the ARI Programme. The TAG emphasizes that, while the Programme is unable to fully fund large-scale vaccine field trials with its available or anticipated resources, it has an important role to play in guiding and facilitating field trials in developing countries.

8.5.5.4 The Programme should ensure that adequate data are obtained on the antibody responses of infants in developing countries to the different H. influenzae type b conjugates that are now available. It should investigate the need for a reference laboratory for the determination of these antibody levels. With regard to H. influenzae type b conjugate vaccine, the TAG endorses the decision to support surveillance activities in the Gambia in preparation for a field trial. The Programme should play a technical role in developing the protocol and monitoring the proposed trial, with the assistance of an international monitoring committee.

8.5.5.5 The Programme should ensure that developing country sites are ready for field studies of the pneumococcal vaccine. The necessary preparations would include measuring antibody levels and monitoring outcome measures to be used (including mortality and, in appropriate subsamples, morbidity and etiology).

8.5.5.6 The TAG suggests that attention be paid to the possible role of maternal immunization to protect infants in their first months of life.

#### 8.5.6 Research management

8.5.6.1 The TAG endorses the revised research management plan.<sup>8</sup> It notes with satisfaction that the plan makes it possible to target research on priority questions and make efficient use of limited staff and funds.

8.5.6.2 The TAG recognizes the important role that the Secretariat plays in the development and management of research projects. Given the need to expand investigations on the prevention of pneumonia, and the important research agenda in case management, the TAG urges the recruitment of additional staff and emphasizes the need to increase expenditure on research.

8.5.6.3 The TAG recommends that most research at this stage should be commissioned, since this approach is the most efficient way of using staff and funds to answer the priority questions. The Secretariat should establish an order of precedence for the research questions to ensure that the most important studies are completed within the limits of staff, funding, and the availability of sites and investigators.

#### 8.6 Budgetary matters

8.6.1 The TAG approves the revised budget for 1990-1991. It notes that the Programme obligated approximately 47% of its total budget during 1990, and thus will require the full budget approved for the biennium. It notes that the modest reduction in the amount

allocated for research, since some activities in this area have developed more slowly than anticipated, is counterbalanced by more rapid development and a significantly increased research budget in the next biennium.

8.6.2 The TAG approves the proposed programme budget for the 1992-1993 biennium, which represents an 18% increase over that for 1990-1991. It notes that since 10% of this increase is for inflation the real growth is only 8%, and considers this to be the minimum required for the planned activities.

8.6.3 While it approves the 1992-1993 budget, the TAG feels that it may provide insufficient support if all the approved activities are to be carried out. It recommends that a revision of the budget be considered by the Programme in 1992, in consultation with the Chairman of the TAG. The review should be based on the TAG's guidance, particularly with respect to research priorities, and may require further increases for research.

8.6.4 The TAG recommends that the Programme pursue its efforts to secure the necessary financial support from the international community. The international consultation that is being organized by the Programme in collaboration with UNICEF and UNDP should increase world recognition of the importance of childhood pneumonia and thus stimulate additional financial contributions to the Programme.

#### 9. NEXT MEETINGS OF THE TECHNICAL ADVISORY GROUP

The TAG agreed to hold its next meetings on 9-13 March 1992 and 8-12 March 1993 at WHO headquarters in Geneva.

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