

JOINT UNICEF-WHO STATEMENT ON BASIC PRINCIPLES FOR CONTROL OF ACUTE RESPIRATORY INFECTIONS IN CHILDREN IN DEVELOPING COUNTRIES

The Twenty-fourth Session of the UNICEF-WHO Joint Committee on Health Policy, held in February 1983, recommended that WHO and UNICEF should jointly collaborate with governments in testing acute respiratory infection control strategies and activities, ensuring (as far as possible) that supplies of essential drugs exist at the primary health care level, and providing support for training. Following these recommendations and further discussions on future joint activities, a Joint UNICEF-WHO Statement on Basic Principles for Control of Acute Respiratory Infections in Children in Developing Countries was drafted. The UNICEF-WHO Intersecretariat Meeting in March 1984 welcomed and approved the initiative and suggested that the draft joint statement be circulated for comments within both agencies before being presented for endorsement by the joint committee. The revised draft, approved by the Joint Committee, is as follows:

Introduction

Acute respiratory infections (ARI), diarrheal diseases, and malnutrition are the principal causes of illness and death in children in developing countries. Until recently, however, ARI have received relatively little attention. Reduction of child mortality is a priority goal of both WHO and UNICEF, and a strategy for dealing with ARI is emerging as a critical program component for both agencies. Many developing countries are now recognizing the problem and have expressed concern about how to deal with it.

In the past few years there has been significant progress in our understanding of the ARI problem and its susceptibility to intervention in developing countries. In particular, the importance of bacteria as a cause of severe lower respiratory infections and death is widely accepted; effective supportive and antimicrobial treatment is available, and therefore many deaths can be averted; existing clinical experience has been consolidated into simple case-management plans that could be handled by trained community health workers; and the expected progress in the development of primary health care (PHC) will provide the infrastructure required to utilize these plans.

The Magnitude of the Problem

Acute respiratory infections constitute a complex and heterogeneous group of diseases caused by a great number of etiologic agents and affecting any site of the respiratory tract.

While in many places children suffering from severe acute respiratory infections do not have the benefit of essential antimicrobial treatment, in other places indiscriminate and inappropriate use of antibiotics is very common. A control program for acute respiratory infections will rationalize the indications for antimicrobials, help to preserve their effectiveness, and in many instances reduce the expenses.

Lung infection (pneumonia) is the most frequent cause of respiratory death among children under five years old. Bronchiolitis, acute laryngitis (croup), and epiglottitis also often have a fatal outcome.

Data on registered deaths from these causes show striking differences between developing and developed countries. Mortality from ARI in developing countries is 30 to 70 times higher than in developed countries. *It has been estimated that about 20% of infants born in developing countries fail to survive to their fifth birthday, and that one-fourth to one-third of child mortality is attributed to ARI as an underlying*

or contributing cause.

Accurate data on the incidence of ARI are limited, but community-based longitudinal studies indicate that it is very high everywhere. On the average, a child in an urban area has from five to eight attacks of ARI annually, with a mean duration of seven to nine days. Most of these are the less serious upper respiratory infections. In rural areas the incidence seems to be lower. The incidence of severe lower respiratory infections, which accounts for most of the mortality from ARI, is of particular importance in developing countries; low birth-weight and malnutrition are associated with a very high mortality risk.

The magnitude of the problem is also well-represented by health services' statistics. ARI are the leading reason for the use of health services; they account for 30 to 50% of pediatric outpatient visits and 10 to 30% of pediatric hospital admissions.

Etiologic Agents

Evidence is now accumulating that in developing countries bacterial pathogens play a far greater role as a primary or secondary cause of severe lower respiratory disease than in developed countries. In investigations conducted among hospitalized children with pneumonia who had not received previous antimicrobial treatment, around 60% of the lung aspirates yielded bacterial growth (in Brazil, Chile, Gambia, India, Nigeria, Papua New Guinea, and the Philippines). This does not diminish the fact that respiratory viruses are widely prevalent and are probably the etiologic agents in the first phase of most acute respiratory infections. The subsequent bacterial infections might be favored by impairment of immunity in malnourished children, poor environmental conditions, and lack of early health care or of any care at all.

The available evidence also indicates that *Streptococcus pneumoniae* and *Haemophilus influenzae* are the most prevalent bacterial agents of community-acquired pneumonia in children in developing countries. Efficient case manage-

ment of ARI within the primary health care context should include administration of appropriate antimicrobials as a component of the strategy to control mortality. In recent years, infections with bacterial strains exhibiting decreased susceptibility to antibiotics belonging to the penicillin group have been increasingly encountered. Most reports, however, relate to developed countries, and in many cases the drug resistance is relative. Respiratory infections caused by pneumococci or *H. influenzae* in developing countries can be considered therapeutically susceptible to adequate doses of injectable penicillin, oral ampicillin, or cotrimoxazole. Thus, the use of these antimicrobials is warranted in developing countries for community-level treatment of pneumonia in children. However, monitoring of the therapeutic efficacy and surveillance of microbial drug sensitivity is an essential part of strategies anywhere in view of the threat of increasing drug resistance by these two microorganisms. There is a need to control the use of antimicrobial drugs in order to avoid indiscriminate use and inadequate dosages leading to development of resistant strains.

Available Control Technologies

The control technologies that can be implemented now at the community and first referral health care levels in developing countries are preventive measures including immunization, case management, and health education.

Preventive Measures

Immunization against diphtheria, pertussis, measles, and childhood tuberculosis¹ is already part of the Expanded Program on Immunization. Its strengthening should have very high priority for any country which starts addressing the ARI problem, since these conditions contribute heavily to childhood morbidity and mortality.

Nonspecific preventive measures at the com-

¹In children, pulmonary tuberculosis usually starts as an acute infection and may progress later as a chronic one.

munity level to be promoted through health education include prenatal care aimed at increasing infant birth-weight, breast-feeding, proper nutrition, and protection against chilling, and at reduction of parental smoking and other indoor air pollution.

Case Management

The content of case management may present wide variations among countries according to local characteristics of the ARI syndromes involved, awareness and motivation of the population, traditions in pediatric practice, and resources. In any situation, correct case management includes differentiation of clinical conditions by degree of severity, supportive measures, antimicrobial therapy, and appropriate referral.

Identification of clinical conditions for management. A number of simple decision trees and flow charts based on selected, easily recognizable signs and symptoms of ARI have been developed to facilitate the process of diagnosis and timely decision-making. The critical decisions are whether or not to give antimicrobials and whether or not to refer the patient to a higher level of care.

The degree of clinical severity of a child *with cough* can be discriminated through the observation of a few cardinal signs, on which the management decision can be based. For example:

- Chest indrawing or inability to drink indicate severe form, which requires antimicrobial treatment plus referral to the district hospital.
- A respiratory rate over 50 per minute (in the absence of the two previous signs) indicates moderate form, which requires antimicrobial treatment but which can be treated at home.
- In the absence of the three previous signs the case can be considered mild, in which event only supportive measures and close observation are indicated.

In areas where stridor and wheezing are frequent, complimentary instructions are needed for their management. Mostly, upper respiratory infections are mild and no antimicrobial treatment is required.

The most difficult part of the program will be the development of a management system that can be used by semiliterate parents and community health workers. Yet it is the easy access to effective therapy which will be the major determinant for the reduction of mortality. This, in turn, means availability of appropriate antimicrobial treatment at the community level and a functioning referral system for more severe cases.

Detailed and clear instructions must be provided to the community health workers, through both manuals and training programs. Their capacity to discriminate ARI into different management categories is crucial to the success of the program.

Antimicrobial therapy. The problem in diagnosis is that of early identification of moderate and severe cases for which the use of appropriate antimicrobial drugs is a life-saving measure. The main issues concerning antimicrobial drugs which deserve consideration are: (1) the decision to use the antimicrobial drug at the community level; (2) the choice of drug; (3) the dosage; and (4) the duration of therapy.

The indications for the use of antimicrobial therapy in the clinical management of ARI may vary from country to country, depending on the following factors: (1) information on the prevailing bacterial pathogens; (2) the pattern of bacterial sensitivity to drugs; (3) policy regarding the use of antimicrobials and of intramuscular injection by the community health workers; (4) the acceptability of the form in which medication is given to the local people (e.g., injections, tablets, mixtures); (5) the cost of treatment; and (6) the structure of the health system.

Parenteral penicillin is generally the drug of choice for the initial treatment because of its high effectiveness and low cost. The selection of the best initial drug treatment is more difficult when the community health worker is unable or is not allowed to give injections. In such a case oral ampicillin (or amoxicillin) or cotrimoxazole can be considered as a possible first choice.

Provisions should be made for at least a second-line standard antimicrobial drug to be used at the first referral level. The important thing is

that the country should identify the standard clinical management strategy appropriate for the different levels of its health care, including the choice of drug and treatment schedule, and should ensure that the supplies are available and that training and supervision are standardized accordingly.

The drug cost of treating a child with ARI with injectable penicillin, oral ampicillin, or cotrimoxazole is very low.² It has been estimated that in the developing countries, in any year, 5 to 10% of the children less than five years old will require such treatment.

Supportive treatment at that PHC level. Supportive treatment has an important role in the management of ARI. Most sick children can be managed well at home, provided that the community health workers and families involved are able to give them appropriate supportive treatment.

Children with ARI may suffer anorexia, and breast-feeding infants may have difficulties in sucking due to blocked airways and troubled breathing. In many regions hydration maintenance and feeding during and following recovery from the illness is inadequate. If the child suffers from repeated attacks of ARI, severe malnutrition may ensue and increase the risk of a fatal outcome. During ARI, breast-feeding must be continued and the quantity of liquids must be increased.

Referral support. There are some cases of severe ARI which must be referred immediately because they cannot be adequately managed at the primary health care level. Others require referral because they fail to respond to first-line treatment. Such children should be referred within hours rather than days. Referral facilities should have available second-line antibiotics and, whenever possible, equipment for oxygen therapy.

The provision of appropriate support will in-

crease the effectiveness of the primary health care worker and his acceptability in the community, particularly if the linkages between the worker and the referral facility are good.

Health Education

The effectiveness of case management depends on getting the community informed and involved through health education which aims at: (1) increasing the capability of families to differentiate moderate and serious respiratory illness from mild disease and to decide when to seek help; (2) educating the community regarding simple supportive therapy; (3) promoting timely immunization against measles, pertussis, diphtheria, and childhood tuberculosis; (4) promoting breast-feeding; and (5) reducing parental smoking and other domestic air pollution to prevent ARI.

These education efforts must be based on an understanding of local health behavior, of what the existing medical care can offer, and of how to make the best use of available services.

Phased Implementation of the ARI Program

The ARI control program, based on health education and well-defined case management, should be introduced in a phased manner and should be supported by health systems research in order to maximize the effectiveness of the approach and to closely monitor its impact on ARI-related mortality. In view of the complexity of the problem, epidemiologic, etiologic, and clinical research have to be pursued so as to further strengthen the country programs. This does not mean that this research is necessary in each country, or that countries should wait for results of research before implementing improved case management of ARI in their primary health care network.

It is proposed, however, that health systems research on ARI be given high priority in a phased implementation of the ARI program. Among the many strategies which could be tested, those dealing with the ability of families and commu-

²The drug cost (1984 UNICEF List) of treating a child for five days is: procaine penicillin (50,000 U/kg once a day), US\$0.20; ampicillin (25 mg/kg every six hours), US\$0.40; and cotrimoxazole (4 mg/kg every 12 hours), US\$0.08.

nity health workers to recognize mild and severe forms of ARI, application of the standard plan for case management by community health workers, and the referral system deserve highest attention.

Further expansion of the program will depend on strengthening the primary health care network as well as the ability of health workers at all levels to manage ARI and to educate mothers about these infections.

Types of Support by UNICEF-WHO

Support provided for this effort by UNICEF-WHO includes the following: (1) advocacy of the needs of the ARI program to muster health care resources and professional commitment; (2) health system support; (3) standardization of management and agreement on antimicrobial drugs to be used in accordance with the Action Program on Essential Drugs; (4) preparation and production of learning materials; (5) training of health workers at all levels; (6) provision of equipment and maintenance of regular supplies and drugs; (7) development of communications and health education programs; (8) program evaluation; and (9) dissemination of research results and other technical developments.

Conclusion

The available information seems to indicate that substantial differences in epidemiologic pat-

terns of acute respiratory infections in children exist between developed and developing countries. Bacterial infections are more common in developing countries; and this may, at least in part, explain the high mortality reported there. Certainly more research is needed, particularly research relating to the clinical and microbiological description of ARI, monitoring of bacterial pathogens and their sensitivity to antimicrobials, morbidity and mortality, and factors determining the incidence and severity of the diseases. While this research is of great value, the current knowledge of respiratory infections in developing countries should be utilized in formulating and testing guidelines for clinical management of ARI at both the primary health care and first referral levels. The national application of what is already known is likely to result in a measurable reduction in ARI-related mortality.

Both UNICEF and WHO should intensify their joint support to countries in the areas outlined above. The two agencies will collaborate closely to integrate an ARI component into the primary health care program along the above lines, particularly in countries where special efforts are being made to reduce child mortality and promote primary health care development.

Source: UNICEF-WHO Joint Committee on Health Policy, Acute Respiratory Infections: Progress Report on WHO Activities, 1983-1984, and Joint UNICEF-WHO Statement on Basic Principles for Control of Acute Respiratory Infections in Children in Developing Countries, Document JC25/UNICEF-WHO/85.6(a) Rev. 1, Geneva, 29 January 1985.

PAHO'S MATERNAL AND CHILD HEALTH PROGRAM

Introduction

Children, adolescents, and women of child-bearing age make up about 65% of the population of most countries of the Americas. They are also the groups most vulnerable to health problems and most in need of care. For these

reasons, promoting their health has been given top priority by PAHO and its Member Countries, and many major objectives set forth by PAHO (among them increasing life expectancy, reducing infant mortality, reducing deaths of children aged 1-4 years, immunizing pregnant women against tetanus, and immunizing all chil-