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Phe dev countries*

IDENTIFICATION OF ACUTE RESPIRATORY INFECTIONS CONTROL TECHNOLOGIES
THAT CAN BE APPLIED AT THE PRIMARY HEALTH CARE LEVEL OF DEVELOPING COUNTRIES:
METHODS OF IMPLEMENTATION, MONITORING AND EVALUATION*

by

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1. What is available now?

Immunization, improved case management and health education, are three acute respiratory infections (ARI) control technologies which offer immediate potential benefits at the primary health care level of developing countries. Furthermore, the technologies could be integrated into existing primary health care systems with a likelihood that they could lead to substantial changes in mortality from acute lower respiratory infection.

In most developing countries where ARI mortality is high, the problem is greatest in early childhood, immunization programmes are inadequately implemented, malnutrition is high and poverty and environmental deprivation are important contributors to the problem. It is anticipated that in such circumstances strengthening of the Expanded Programme on Immunization (EPI) for pertussis, measles and diphtheria, strengthening of case management by primary care workers of cases of ARI and strengthening the education of mothers in recognition of serious ARI, will alter mortality rates in young children.

1.1 Immunization

Because pertussis, measles and diphtheria immunization are already part of the EPI, they will be given no further consideration in this discussion.

Two vaccines which must be considered in the future, but which cannot at this stage be advocated as primary care interventions are pneumococcus and influenza. In the case of pneumococcus, the vaccine is effective in adults, but efficacy in young children needs further evaluation, and its expense makes it as yet unfeasible for use in developing countries. In the case of influenza vaccine, antigenic shift and its short-term efficacy put it generally beyond the resources of developing countries.

* Paper prepared for the Technical Advisory Group on Acute Respiratory Infections, Geneva, 7-11 March 1983.

1.2 Case management

There is a consensus that viruses are the principle initiators of acute respiratory infections, but there is also growing evidence from developing countries that bacteria are particularly important contributors to lower respiratory infection. They probably often super-infect the virus-damaged respiratory tract or perhaps sometimes cause clinical infection on their own. It is difficult, even for experienced clinicians, confidently to distinguish those patients whose symptoms are due exclusively to virus infection, from those whose respiratory tracts are already invaded or are at serious risk of invasion by bacteria.

1.2.1 Antibiotic therapy

The rational introduction of antibiotics in the management of acute respiratory infections, is an important life-saving measure in developing countries which has often been inadequately or irrationally applied. In particular, the proper education of primary health care workers in the use of antibiotic drugs, or in the appropriate referral of patients for antibiotic therapy, is an issue which requires urgent and serious attention in the light of available information about bacterial pathogens and their sensitivity. Studies in India suggest that this single intervention could have massive repercussions in terms of lives saved, especially in young children. Appropriate use of antibiotics is likely to be life-saving in patients with severe lower respiratory infection. Serious morbidity and possible life-threatening complications can be prevented by appropriate use of antibiotics in sinusitis, exudative tonsillitis, exudative pharyngitis and acute otitis media.

It is not yet clear, however, how antibiotic therapy is best integrated into primary health care. In some countries primary health care workers have access to a limited range of antibiotics whereas in others they may only refer patients for therapy. Unless careful guidelines are issued to primary health care workers and extremely good supervision is instituted, the problem of indiscriminate use of antibiotics includes not only inappropriate therapy but the possibility of the rapid development of resistance of respiratory pathogens. Thus, wherever an ARI control programme is instituted, it is important that its effectiveness is evaluated and that the drug susceptibility of common bacterial pathogens is monitored.

1.2.2 Oxygen therapy

In the developed countries, serious acute respiratory infections are frequently managed by the use of oxygen. There is good evidence that oxygen is a life-saving measure in many instances. A properly co-ordinated ARI control programme would include the availability of oxygen for management of severe respiratory infections at secondary or tertiary care centres, and a programme of instruction to ensure the health workers could apply oxygen appropriately to those cases which required it.

1.2.3 Other complications

The programme should also include adequate instruction to workers at these centres in the use of digitalis for heart failure of patients with ARI, and simple guidelines for the management of other complications, including severe broncho-spasm and airway clearance.

1.2.4 Malnutrition

Malnutrition is a serious risk factor for acute respiratory infection, and case fatality rates are considerably higher in mal-nourished persons suffering ARI. Correction of malnutrition in patients presenting with ARI becomes an important intervention, as does

identification of malnourished children before they develop ARI. The primary health care worker is a critical agent in this endeavour.

1.2.5 Hydration

A fifth area which deserved attention in clinical management, but which has been inadequately evaluated in developing countries, is the question of hydration. The possibility that inadequate hydration contributes to mortality of young children from ARI in some developing country situations needs to be studied, and if it proves to be a significant factor, appropriate therapeutic regimens need to be instituted.

1.2.6 Humidification

Another factor believed by many to be important but also inadequately evaluated is the role of humidification of inspired air. While there is no doubt of the role that this can play in the management of croup of viral origin, it needs a better evaluation in general clinical management.

1.3 Health education

In the developed countries, young children of urban areas experience eight to ten episodes of acute respiratory infection each year. Most of these episodes do not reach the health services and mothers are generally familiar with the symptoms and signs which demand sophisticated medical attention. The proper education of mothers in the identification of respiratory distress and in the administration of simple symptomatic measures for children who do not require antibiotic therapy, is an important component of an ARI control programme, and the primary health care worker has an essential role to play in this.

2. Evidence for efficacy of the above components

The components of the programme described above are largely unquestioned in the developed countries. They tend to be implemented in a patchy fashion, especially in the cities and centres of western medicine in the developing countries. An effort to evaluate the impact of such measures in a rural community has been undertaken in India with dramatic consequences for infant mortality rates. It seems highly likely that some or all of the elements mentioned above will have an equivalent impact when introduced in a coordinated fashion through primary health care services in other rural areas. At the same time as such programmes are implemented, however, it is clear that further evidence of their efficacy should be collected.

Operational research protocols have been developed by WHO for such a purpose and it is desirable that at the same time as national programmes of ARI control are being mounted, efforts should be made to evaluate their impact and to collect data that will allow the programmes to be strengthened. In addition to operational research to evaluate the impact of a primary health care programme, there is a need for a number of other types of research to be undertaken and these have been discussed in other WHO documents.

3. Programme components

From what has been said above, it is clear that an ARI programme must rest fundamentally on strengthening the ability of primary health care workers to manage acute respiratory infections and to educate local communities about these infections. In parallel with this, the EPI will need to be strengthened and the clinical capacity of referral services enhanced. In essence the task is educative, administrative and logistic.

3.1 Simple training programmes are needed to strengthen the primary health care worker and to increase his confidence in identification of sick children, prescribing for those who need antibiotics, referring on those who require more sophisticated management and reassuring mothers of those who need no intervention. Education of the community as a whole should not be left exclusively to the primary health care worker and some efforts should be made to educate mothers through whatever mass media are available and through general health education services.

3.2 The administrative problem is one which is common to the organization of primary health care services everywhere, namely ensuring that adequate supervision of primary health care workers is available and that encouragement is provided.

3.3 The logistic problem is one of ensuring adequacy of supplies, and of maintaining lines of referral for complicated patients.

4. Implementation

4.1 What can we learn from the Diarrhoeal Diseases Control Programme?

The creation of a major global programme initiative with the production of training manuals, programme managers, research programmes, scientific meetings, country and local seminars has undoubtedly contributed to the success of this programme which depends ultimately on the same elements as will determine the success of an ARI initiative.

The Diarrhoeal Diseases Control Programme has the benefit of a novel basic technology, i.e. oral rehydration. The centrepiece of clinical intervention in the case of ARI is antibiotic therapy which suffers the disadvantage that it is not new. It is, however, highly efficacious and widely abused.

Some will argue against a repetition of the Diarrhoeal Diseases Control Programme on the basis that it requires a significant global and to some extent vertical infrastructure which will inevitably compete both for scarce resources and scarce personnel in developing countries with the Diarrhoeal Diseases Control Programme.

An alternative option would be to expand the Diarrhoeal Diseases Control Programme to incorporate ARI. This would have the inconvenience of decreasing the identity of both programmes at a moment in which their efficacy may depend on the clarity of their message, and probably it will be preferable that the ARI control programme preserves its identity. In the long range, however, it seems inevitable that, to achieve its effect on the primary health worker, both programmes must follow similar implementation paths, use the same strategies and recognize common areas of action.

4.2 Implementation at the global level

Administratively, the ARI Programme needs to move closely with the Diarrhoeal Diseases Control Programme and there would seem to be strong reasons to ensure that this happens at the WHO Headquarters level as well as at regional and national levels. The identity of the ARI initiative need not necessarily suffer from such a marriage. Indeed, separate funds for the programme should be developed for ARI, but wherever possible, intersections between the two programmes should be identified and common training manuals, research projects, etc., should be developed.

4.3 Implementation at national level

In addition to strengthening the EPI, the ARI Programme will necessarily require the collaboration of those responsible for the administration of primary health care and

maternal and child health care. For a national programme to succeed, the problem of ARI must first be recognized at the administrative level and the specific issues relevant to the national problem must be identified.

Exactly the same procedures as have preceded the development of national diarrhoeal diseases programmes are needed for effective ARI programmes. ARI mortality rates need to be described, an inventory of the national problem must be made, objectives and targets must be set, strategies defined and activities and scheduling must be undertaken in order to ensure that the primary health care worker has both the resources and knowledge to deal with the problem in the field. In order to sensitize national administrators to the issues surrounding effective implementation of ARI control, training manuals are needed, national seminars may need to be held and responsibility for implementing ARI control should be undertaken by a defined group within the Health Ministry.

4.4 Phased introduction of national programmes

A national ARI programme must obviously focus on the specific problem using available resources and personnel. Initially, a pilot area should be chosen to implement the control programme and wherever possible this should include a monitoring and evaluation component which will enable strengthening of policy and assessment of impact on the initial programme. The programme in this pilot area would thus include not only the elements described above, but also an operational research element such as those described briefly below, but further elaborated in other WHO documents.

4.5 Implementation at the primary health care level

Primary health care workers must be trained using whatever simplified treatment schedules have been agreed upon. There must also be assurance of adequacy of supervision of primary health care workers, and of the referral chain and of their supply.

It is important to recognize that wherever primary health care workers exist, they are already involved in management of ARI in some way. Effective training, therefore, requires an initial analysis of their present approach to the problem and a review of ways in which this approach can be strengthened.

Similarly, ARI is already being dealt with in some way or another by mothers and other family members. An understanding of existing practices is fundamental to an effective health education programme.

5. Monitoring and evaluation

A protocol for the evaluation of an ARI control programme has been drawn up by a WHO working group. The protocol is intended for use in populations of approximately 5000 children, into which an ARI control programme is introduced. The population that is chosen for study should, as far as possible be typical or representative of the national population, and strengthening of primary care services in this population should obviously be typical of that which is being attempted on a larger scale.

The intent of the operational research protocol is to collect baseline information on mortality during the year leading up to the primary care strengthening programme, which can serve as an index of progress in the effectiveness of the ARI Control Programme. This kind of evaluation is a relatively sophisticated activity which requires the commitment of resources and personnel to ensure its effectiveness. It may not be feasible in all countries which embark on ARI control.

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