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REPORT

ADULT LUNG HEALTH INITIATIVE

Basis for the Development of Algorithms for Assessment, Classification and Treatment of Respiratory Illness in School-age Children, Youths and Adults in Developing Countries

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Edited by

Dr Robert Scherpbier
Ms Christy Hanson
Dr Mario Raviglione
Communicable Diseases
World Health Organization

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ADULT LUNG HEALTH INITIATIVE STRATEGY

Ms Christy Hanson
Dr Robert Scherpbier
Dr Mario Raviglione

ADULT LUNG HEALTH INITIATIVE STRATEGY

Executive Summary

The "Adult Lung Health Initiative" (ALHI) aims to provide comprehensive tools to primary health care workers for the management of tuberculosis and other respiratory diseases in youth (over 5 years) and adults. The ALHI is the result of careful consideration of the demands put on peripheral health workers. These individuals often receive only basic medical training and are required to appropriately diagnose and treat, or refer, any illness occurring in the community. Studies have shown that among adults, up to 30% of the patients that visit these health workers have respiratory symptoms. Only 2-3% of these will have TB. It is therefore evident that at the primary health care level, the health worker that we rely on to identify, diagnose and treat TB patients can only succeed in this task if he/she is able to effectively screen out and treat other respiratory diseases. To complement and enhance the accomplishments being made in TB control, the new Communicable Disease Programme (CDS), in partnership with the Non-Communicable Disease Programme (NCD) and other WHO programmes, is designing a package of care to assist primary health care workers at the most peripheral levels in diagnosing and treating priority respiratory diseases, including tuberculosis.

The Setting: Primary Health Care Network

In developing countries, access to and utilization of health services are determined by a complex interaction of factors, such as distance to the health facility, level of perceived sickness, age and educational background of the patient, and the quality of services provided. Most patients seek care from a local health post staffed by a general health worker who may have as little as two years of clinical training. Frequently, the peripheral health clinics/posts have no laboratories or other diagnostic tools on site and, if they do, they are only able to perform the most basic blood and urinalysis tests. As the point of entry into the primary health care network, the demands on the peripheral health workers are high. This first level worker will see patients with all types and severity of illness and must diagnose, treat or refer each one. With limited training and available technology, the peripheral health worker relies on the syndromic approach to manage illness. Where no standards or guidelines exist to support the health worker in this role, quality of care is reduced and utilization of services is decreased.

Where operating effectively, the primary health care (PHC) approach identifies and addresses the main health problems in the community, of which respiratory diseases constitute a large fraction. Communicable respiratory diseases (tuberculosis, acute respiratory infections in children and adults, pertussis, diphtheria, measles) and non-communicable respiratory diseases (asthma, chronic obstructive pulmonary disease, lung cancer) represented in 1990 about one-fifth of the global burden of disease measured in disability-adjusted life years (DALYs). Opportunistic infections and other pulmonary complications further increase the respiratory disease burden in high HIV prevalence settings. In the statistics of many health facilities in developing countries

surveyed in 1997-1998, respiratory symptoms are the first or second cause of visits to outpatient services. The most frequent respiratory patients are those with acute illness (60 to 80%), in which the respiratory signs disappear after 1 or 2 weeks of appropriate treatment.

While tuberculosis constitutes a sizable disease burden in many countries, it represents only 2-3% of the total morbidity caused by all respiratory illnesses. Effective TB control programmes rely on the primary health care system to appropriately manage the other 97-98% of respiratory cases, thereby weeding out the non-TB cases and efficiently referring TB cases for treatment by DOTS.

Preliminary review and evidence illustrates that in middle- and low-income countries primary health care facilities may provide inadequate or inefficient care for respiratory diseases. With the exception of case management of tuberculosis, many health systems have no standard strategy for dealing with the large number of respiratory diseases in youth and adults. Shortages of resources at PHC level further complicates the problem. The absence of diagnostic algorithms may result in over-diagnosis of sputum smear-negative tuberculosis, particularly in high HIV prevalence settings and in countries relying mostly on chest radiography for diagnosis (thus wasting resources). The consequences of the absence of respiratory treatment guidelines may be excessive drug prescriptions (antibiotics), use of ineffective drugs (especially in the case of asthma), harmful regimens (antibiotics, corticosteroids, antihistamines), unnecessary referral of many patients to upper level facilities for specialised investigations or to the private sector . The care provided is often insufficient and of low quality, in addition to being unnecessarily expensive to the health system and for the individual patients, whatever the source of funding (government, social security, or recovery cost schemes). Effective TB control is dependent on a well-functioning PHC system which is able to appropriately manage all other respiratory illnesses to facilitate the accurate identification of TB suspects.

While theoretically strong, many primary health care systems remain weak due to operational difficulties. Consequently, the problem of integrating communicable disease control programmes into the primary health care system is not one of transforming existing disease-specific intervention protocols into an integrated package, but a question of how to utilise the strengths of the specialised programme to enhance/support the primary health care system. The aim, therefore, of integration is to optimise use of scarce resources and respond more effectively to the community's needs. **This is best done by strengthening the skills of the most peripheral health worker who is the entry point to the primary health care system and the link to the community.**

The Priority: Provide Tools to the Peripheral Health Worker

To improve disease management in developing countries, the priority is to strengthen the capacity of peripheral health workers to most efficiently diagnose and treat, or refer, patients. To enhance health worker ability, tools that assist in the syndromic management of illness and appropriately target the skill level, availability of resources and priorities of these workers must be made available.

The Model: Interventions (IMCI and DOTS) for Enhancing the Efficacy of the PHC Network

A comprehensive package for the integrated management of childhood illness (IMCI) has been developed by WHO (coordinated by CHD, Division of Child Health and Development) and is being implemented in low-and middle-income countries (Annex 1). The Adult Lung Health Initiative will not replicate these efforts but will build on this approach for the management of respiratory illness among school-age children, youth and adults (Annex 1). Eventually, it is highly desirable to have a comprehensive package addressing the priority diseases among both children and adults. **The ALHI should be seen as the first building block for the integrated management of adult illnesses.** Countries familiar with the DOTS strategy as well as the IMCI initiative have expressed the need for and appropriateness of developing a package of care for the management of respiratory illness in school-age children, youth and adults as the first step. CDS and IMCI will carefully consider how to best address all age groups, ensuring consistency and continuity in the approaches to the syndromic management of illness.

In recent years, WHO/GTB successfully defined and started to implement effective TB control in various countries of the world. The strategy endorsed by WHO, "DOTS", has been implemented as a specialised programme which utilizes the primary health care (PHC) system and the multi-purpose health worker at the peripheral level to deliver services. Therefore, to improve TB control, the overall health care infrastructure in the country must be strong. CDS aims to support PHC by using its comparative advantage of technical expertise and successful management strategies relating to TB. A **standardised syndromic approach to respiratory illnesses** will respond to the current trends of health sector reform and decentralisation which focus on PHC services by providing a clinical and managerial tool designed specifically for the district level. Where effective TB Programmes are operating, the standardised approach will protect the proven management schemes inherent in the DOTS strategy. It will also serve to strengthen other health services through the introduction of improved diagnostic, treatment and management strategies for the heaviest disease burdens. The package of care approach will also empower districts where no formal TB programme is operating to improve health service delivery as it will provide technical and managerial support to the PHC staff. This will result in a more logical approach to the management of TB and respiratory illness by responding to local needs, encouraging rational use of resources and staff time, and promoting sustainability, in addition to adding economies of scale.

The Strategy: Adult Lung Health Initiative

Based on the:

- documented epidemiological importance of respiratory disease;
- potential gains to be made in TB control through the strengthening of the PHC system;
- expressed needs of countries for support in this area; and
- lack of a globally coordinated approach to address illness in youth and adults, and particularly respiratory illness,

CARG 1996 recommended that GTB should explore whether the impact of good TB control programmes based on the DOTS strategy could be enhanced by combining case management with respiratory diseases.

GTB consequently began to explore the feasibility of developing a combined package of care for TB and other respiratory diseases in youth and adults. A task group consisting of staff from different units of GTB was created to initiate a project entitled the "Adult Lung Health Initiative" and to involve other partners within WHO and externally in this project. The goal of the task group is to better define the needs and opportunities in this area, and, eventually, to

develop and test the feasibility of a syndromic approach for the care of TB and respiratory diseases.

During TRAC 1997, a conceptual paper highlighting the rationale and objectives for this project was presented and endorsed. The overall objectives of the ALHI were noted as:

- to improve the detection of TB cases (both smear-positive and smear-negative) and strengthen the quality of their case management as well as that of other respiratory diseases in patients over five years of age;
- to standardize case management of respiratory diseases at first level health facilities and first referral (district) hospitals in order to improve the quality of care and increase effectiveness.

The combined case management of tuberculosis and other respiratory diseases is a rational and pragmatic approach which should be suitable for any situation in developed and developing countries and for public, social security and private health services. The Adult Lung Health Initiative will first focus on meeting the needs of developing countries, i.e. those with low- or middle-income where tuberculosis prevalence is high.

The combined case management will focus on the most prevalent respiratory diseases and will address the varying technical needs at the different levels within a district: community, health posts without a doctor, health centres with doctors and first referral hospitals. To initiate this approach, a package including training, job aides (i.e. flowcharts), technical guidelines and management strategies will be developed and introduced at district level.

The ALHI will initially focus on combining care of TB and other respiratory diseases. If results are encouraging, the lessons learned may be utilised to study the feasibility of combining care of respiratory diseases in general and other priority adult diseases currently not efficiently addressed within the existing PHC schemes.

The ALHI is designed with the needs of the first-level health workers in mind. As these health care providers deal with all kinds of patients and diseases, CDS and its partners aim to design diagnostic and treatment algorithms in such a way that they are consistent with the algorithms available through the Integrated Management of Childhood Illness (IMCI) package. The respiratory algorithms may be considered as the first building block towards the establishment of a "sick adult initiative" based on an integrated approach to adults presenting to primary health care services with any illness.

With its previous experience with this project, CDS has taken a leadership role within WHO for coordinating the ALHI. CDS will continue close collaboration with other programmes to ensure that the ALHI is an efficient implementation mechanism for the technical expertise/guidelines of all programmes dealing with respiratory health. In addition, CDS is working closely with IMCI and other WHO programmes to coordinate complementary algorithms with the aim of developing and promoting a continuum of care, based on the syndromic approach, for patients ranging from infants to elderly adults.

The Results: Expected Outcomes from ALHI

The vision is that the implementation of the ALHI will result in both individual patient care and public health benefits. Specifically, in terms of **individual care** the impact will be:

- Reduction in disability, morbidity and mortality due to pneumonia through improved management, specifically in school-age children and elderly adults;
- Improved diagnosis and treatment of TB leading to a reduction in disability, morbidity and mortality;
- Improved management of pulmonary infections in symptomatic HIV-positive patients;
- Improved management of asthma leading to a reduction in disability, morbidity and possibly mortality;
- Reduced disability due to COPD;
- Increased quality of life for asthma, COPD and symptomatic HIV-positive patients;
- Reduction in complications of acute rheumatic fever, e.g., rheumatic heart disease, and of otitis, e.g., deafness, in school-age children and youth.

The envisaged impact on **public health**, i.e., primary health care delivery, health systems, control of priority respiratory diseases, will be:

- Improved efficiency and decreased burden on the health system including: shorter patient – provider interaction, reduction of waiting time, reduction in hospitalization, more rational use of antibiotics, decreased cost of treatment, more appropriate referrals to higher levels;
- Expansion of DOTS, Global Initiative for Asthma (GINA) guidelines and other technical approaches through use of ALHI as an additional implementation mechanism with a specific focus on peripheral health workers;
- Improved cost-effectiveness of TB control activities and more rational use of limited drug supplies through reduction of the number of inappropriately diagnosed smear-negative pulmonary TB cases;
- By improving quality of adult respiratory health care, strengthened patient confidence and increased utilization and credibility of peripheral health services.
- Involvement of non-specialised, multipurpose staff in disease-specific control activities, linking between clinical care and public health

Precise evaluation tools and epidemiological and operational indicators will be introduced in the lower levels of health care networks to monitor progress and illustrate the utility of this approach.

Next Steps: Prevention

Responding to the immediate and urgent needs of primary health care workers, the ALHI is focusing on developing clinical tools for improving the management of existing disease. Prevention of new disease will, obviously, become an important aspect of the project if it is to have a substantial impact on morbidity and mortality in the long-term. In this context, CDS is considering environmental and occupational factors fueling the emergence of respiratory disease and exploring, in close collaboration with other programmes within WHO, mechanisms for including prevention as an integral part of ALHI. This will necessarily involve counseling schemes to be taught and practiced by first level health workers, targeting for instance tobacco cessation and education to reduce health hazards due to indoor cooking. In addition, in high HIV prevalence settings, it will be necessary to address HIV counseling/testing and potential interventions benefiting HIV-infected persons, such as INH preventive chemotherapy, and timely, adequate treatment of opportunistic respiratory diseases.

1997: Activities Performed

1. Rationale Paper

A background paper conceptualising the rationale for this project was produced. The paper highlights the needs, in terms of supply (what the health system can offer) and demand (what the needs of communities are) for a standardised and combined management of adult respiratory diseases.

2. Involvement of Regional and Country Offices

During a meeting of Regional Advisers and country officers in March 1997, the Adult Lung Health Initiative was introduced. It was agreed that it would be essential to conduct several country assessments to review the present health system response to respiratory illness, identify priority disease burdens, analyse the efficacy of present approaches, and explore the need for and feasibility of introducing diagnostic and treatment algorithms at district level. Countries to be considered for the assessment as well as for any future pilot projects were proposed by the Regional Advisers. The countries participating in this activity are: (AFRO) Côte d'Ivoire, Guinée, Kenya; (AMRO) Argentina, Chile, Peru; (EMRO) Morocco; (EURO) Kyrgyzstan; and (SEARO) Thailand.

3. Development of Assessment Tool

To best analyse the present health system response to respiratory illness, a data collection tool and research protocol was developed to record all patients over 5 years of age with respiratory symptoms who are received in a district health system over a 2-3 month period. This tool, called the "Register of Respiratory Symptomatics", is being used to monitor patients' progression through the health system including any referrals, diagnostic tests and/or treatments. A database has been developed and will be used for the compilation and analysis of data. It is anticipated that the survey will highlight any inefficiencies in the present management of respiratory patients which should be addressed by a future "package of care".
In addition to introducing the "Registers" to collect clinical data, the country assessments are being used to explore the existing political and operational environments in which tuberculosis and other respiratory illnesses are managed, as to better study the context into which a package of care must be incorporated.

4. Initial Country Assessments

In 1997, country assessments were conducted in Thailand, Kenya, Côte d'Ivoire, Guinée and Morocco. In early 1998, country assessments were conducted in Argentina, Chile, Kyrgysztan and Peru. In addition, surveys will be initiated in Nepal and possibly Algeria. An analysis of the country assessments will be completed by early 1999 in collaboration with CDC. A document summarizing the analysis will be published.

1998 and Beyond

On-going activities include:

1. Production of background documents on ARI, TB, asthma and COPD

Position papers, reflecting the state-of-the-art knowledge on acute respiratory infections, tuberculosis, asthma, and chronic obstructive pulmonary disorder, respectively, have been written by internationally recognised experts as background and preparation for the development of clinical care algorithms.

2. Development of Clinical Care Algorithms

Experts in the field of respiratory illness and/or having experience in the development of comprehensive care packages from both within WHO and externally were consulted in May 1998 for the development of clinical algorithms. In addition to our partnership with the Division of Non-Communicable Diseases (NCD) of WHO for the development of this initiative, the following divisions were invited to contribute: the Division of Child Health and Development (CHD); the Action Programme on Essential Drugs (DAP); the Division of Drug Management and Policies (DMP). Experts from Chile, Cote d'Ivoire, Guinea, Kenya, Kyrgyzstan, Morocco and Peru provided technical expertise and country practical experience. Other external experts included representatives of the Global Initiative for Asthma (GINA), a joint activity of the National Heart, Lung and Blood Institute of the National Institutes of Health and WHO/NCD; Centres for Disease Control and Prevention (CDC); the International Union against Tuberculosis and Lung Disease (IUATLD); the European Respiratory Society (ERS); the Royal Netherlands Tuberculosis Association KNCV; the Finnish Lung Health Association; and the Institute of Tropical Medicine of Antwerp, Belgium.

The objectives of the workshop were to receive technical input for the development of the clinical algorithms and agree on the strategy for pilot project implementation. Consensus was achieved regarding the clinical aspects (diagnostic, treatment and referral) and monitoring indicators to be incorporated into the eventual algorithm and strategy. The panel of experts involved in the Consultation will continue to collaborate throughout the development of the algorithms. In addition, other experts addressing specific components of the algorithms have been collaborating. Among them, experts in environmental health, tobacco cessation, malaria, treatable cardiac conditions, rheumatic fever, and health systems.

3. Drafting of algorithms for level B health workers

First drafts of the algorithms to be used at peripheral health sites without physicians are being produced and will be circulated internally for further refinement by end 1998. The algorithms will then be sent to the workshop participants for review and will be finalized by early 1999.

4. Drafting guidelines for level C health workers

Concurrently, a draft clinical manual for level C (referral health centres with clinical officers or physicians) health workers is being developed. This manual will complement the algorithms with clinical recommendations for patients referred according to the algorithm. Selected experts will review the draft level C manual.

5. Research

The workshop illustrated that some research will be required for validation of technical decisions and to design the most effective algorithm. A literature search will be conducted to support and validate choices made in the development of the algorithm and those of the country specific adaptations. The reasoning leading to the choices made will be well documented. Additional research will be carried out if the information cannot be obtained from the literature, or when further clarification is needed.

6. Training of health staff

The correct use of the algorithms and clinical manual is crucial for a successful implementation. Thus, the development of training schemes and training materials will be an important part of the Initiative. This will strengthen understanding and compliance by the peripheral health care worker, who may be already familiar with IMCI. Proposals have been solicited from numerous training development agencies and three potential partners have been identified. Training development will begin upon completion of the draft algorithms.

7. Cost-effectiveness studies

With one of the aims of this project being to improve both quality and efficiency of service delivery, it is vital that CDS be able to demonstrate improved cost-effectiveness over current practices through the use of standardized algorithms. To accomplish this, a preliminary costing of the present management of asthma, TB, COPD, and acute respiratory infections in selected countries must be completed. The countries selected for the costing will, ideally, have participated in the initial country assessment and will thereby have data available on diagnostic and treatment strategies and incidence of disease. In addition, the countries will represent potential sites for future implementation of the algorithms such that a "post-algorithm" costing can also be conducted for comparison.

8. Pretesting

The algorithms and clinical manual will be validated and pre-tested before wider scale implementation. Possibly, pre-testing will be done in areas already familiar with the Integrated Management of Childhood Illness. The reasoning for this is that health staff in these areas are already familiar with, and have been trained in, an integrated approach and the use of algorithms. Preference will be given to countries that have demonstrated high levels of interest and commitment to the Lung Health Initiative and which performed well during the initial

country assessment and data collection phase. It is expected that pre-testing will start early in the year 2000.

9. Implementation

Following successful pretesting and finalization of the algorithms, clinical manual and training tools, the ALHI will be adapted to specific country situations and implemented district-wide in selected countries in late 2000-2001.

Final Product

Addressing the needs of district health managers with comprehensive, innovative, and efficient algorithms for diagnosis and treatment of TB and other respiratory diseases will strengthen PHC services by encouraging a standardised, efficient approach to the management of respiratory illness. At the same time, the final product of this initiative will contribute to individual care by meeting the needs of the people with respiratory diseases in the community. Ultimately, the ALHI will serve as a model and building block for an integrated approach to the comprehensive management of sick adults.

ANNEX 1. The Integrated Management of Childhood Illness strategy

Seven in ten childhood deaths are due to five causes: acute respiratory infections (mostly pneumonia), diarrhoea, measles, malaria and malnutrition –and often to a combination of these causes. At least three out of four episodes of childhood illness are caused by one of these five conditions.

In addition, most sick children attend health facilities with signs and symptoms related to more than one of these conditions. This overlap means that a single diagnosis may neither be possible nor appropriate. Treatment of childhood illness may also be complicated by the need to combine therapy for several conditions.

An integrated approach to managing sick children is therefore indicated.

WHO's Division of Child Health and Development (CHD), in collaboration with other WHO programmes and UNICEF, has responded by developing a strategy for ***Integrated Management of Childhood Illness (IMCI)***. The strategy combines improved management of childhood illness with aspects of nutrition, immunisation, and several other important influences on child health, including maternal health.

Using a set of interventions for the integrated management and prevention of major childhood illnesses, the IMCI strategy aims to reduce death and the frequency and severity of illness and disability, and to contribute to growth and development. This set of interventions aims to improve practices in both health facilities and the home.

Implementing the IMCI strategy in countries involves three components:

- Improvements in the case management skills of health staff through the provision of locally adapted guidelines on the integrated management of childhood illness to promote their use.
- Improvements in the health system required for effective case management of childhood illness.
- Improvements in family and community practices.

To address the range of interventions, countries are encouraged to adopt a gradual, phased process for the planning and implementation of IMCI activities.

The core intervention is integrated case management of the five most important causes of childhood deaths and of common associated conditions. The IMCI tools currently available for this intervention are case management charts, guidelines and related training materials. They were developed to be appropriate in the majority[1] of developing countries and are thus called "generic". The extent of adaptation a country needs to do has, therefore, been minimised by making the generic case management guidelines as widely applicable as possible. However, adaptation of the guidelines is required to cover the most serious illnesses that contribute to child mortality in a specific country.

In the adaptation process, consensus must be reached (e.g. on which childhood conditions to include). Certain adaptations are essential (e.g. selection of sensitive first- and second-line antibiotics, which can be made available in first-line facilities; identification of affordable, available and culturally acceptable complementary foods; identification of specific terms in the local language for signs of illness, which help health workers to assess the child's illness and help mothers to recognise when to take a child to the health workers for care). Other adaptations may only be necessary to allow consensus to be reached (e.g. recommendations on timing for introduction of complementary foods may need to be adapted in order to make the

[1] The generic IMCI guidelines apply to countries with an infant mortality rate higher than 40 per 1000 live births and where there is transmission of *P. falciparum* malaria.

IMCI intervention compatible with other efforts to improve nutrition; target groups for preventive measures may differ in different countries according to epidemiology of a disease and in need of adaptation).

Implementation is carried out in a phased manner, beginning with the introduction of IMCI, moving on to preparation for and implementation of initial activities in selected districts and, finally, to expansion of activities and geographic coverage.

The introductory phase includes provision of information, orientation, training key MoH staff in IMCI, establishment of an IMCI working group and obtaining MoH endorsement. A total of fourteen countries were in the process of introduction by May 1997.

During the early implementation phase experience is gained with IMCI planning in selected districts. The tasks in this phase include selection of initial districts, adaptation of case management guidelines and training materials, training national and district level facilitators, preparation and planning at district level, and training health workers, including follow-up of trainees. By May 1997, seventeen countries had successfully introduced IMCI and had moved on to early implementation.

Only one country, as of May 1997, has begun expansion and coverage activities. Activities in this phase include further strengthening of district level capacity, expansion of training coverage and follow-up, improved drug availability and management, monitoring and measurement of outcome indicators. Interventions at the referral and family and community level will be included as the guidelines for these become available.

Where IMCI and the Adult Lung Health Initiative meet

The charts, guidelines and training materials developed under the Integrated Management of Childhood Illness (IMCI) are intended for patients up to five years. Tools do not yet exist to assist the peripheral health worker in a standardised way with the management of patients older than five years. Yet, patients of all ages attend to the same health worker with their illnesses. With the development of tools for the management of key respiratory illnesses, as under the Adult Lung Health Initiative (ALHI), a continuum of care is ensured.

As part of the ALHI, health workers will be trained in the use of the clinical care algorithms and manuals. Health workers already trained in the integrated management of illness as part of the IMCI strategy, will need less training than those to whom the integrated approach is a new concept. Training programmes will thus be more efficient if the ALHI is implemented in those areas already familiar with IMCI. In addition, the ALHI training will reinforce the IMCI message of integrated management, will strengthen the efficient use of resources and add to an economy of scale.

Application of the ALHI to areas where the IMCI has already gained experience, will enhance and ensure the development of consistent programmes. The result of the integration of the IMCI and ALHI strategies will be a convergence of programmes, rather than the development of parallel ones. This is fully in line with the recent WHO organisational restructuring, aimed at programmatic changes, a greater efficiency and cost-effectiveness, and collaboration within the organisation.