

Management of respiratory diseases in India – the PAL way

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In recent decades, the overall incidence of respiratory diseases has grown manifold due to overcrowding and urbanization, high levels of pollution, tobacco smoking and the HIV epidemic. Up to one-third of patients, over the age of 5 years, attending primary health care (PHC) settings seek health care for respiratory problems¹. Most of the patients present themselves with similar symptoms. Improper diagnosis, including TB, unnecessarily costly treatment prescriptions and inefficient referral of patients in the absence of clearly defined referral criteria have compromised on the quality of care. Antibiotics are prescribed for more than two-thirds of the patients with respiratory symptoms and in some settings > 85% (refs 2 and 3). There are no global management recommendations for patients aged 5 years and above with respiratory symptoms at any level of health infrastructure, with the exception of TB. Thus, standardization of case-management of respiratory diseases is needed to improve the quality and efficiency of respiratory care within PHC.

What is PAL?

The practical approach to lung health (PAL) is one of the strategies under the new STOP TB Plan which is intended to improve the quality of respiratory case management alongside expanding TB case detection. WHO recommends PAL strategy as the most important component contributing to strengthening of health system. PAL uses two main approaches to achieve integrated case-management of respiratory patients in PHC: (i) standardization of diagnosis and treatment of respiratory conditions and (ii) coordination among health workers at different levels and between TB control and general health services. Baseline and impact studies in many countries of Africa, Latin America, Central Asia and Eastern Mediterranean region have shown decreased referral of non-severe respiratory conditions, higher TB case detection, decreased unwarranted drug prescription, better quality and reduced average cost of drug prescription³⁻⁸.

The PAL strategy is particularly suitable for implementation in countries which have already implemented or are successfully implementing the DOTS strategy to control TB and in settings with high HIV prevalence. PAL focuses on four priority respiratory diseases, namely TB, ARI (with focus on pneumonia), asthma and chronic obstructive pulmonary disease (COPD) in patients older than 5 years, who seek treatment for respiratory problems. The implementation of PAL strategy will strengthen health services delivery and management of the PHC system through an efficient referral and counter-referral system, sound management information system, better coordination and standard technical guidelines on diagnosis and treatment of common respiratory conditions among patients attending different levels of health care. Standardized treatment of ARI will ensure appropriate use of antibiotics. As an essential component of PAL, supply of diagnostic equipment and drugs for management of asthma and COPD will be streamlined. This will boost the confidence of the population in PHC services and also raise the competence of health staff. PAL also focuses on health education and promotion activities for prevention of respiratory conditions.

PAL in India – how to go about it?

In India, there is a strong public health infrastructure evident from the successful implementation of Revised National Tuberculosis Control Programme (RNTCP). With the growing burden of respiratory illnesses and risk factors, it is high time we build the capacity of the health system to provide a patient-centred approach for evidence-based management of respiratory diseases. However, before implementation we should closely study the political, academic and professional support to implement the PAL strategy in the country, estimate epidemiological and social burden of respiratory diseases and assess the capabilities of the health infrastructure to implement the PAL strategy. Information on current treat-

ment practices in the case-management of outpatients with respiratory symptoms is also vital towards formulation of technical guidelines. A pilot project may be initiated to gain experience with the application of the PAL strategy. A conducive political atmosphere should be created for adoption of PAL by organizing advocacy seminars for programme managers and technical staff of departments related to TB control, HIV/AIDS, chronic diseases; other related ministries – education, social welfare, labour, industry, environment; pneumonologists and public health experts; representatives from medical and nursing associations, NGOs, other potential partners in providing technical or financial support, etc. Intra-organizational coordination is essential for effective PAL strategy development and implementation. Various components of health system and services like drugs, equipment, laboratory and radiology services, health education, human resource and health management information system (HMIS) should be engaged in strategy development. Inter-organizational collaboration through linkages with other ministries, international cooperation agencies, NGOs, private sector, etc. is a key element for success in public health programmes. Development of standard clinical guidelines for improving the case-management of respiratory diseases at PHC outpatient services and first-referral (or district) hospitals is a crucial pre-requisite that needs deliberations and brain-storming. A sound information system should be designed to monitor and evaluate the implementation of PAL strategy. Educational materials and training modules should also be developed for building the capacity of the health staff at different levels. Considering the HIV epidemic, close coordination should be established with the HIV/AIDS programme. This will promote joint activities such as issue of guidelines on the management of respiratory diseases in HIV-infected patients, survey of HIV-positivity among patients with respiratory conditions, prevention of respiratory diseases among HIV-infected persons and development of training modules and educational materials on HIV infection and associated respiratory diseases.

Opportunities and challenges

The dense network of health facilities under RNTCP and existing HMIS, the already in place case-management guidelines for asthma and COPD are the important assets that favour the development of PAL strategy. However, lack of political commitment, scarce resources like trained manpower and other inputs like drugs and equipment, poor smoking cessation services and weak referral and counter-referral system are the major challenges that need to be tackled during strategy development.

Conclusion

PAL provides a comprehensive package for a wide range of respiratory conditions, covering both technical and managerial aspects. A symptom-based systematic approach like PAL will help practitioners

as well as the health system to handle patients and also provide them with better care. PAL guides a clinician to interpret key signs and symptoms, diagnose and determine the degree of severity, provide adequate treatment and, if necessary, give proper referral advice. It also strengthens the health care delivery system and health resource management through better coordination and standardized procedures.

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Importance of seed banking and herbarium collections in biodiversity conservation and research: a new initiative in the United Arab Emirates

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In recent years, the demand for conservation of plant genetic resources has risen due to habitat loss and perceived climate change. It is speculated that under the current conditions of rapid climate change, a catastrophic loss of genetic diversity is likely to occur¹. Natural plant populations serve as repositories of genetic diversity. Seed collection is one of the most practical and effective ways for preservation of wild populations of native plants. It is evident that plant species are already endangered by habitat loss, and the additional threats posed by climate change make plant conservation even more challenging². Seed banking is one of the most widespread and valuable *ex situ* approaches to conserve and store seeds that could be a valuable source for habitat restoration and species conservation purposes. The seed banks have also been considered an increasingly important component of the international efforts to preserve plant biodiversity. Despite being regarded as an infertile

desert, the United Arab Emirates (UAE) hosts a unique fauna and flora that show remarkable adjustments to survive harsh environmental conditions with physiological, behavioural and morphological strategies³. Plants species found in the UAE are adapted to several environmental stresses, such as salinity and high temperature that can reach up to 50°C during summers. In the UAE, approximately 700 plant species have been recorded from diverse habitats^{4,5}. Many of the plants of the UAE that cannot tolerate the very harsh temperatures in summers, are present on the top of the high mountains. If the global warming process has already started, the temperatures would increase, even at the top of these mountains, and consequently many of these plants could become extinct. Therefore, seed banking is an important step towards safeguarding plant biodiversity in the region.

In 2009, the Sharjah Research Academy established the Sharjah Seed Bank

and Herbarium (SSBH) laboratory at the University of Sharjah, the first such formal laboratory in the history of the UAE. The SSBH laboratory aims to collect seeds and bank the entire flora of the UAE, with multiple populations sampled, as well as to build up comprehensive herbarium collections for the region. Field work to collect seeds and herbarium specimens has been underway since 2009, with a series of joint collection trips involving staff from the Royal Botanic Garden, Kew, UK. So far, more than 1000 vouchered seed collections have been made, representing more than 340 species⁶. Although total seed quantity is important, the genetic representativeness of the collection is a more important indicator of the value of a collection for recovery purposes. Keeping this in view, our seed collection strategy attempts to capture more genetic diversity of species throughout their geographic distribution. Seeds are collected using internationally accepted standards