Improvements in sanitation, diagnostic facilities, therapeutics, and healthcare delivery have played an important role in the control of communicable, maternal, neonatal, and nutritional diseases globally. Together with an increase in life expectancy, this has resulted in an increasing healthcare burden from noncommunicable diseases (NCDs). Discussion on NCDs has largely remained focused on cardiovascular diseases, diabetes, and cancers. More recently, chronic respiratory diseases (CRDs) have emerged as important public health problems, especially in resource limited settings. CRDs include chronic obstructive pulmonary disease (COPD), bronchial asthma, occupational lung disorders, interstitial lung diseases, and others. Among these, the first two are perhaps of the greatest public health significance. The true epidemiological burden of both asthma and COPD is difficult to estimate due to the absence of standard case definitions. Experts also agree that there is considerable underreporting for both diseases, especially in the developing world. Globally, asthma is the most prevalent CRD (358 million), with twice the number of cases of COPD (174 million) as per Global Burden of Disease (GBD) estimates in 2015. However, mortality from COPD is eight times more common than that from asthma. Morbidity for COPD is also higher. Asthma ranks 23rd (1.1% of global disability-adjusted life years [DALYs]), and COPD ranks eighth (2.6% of global DALYs) among the various GBD causes.[1]

Clearly, no government can afford to ignore the rising burden of CRDs, more so in resource-limited environments. The Global NCD Action Plan, adopted by World Health Assembly in 2013, calls for a 25% relative reduction in overall mortality from NCDs (including CRDs) and a 30% relative reduction in the prevalence of current tobacco use (a major risk factor for COPD) among adults, by 2025.[2] The action plan however falls short of suggesting a specific agenda for CRDs and fails to prioritize reduction in ambient and household air pollution that is believed to drive the CRD burden in the developing world. There is clearly a need for individual governments to address these lacunae depending on local needs. For instance, India has added a target of 50% relative reduction in household solid fuels for cooking by 2025 as an additional framework element for NCD prevention and control.[3]

Although almost all countries have a unit, branch, or department responsible for NCDs within their Ministry of Health, CRDs remain the least likely to be addressed by an operational plan in all World Health Organization (WHO) regions except the South-East Asia region.[4] There is therefore an urgent need to include CRDs to the existing priority list of NCDs that should be managed through existing national NCD control programs. This integration could be vertical or horizontal. The former implies that the operational plan to manage CRDs is introduced as a separate program developed from scratch. The latter involves using existing NCD program resources to deliver CRD control as an integral part of NCD programmatic activities. The horizontal approach is more cost-effective from both implementation and managerial perspectives and should be the preferred mechanism.

Development of operational guidelines for prevention, diagnosis, and management of CRDs at the primary and secondary levels of healthcare is an important prerequisite to initiate a CRD control program. Evidence-based expert recommendations are available individually for both asthma and COPD and get periodically updated.[5,6] Although these guidelines provide state-of-the-art strategies to combat these disorders, they do not specifically apply to the primary health care level, where resources for both diagnosis and treatment are rather limited. National guidelines need to focus on locally important risk factors and account for the available healthcare infrastructure and personnel. Moreover, any CRD program will need to deal with asthma and COPD together, rather than separately. A pragmatic approach could involve evaluating patients with respiratory symptoms and/or risk factors, distinguishing between asthma and COPD (or something else) based on simple clinical and laboratory parameters, assessing disease severity and control using locally available resources, prescribing pharmacotherapy and nonpharmacological interventions, and regular monitoring using simple tools. Community empowerment and engagement is necessary to facilitate prevention, early diagnosis, and care of CRDs using processes and tools that are accessible and acceptable to the community. Health education, risk reduction, and referral mechanisms
(both for poorly controlled disease and management of complications) are other key areas for which algorithms need to be developed. WHO Package of Essential NCD intervention protocols could be a starting point for the development of national plans.\textsuperscript{7,8}

The other major challenge is the provision of diagnostic and therapeutic facilities to the community. A strong political commitment, as well as innovation, are necessary to address these issues. International guidelines lay down certain standards of care for asthma and COPD patients, and it is up to the health administrators not to allow any major dilution while ensuring that the benefits percolate down to the primary care level to the maximum extent feasible. A key requirement will be upgradation of diagnostic services and procurement of inhaled and other drugs that are so far not available at the primary care level. While financial constraints are certainly an important consideration, the economic and social costs associated with uncontrolled disease (especially in the economically productive age group) cannot be neglected. In several developing countries, oral bronchodilators are freely available through the public health system due to their low cost. Inhalers are however not available despite all contemporary guidelines advocating them as the preferred drug delivery mechanism. It is time that the poor in underdeveloped nations are treated at par with other patients and provided access to the currently recommended inhaled drugs and delivery systems through their national programs. In general, a single formulation each of inhaled short-acting beta-agonist (e.g., levalbuterol), inhaled corticosteroid (e.g., budesonide), inhaled corticosteroid plus long-acting beta-agonist (e.g., formoterol/budesonide combination), and inhaled long-acting antimuscarinic (e.g., tiotropium) should prove sufficient for long-term management of virtually all patients. The diagnostic facilities too need to be upgraded. In particular, quality spirometry should be made universally available. This has several logistic issues that need to be tackled on a local basis. Obviously, it is not feasible to deploy spirometers till the most peripheral health unit in any country. It may be more practical to provide spirometers at places where there is already some technical staff available (such as those handling electrocardiography or radiography), who can be trained to use these machines. Patients can either be referred to these centers (if the distances involved are small) or the spirometer can be periodically carried to neighboring peripheral health facilities to conduct pulmonary function tests on a group of patients. It is pertinent to note that spirometry is extremely important in the diagnosis and severity assessment of CRDs. Pulse oximeters, and oxygen cylinders with flowmeters, may also be considered during infrastructure upgradation.

It is also important to link the CRD program with other related national programs. Two of the most important linkages include the smoking cessation programs and the program for improvement of ambient/household air quality. In addition, capacity building measures need to be set up to improve the competencies of primary health workers in diagnosing CRDs and stratifying their severity based on clinical and spirometric criteria, providing support in managing disease exacerbations and health education. There is also a need to develop and validate potential health service delivery indicators that can be independently measured to assess the effectiveness of the COPD and asthma care system over time.

The arrangement of logistics to implement CRD control measures at primary care level may be a challenge in the initial stages, and health managers share a key responsibility for arranging finances to provide infrastructure and medications, as well as arrange horizontal integration into existing healthcare framework. Without these measures, it may not be possible to stem the growing CRD epidemic.

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