Chronic respiratory diseases in developing countries: the burden and strategies for prevention and management
Nadia Aït-Khaled,1 Donald Enarson,2 & Jean Bousquet3

Abstract  In developing countries, chronic respiratory diseases represent a challenge to public health because of their frequency, severity, projected trends, and economic impact. Health care planners, for example, are faced with a dramatic increase in tobacco use and must establish priorities for the allocation of limited resources. Nevertheless, smoking prevention and standardized management programmes for asthma and chronic obstructive pulmonary disease should be implemented in developing countries whenever possible. International measures will be required to reverse tobacco smoking trends, and international agencies could define essential drugs and equipment and encourage the use of generic drugs, particularly for corticosteroids inhaled at high dosages. For such programmes to be effective, producers of high-quality generics will need to be identified, and the medications added to national lists of essential drugs and included in procurement procedures. Other recommendations for alleviating the burden of chronic respiratory diseases in developing countries are: adapting guidelines to local contexts and ensuring their distribution; upgrading equipment at district level; purchasing high-quality drugs at low prices; routine training and supervision of health services personnel; and regular monitoring of performance. Social mobilization by professional societies, nongovernmental organizations, and the mass media will also increase government commitment to tobacco control and standardized case management.

Keywords  Lung diseases, Obstructive/economics/prevention and control/epidemiology; Asthma/economics/prevention and control/epidemiology; Cost of Illness; Smoking cessation; Essential drugs; Developing countries (source: MeSH).

Mots clés  Bronchopneumopathies obstructives/économie/prévention et contrôle/épidémiologie; Asthme/économie/prévention et contrôle/épidémiologie; Coût maladie; Sevrage tabagique; Médicaments essentiels; Pays en développement (source: INSERM).

Palabras clave  Neumopatı ´as obstructivas/economı ´a/prevencio´ n y control/epidemiologı ´a; Asma/economı ´a/prevencio´ n y control/epidemiologı ´a; Costo de la enfermedad; Cese del tabaquismo; Medicamentos esenciales; Paı ´ses en desarrollo (fuente: BIREME).


Introduction
Chronic respiratory diseases represent a public health challenge in both industrialized and developing countries because of their frequency (1) and economic impact. In developing countries, where poverty and noncommunicable respiratory disease have long been linked (2, 3), most patients have poor access to health care; this is even true of the poorest minorities in industrialized countries. In developing countries, however, an additional problem is that health planners have limited resources (4). The burden and trend of chronic respiratory diseases and their economic impact are highlighted in this paper, and practical strategies for improving patient management in developing countries are suggested.

Prevalence and distribution of chronic respiratory disease
Chronic obstructive pulmonary disease
In 1990, the WHO/World Bank global burden of disease study (5, 6) estimated the global prevalence of chronic obstructive pulmonary disease (COPD) to be 9.33 per 1000 people for men and 7.33 per 1000
for women. The prevalence was higher in industrialized countries, except for China — although this has been disputed (7) — and was already high in sub-Saharan Africa (4.41 per 1000 for men and 2.49 per 1000 for women). The lowest prevalence was in the Middle Eastern Crescent (2.69 per 1000 for men and 2.83 per 1000 for women) (6).

In middle-income countries, such as Algeria, COPD and asthma are emerging as public health problems (4; Table 1). However, the prevalence of COPD is probably underestimated, since it is not usually diagnosed until it is clinically apparent and moderately advanced. COPD affects men more frequently than women, usually appears after 45 years of age, and increases in frequency with age. Tobacco smoking is the single most important factor in the genesis of COPD and is responsible for more than 75% of cases worldwide (8–10), but other environmental risk factors are also known. A number of studies in Africa, for example, have shown that COPD is associated with workplace pollution (11–14), and indoor air pollution from biomass fuel appears to contribute to COPD in women in developing countries (15–17). In addition, COPD is associated with acute respiratory infections in children (18, 19) and low socioeconomic status (3). Substantial impairment of lung function is also often found in patients cured of tuberculosis, but with extensive residual fibrosis (20).

The rate of tobacco consumption is increasing throughout the developing world. Between 1985 and 1990, for example, the rates rose by 3.4%, and were predicted to rise by 2.7% between 1995 and 2000 (21). Africa is likely to be particularly hard hit, because of an ageing population and because tobacco use is rising faster there than in any other country. Consumption increased by 2.4% between 1985 and 1990 and was predicted to rise by 3.2% between 1995 and 2000 (22). If nothing is done to stop this rate of growth, Africa will have one of the world’s highest levels of tobacco consumption (23). Rising tobacco consumption is due in part to aggressive marketing campaigns by international tobacco companies, which are effective in men and boys (24). Because smoking rates are low in women in Africa and Asia, they are likely to be targeted next by the tobacco industry (25).

Some of the expected trends in COPD prevalence can be explained by changes in life expectancy at birth, which varies widely between countries, and the age structure of the population (with COPD being most frequent in people over 65 years of age). In China, for example, the life expectancy for men in 1998 was 68 years, but only 49 years for men in Africa. The corresponding figures for women were 72 and 51, respectively (27). The age structure of the population also differs between countries (26). In 1995, 44% of the population in Africa was under 5 years of age, compared to only 26% of the population in China; and the proportion of the population over 65 years old was 3% in Africa, 7% in China, 8% in the USA, and 14% in Europe.

Asthma

In 1986, the International Union Against Tuberculosis and Lung Disease (IUATLD) published a questionnaire that is currently used in most epidemiological surveys on asthma (27). The first international survey to use this questionnaire studied adults aged 20–44 years, in 48 centres in 22 countries (28), and found substantial variation in the prevalence of asthma from one centre to another (Table 2), even within the same country. Another international survey used a standardized protocol, the International Study of Asthma and Allergies in Childhood, and calculated the cumulative prevalence of asthma in children aged 13–14 years in 155 centres in 58 countries (29). Although asthma was more frequent in industrialized countries, in 1998 it was already frequent in Latin America and Africa (Table 3).

In industrialized countries the main risk factors for asthma are exposure to house mites, pollens, pets, and other sources of allergens. Other risk factors include acute respiratory infections, dietary factors, “western” lifestyle, and genetic factors. Asthma is more prevalent in urban areas and in adults younger than 40 years of age. Asthma is even more prevalent in children than adults, with boys being 1.5–3.3 times more frequently affected than girls. Since 1960, the prevalence of asthma in children has risen by about 6–10% annually in most industrialized countries (30), and by almost 50% in 10 years in the USA, mainly among minorities and poorer communities (31). The increase is probably linked in large part to environmental factors (32), as observed in 1998 in Papua New Guinea, where the prevalence of asthma rose from 0.2% to 7.3% in 15 years, following the introduction of blankets.

Evaluating the global burden of chronic respiratory diseases: the DALY approach

Recently, the burden of diseases, injuries, and risk factors in human populations has been measured in disability-adjusted life years (DALYs). The DALY approach is grounded on economic and ethical principles and can guide policies towards more cost-effective and equitable health care. However, the DALY measurement obscures disease distributions and their impact in terms of disability, and includes social and economic value judgements (33), which undermine its use in the rational allocation of health resources. Moreover, the DALY approach does not solve the problems of prioritization and resource allocation (34).

Nevertheless, an analysis of DALYs lost is useful a useful way to compare the relative importance of chronic respiratory diseases. Using this approach, it was estimated that respiratory diseases caused 15% of the global burden of disease in 1999, with COPD contributing 2.7% of the burden, asthma 0.9%, and tuberculosis 2.3% (35).
However, there were differences from one region of the world to another (Table 4). It has been projected that between 1990 and 2020 the burden of different diseases (measured in DALYs) will change in rank (5), with lower respiratory tract infection falling from first to sixth rank and COPD rising from twelfth to fifth. The disease burden of tuberculosis is projected to remain unchanged at seventh.

Mortality, morbidity, and poverty

Although COPD is associated with poverty (2, 3), it is less frequent in developing countries because of younger populations and lower tobacco consumption compared to industrialized countries. In Africa, for example, COPD prevalence in patients hospitalized in specialized services ranged from 2.7% in Guinea to 14% in Morocco (36). However, COPD mortality and morbidity are projected to increase in all countries, including those in Africa (37). In sub-Saharan Africa, deaths are projected to increase threefold, from 57 000 in 1985 to 145 000 in 2015, simply from demographic changes. If epidemiological changes are considered, COPD mortality would rise to 243 000 cases in 2015, nearly a fivefold increase (Fig. 1), and higher than the predicted changes in the global average.

Asthma death rates per 100 000 population from 1985 to 1987 varied from 2 (Hong Kong Special Administrative Region of China and USA), to 7 (New Zealand), and to more than 9 (in Germany), although the rates for disadvantaged groups were much higher in all countries (38, 39). These deaths occurred mainly in the young, and at the patient’s home (in 50–60% of cases), after the severity of the asthma attack was underestimated and undertreated; and usually, the patient had been inadequately treated prior to the fatal attack. Since 1990, the rising trend in mortality has stopped or reversed in some industrialized countries (40), despite a rise in asthma prevalence, and is probably linked to better use of inhaled corticosteroids among those with access to such medication (41).

In many countries, the rising trend in asthma morbidity in the last 20 years (42) has been reflected in an increase in hospitalization. With the promulgation of consensus recommendations, however, this trend seems to have been stemmed (43). In industrialized countries, unplanned use of health services is higher among the poor (44–47), particularly in inner cities (48) and is linked to deficiencies in patient management, lack of access to care, absence or underutilization of inhaled corticosteroids (49), and lack of patient health education (50).

Financial and economic costs of chronic respiratory disease

As new health care strategies compete for limited resources, economic analyses are being used to inform choices for health care delivery (51, 52). Unfortunately, there is a lack of data from developing countries and the cost of disease can only be estimated using data from industrialized countries. In 1993, for example, the annual economic burden of COPD in the USA was estimated to be US$ 23.9 billion (53), and the estimated annual cost of COPD varies from US$ 813 per patient in the Netherlands (54) to US$ 1522 per patient in the USA.

In 1990, it was estimated that annual asthma costs in the USA were US$ 640 per patient and that they represented 0.5–1.0% of all USA health expenditure.

### Table 1. Respiratory diseases in Algeria, 1990

<table>
<thead>
<tr>
<th>Respiratory disease</th>
<th>Cases per 100 000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute respiratory infections, annual incidence</td>
<td></td>
</tr>
<tr>
<td>All forms</td>
<td>20 375</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>611</td>
</tr>
<tr>
<td>Asthma, prevalence</td>
<td></td>
</tr>
<tr>
<td>All forms</td>
<td>800</td>
</tr>
<tr>
<td>Severe</td>
<td>80</td>
</tr>
<tr>
<td>Chronic bronchitis, prevalence over 40 years of age</td>
<td></td>
</tr>
<tr>
<td>All forms</td>
<td>500</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>125</td>
</tr>
<tr>
<td>Tuberculosis, annual incidence</td>
<td></td>
</tr>
<tr>
<td>All forms</td>
<td>46</td>
</tr>
<tr>
<td>Pulmonary smear positive</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: ref. 4.

### Table 2. The European Community Respiratory Health Survey (ECRHS) estimate of asthma prevalence in adults aged 20–44 years, 1996

<table>
<thead>
<tr>
<th>Town, region, or country</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia and New Zealand</td>
<td>6.8–9.7</td>
</tr>
<tr>
<td>USA and Northern Europe</td>
<td>&gt;5</td>
</tr>
<tr>
<td>Western Europe and Mediterranean countries</td>
<td>1–4</td>
</tr>
<tr>
<td>Alger, Algeria</td>
<td>2.4</td>
</tr>
<tr>
<td>Bombay, India</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Source: ref. 28.

### Table 3. The International Study of Asthma and Allergies in Childhood (ISAAC) estimation of asthma prevalence in children 13–14 years old, 1998

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oceania</td>
<td>25.9</td>
</tr>
<tr>
<td>North America</td>
<td>16.5</td>
</tr>
<tr>
<td>Latin America</td>
<td>13.4</td>
</tr>
<tr>
<td>Western Europe</td>
<td>13.0</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>10.7</td>
</tr>
<tr>
<td>Africa</td>
<td>10.4</td>
</tr>
<tr>
<td>Pacific Asia</td>
<td>9.4</td>
</tr>
<tr>
<td>South-east Asia</td>
<td>4.5</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Source: ref. 29.
expenditure. Although annual asthma costs vary worldwide, from US$ 326 per patient in Australia in 1991 to US$ 1315 in Sweden in 1975, it has been estimated that 80–90% of national health expenditure for asthma are allocated to fewer than 10% of asthma patients — i.e. those with severe asthma (55, 56). Moreover, costs increase for asthma patients with rhinitis as a comorbidity (57). Recently, the costs associated with asthma have increased in industrialized countries. In 1998, for example, asthma costs in the USA were estimated at US$ 12.7 billion annually, more than twice the 1990 costs (51).

However, costs associated with asthma can be reduced by appropriate management. The introduction of high-dose inhaled corticosteroids for severe asthma patients, for example, reduced the number of hospital days by 80% for these patients, as well as reducing health costs (58). Other studies in industrialized (59, 60) and developing (61) countries have also demonstrated the cost-effectiveness of inhaled corticosteroids.

### Prevention and management approaches in developing countries

Most developing countries have no standard protocols for assessing and managing chronic non-communicable respiratory disease. The services that exist do not reach most of the population afflicted by “human poverty”. These people are usually illiterate, have no access to health services, and die before the age of 40 years. They comprise 15% of the population in Latin America, 34% of the population in Arab countries, and more than 40% of those in sub-Saharan Africa and south-east Asia (62).

The objectives of chronic respiratory disease prevention and management for developing countries are to decrease the burden of illness, prevent avoidable deaths, and increase the quality of life of patients. These ways in which these objectives may be accomplished are outlined in Box 1.

### Prevention and management of COPD

International measures will be required to reduce tobacco smoking and counteract the influence of tobacco companies. The Director-General of WHO made tobacco control a priority by creating a new cabinet project, the Tobacco Free Initiative, aimed at focusing international attention and resources on the tobacco epidemic. An important result was the international treaty, the Framework Convention on Tobacco Control (63). To decrease national tobacco consumption, governments must increase taxes, ban sales of single cigarettes, establish smoke-free areas, ban advertising and other promotional tactics, and specify the warnings for and content of tobacco products.

Secondary measures, such as smoking cessation programmes, can reinforce the above approaches. In 1998, the IUATLD published a guide for low-income countries to help health workers and other professionals to establish such programmes (64). The guide provides a framework for implementing smoking cessation activities in primary health care services; for assessing tobacco use and its consequences in the population; for assessing legislation and advocacy needs; and for implementing prevention programmes. Chronic respiratory disease is completely reversible if a patient stops smoking before the onset of airflow obstruction. Once obstruction is established, however, stopping smok-

### Prevention and management approaches in developing countries

**Table 4. World Bank estimates of the burden of respiratory diseases in DALYs**, 1999

<table>
<thead>
<tr>
<th>Region</th>
<th>Tuberculosis</th>
<th>COPDb</th>
<th>Asthma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>2.3</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>3.4</td>
<td>1.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>2.2</td>
<td>8.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>1.8</td>
<td>1.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Europe</td>
<td>1.4</td>
<td>4.0</td>
<td>1.6</td>
</tr>
<tr>
<td>The Americas</td>
<td>0.9</td>
<td>1.8</td>
<td>1.0</td>
</tr>
<tr>
<td>World</td>
<td>2.3</td>
<td>2.7</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Source: ref. 35.

* DALYs = disability-adjusted life years.

b COPD = chronic obstructive pulmonary disease.

**Fig. 1. Projected COPD mortality changes for sub-Saharan Africa**

[Graph showing projected COPD mortality changes for sub-Saharan Africa from 1985, 2000, and 2015.]

Source: ref. 37.

* COPD = chronic obstructive pulmonary disease.
ing is the only intervention capable of decreasing the loss of lung function. A change of outlook and behaviour of medical personnel (who are frequently smokers) is thus urgently needed in low-income countries to discourage people, particularly the young, from taking up smoking and to encourage patients who are smokers to quit as early as possible. A first step will be smoke-free care facilities. Other prevention activities include reducing pollution from biomass fuel smoke in the environment and workplace.

Guidelines for the standardized management of COPD have been proposed for industrialized countries (65–67) and a global initiative for managing obstructive lung disease was recently published (68). There are also guidelines for COPD in South Africa and Malaysia (69,70) and for the long-term management of COPD in Africa (36). These guidelines include early recognition of the disease by questionnaire, confirmation of diagnosis, and assessment of disease severity by clinical evaluation and spirometry. The recommended approach to chronic management (36, 69) is a stepwise approach according to disease severity (Fig. 2), using only inexpensive bronchodilators. For example, inhaled β-2 short action and/or inhaled ipratropium bromide on demand, or continuously with or without low doses of slow-release theophylline. Inhaled steroids are reserved for cases where a clear response to a standardized trial of steroids has been demonstrated. Long-term oxygen therapy and rehabilitation programmes are recommended for severe COPD but are not generally available in low-income countries, nor will be in the near future. A number of current interventions are not justifiable and should be stopped, including periodic courses of antibiotics, long-term oral steroids, and mucolytics.

Despite the availability of guidelines, many low-income countries may be unable to implement them, since resources would have to be redirected from higher-priority activities. One unfortunate consequence of this is that COPD may not be properly diagnosed and patients may be inappropriately treated for tuberculosis.

**Prevention and management of asthma**

Effective primary interventions for asthma do not exist, although the publication of international consensus reports (71, 72) is an important advance. National consensus documents have also been published in some middle-income countries, and in 1996 the IUATLD published a guide for managing asthma in low-income countries (73). Nevertheless, the benefits of these interventions have yet to reach patients in many developing countries.

The IUATLD guide proposes that international guidelines should be adapted for developing countries. The components of the intervention include a technical package for management and an information system for continuous evaluation. The technical package recommends standardized diagnosis, treatment, and health education. Evaluation is based on a standardized treatment card and a register of new cases of persistent asthma. Diagnosis, evaluation of severity, and follow-up are based on clinical history and measurement of peak expiratory flow. Disease severity, for example, is based on a clinical evaluation of symptoms and a functional evaluation based of the best peak expiratory flow. Long-term treatment is stepwise (Fig. 3), using two cost-effective drugs (inhaled salbutamol 100 µg and inhaled beclomethasone 250 µg). Patient education is adapted to the socio-economic level of the patient.
cultural context and aims to explain the disease and the role of the two drugs. Patients are taught to identify and avoid factors that trigger asthma, and to take responsibility for adjusting their treatment. Follow-up must be well organized to assure compliance with long-term treatment and an information system for evaluating the intervention is essential. Chronic rhinitis is common (29) and often associated with asthma. If affordable, nasal beclomethasone 50 mg and/or oral H1 antihistaminic can be added to the asthma treatment (74).

A number of costly interventions are not recommended for use in developing countries, including allergy skin tests, measurement of total and specific IgE, nonspecific bronchial challenge, mucolytics, and antibiotics. Immunotherapy is not recommended in these countries (73–75) because in addition to high cost and limited indications, many allergens are not well identified and rare side-effects might be severe.

Discussion

A number of obstacles in developing countries prevent asthma and COPD guidelines from being effectively implemented, including the availability and affordability of inhaled drugs, availability of equipment, and difficulty of implementing a new health intervention in poorly functioning services. In many developing countries, inhaled high-dose beclomethasone is often not available or affordable. In a 1998 study, inhaled beclomethasone was consistently available in only four of eight countries surveyed (76), and the cost of inhaled beclomethasone varied more than fivefold and that for inhaled salbutamol more than threefold. In all but two countries, the cost of one year of treatment for a case of moderate persistent asthma exceeded the monthly salary of a nurse (Table 5). Another survey in eastern Europe showed that inhaled beclomethasone (250 μg) was unavailable in many regions of Azerbaijan, Georgia, and the Russian Federation. In six other countries, however, drugs were available and affordable (77) (Table 6). This was particularly true in Poland, where a one-year course of treatment for persistent asthma with drugs made in Poland was only US$ 20, 10 times lower than in Burkina Faso. Lower-priced, high-dose inhaled beclomethasone was most available in countries which used the generic version and included it in national lists of essential drugs, and which published a national consensus.

As national tuberculosis programmes are well developed in most developing countries, it may be possible to integrate standardized management programmes for COPD and asthma into tuberculosis programmes using the existing information system and extending its use to other chronic diseases (78). At primary level, chronic respiratory disease might be suspected from patient history and clinical symptoms. At secondary district level, peak-flow meters are needed to diagnose and manage asthma, and spirometers for COPD. It may be feasible to introduce peak-flow meters because of their low

### Table 5. Affordability of asthma treatment and national policies in developing countries, 1998

<table>
<thead>
<tr>
<th>Country</th>
<th>Cost of IB&lt;sup&gt;a&lt;/sup&gt; (US$)</th>
<th>Inclusion in essential drug list</th>
<th>Generics available</th>
<th>Treatment cost&lt;sup&gt;b&lt;/sup&gt; (US$)</th>
<th>Nurse’s salary (US$ per month)</th>
<th>% of the population with health insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>5</td>
<td>Yes</td>
<td>Yes</td>
<td>52</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>6</td>
<td>Yes</td>
<td>No</td>
<td>60</td>
<td>35</td>
<td>0</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>12</td>
<td>No</td>
<td>No</td>
<td>104</td>
<td>65</td>
<td>0</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>13</td>
<td>No</td>
<td>No</td>
<td>128</td>
<td>100</td>
<td>70</td>
</tr>
<tr>
<td>Mali</td>
<td>15</td>
<td>No</td>
<td>No</td>
<td>132</td>
<td>200</td>
<td>0</td>
</tr>
<tr>
<td>Turkey</td>
<td>16</td>
<td>Yes</td>
<td>Yes</td>
<td>136</td>
<td>300</td>
<td>0</td>
</tr>
<tr>
<td>Guinea</td>
<td>17</td>
<td>No</td>
<td>No</td>
<td>152</td>
<td>81</td>
<td>Very small</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>27</td>
<td>No</td>
<td>No</td>
<td>244</td>
<td>70</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: ref. 76.

<sup>a</sup> IB = Inhaled beclomethasone 250 μg per puff, 200 puffs.

<sup>b</sup> International Union Against Tuberculosis and Lung Disease (IUATLD) standardized treatment for a case of moderate persistent asthma for one year.

### Table 6. Relative cost of essential asthma drugs in eastern European countries, 2000

<table>
<thead>
<tr>
<th>Country</th>
<th>Cost of IB&lt;sup&gt;a&lt;/sup&gt; (US$)</th>
<th>Inclusion in essential drug list</th>
<th>Generics available</th>
<th>Treatment cost&lt;sup&gt;b&lt;/sup&gt; (US$)</th>
<th>Nurse’s salary (US$ per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>1.7&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Yes</td>
<td>Yes</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>The former Yugoslav Republic of Macedonia</td>
<td>5&lt;sup&gt;c&lt;/sup&gt;–10</td>
<td>Yes</td>
<td>Yes</td>
<td>52</td>
<td>60</td>
</tr>
<tr>
<td>Romania</td>
<td>6.8</td>
<td>Yes</td>
<td>Yes</td>
<td>64</td>
<td>207</td>
</tr>
<tr>
<td>Hungary</td>
<td>7</td>
<td>Yes</td>
<td>Yes</td>
<td>70</td>
<td>58</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>8.3</td>
<td>Yes</td>
<td>Yes</td>
<td>73</td>
<td>145</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>8.3</td>
<td>Yes</td>
<td>Yes</td>
<td>78</td>
<td>80</td>
</tr>
</tbody>
</table>

Source: ref. 77.

<sup>a</sup> See footnote a, Table 5.

<sup>b</sup> See footnote b, Table 5.

<sup>c</sup> Drugs made in Poland.
Conclusions

In light of the projected burden of COPD in developing countries, programmes to prevent tobacco smoking are urgently needed. Government commitment is fundamental and may be increased by signing the Framework Convention for Tobacco Control. Each country must also consider whether to implement standardized management programmes for asthma and/or COPD, based on national priorities. International agencies could assist by defining essential drugs and equipment, and encouraging the use of generics. Inhaled beclomethasone 250 μg, for example, has been added to the essential drugs list recommended by WHO (79). There is also a need to identify producers of high-quality generic drugs, to enable international tenders to be effectively applied. National governments should add these medications to their essential drugs list and include them in their procurement procedures. If adequate asthma drugs were made available in developing countries for about US$ 20 per patient for one year’s treatment, these would be affordable for the majority of patients.

Other measures include adapting guidelines to the local context and distributing them; upgrading equipment at district level; purchasing high-quality drugs at low prices; routine training and supervision of health services personnel; and permanently evaluating performance using clear indicators. Mobilization of professional societies, nongovernmental organizations, and the media will also increase government commitment to controlling tobacco use and implementing standardized case management.

Conflicts of interest: none declared.

Résumé

Maladies respiratoires chroniques dans les pays en développement: poids de la morbidité et stratégies de prévention et de prise en charge

Dans les pays en développement, les maladies respiratoires chroniques constituent un grave problème de santé publique en raison de leur fréquence, de leur gravité, de leur impact économique et aussi des tendances prévues. Les planificateurs sanitaires sont par exemple confrontés à une très forte augmentation du tabagisme tout en devant établir des priorités pour l’attribution de ressources limitées. Néanmoins, la prévention du tabagisme et la prise en charge normalisée de l’asthme et des bronchopneumopathies chroniques obstructives devraient être mises en place dès que possible dans ces pays. Des mesures internationales seront nécessaires pour inverser les tendances en ce qui concerne le tabagisme, et les agences internationales pourraient définir les médicaments essentiels et l’équipement de base, et encourager l’utilisation des médicaments génériques notamment pour les corticoïdes inhalés à forte dose. Pour que de tels programmes soient efficaces, il faudra identifier des fabricants de génériques de haute qualité, ajouter les produits en question aux listes nationales de médicaments essentiels et les inscrire dans les procédures d’achat. Pour alléger le fardeau des maladies respiratoires chroniques dans les pays en développement, on peut également recommander d’adapter les directives au contexte local et en assurer la distribution, d’améliorer l’équipement au niveau du district, d’acheter des médicaments de qualité à bas prix, d’assurer la formation et la supervision courantes des personnels de santé, et de suivre régulièrement les résultats. De plus, la mobilisation sociale par le biais des associations professionnelles, des organisations non gouvernementales et des médias renforcera l’engagement des pouvoirs publics en matière de lutte contre le tabac et de prise en charge des cas.

Resumen

Enfermedades respiratorias crónicas en los países en desarrollo: carga y estrategias de prevención y manejo

En los países en desarrollo las enfermedades respiratorias crónicas representan un enorme reto para la salud pública, debido a su frecuencia, gravedad, evolución previsible e impacto económico. Los planificadores de la atención sanitaria, por ejemplo, están afrontando un aumento espectacular del consumo de tabaco y deben establecer prioridades para asignar unos recursos limitados. Así y todo, en los países en desarrollo hay que emprender siempre que sea posible programas de prevención y tratamiento normalizado del tabaquismo, a fin de combatir el asma y la enfermedad pulmonar obstructiva crónica. Se requerirán medidas internacio-
nales para invertir la tendencia de aumento del tabaquismo, y los organismos internacionales podrían señalar el equipo y los medicamentos esenciales necesarios y alentar el uso de medicamentos genéricos, en particular por lo que se refiere a la inhalación de altas dosis de corticosteroides. Para que esos programas sean eficaces, habrá que identificar a los fabricantes de genéricos de alta calidad, e incluir los fármacos en las listas nacionales de medicamentos esenciales y en los procedimientos de adquisición. Otras recomendaciones para aliviar la carga de enfermedades respiratorias crónicas en los países en desarrollo consisten en adaptar las directrices a los contextos locales y asegurar su distribución; mejorar los equipos disponibles a nivel de distrito; adquirir medicamentos de alta calidad a bajo precio; adiestrar y supervisar de forma sistemática al personal de los servicios de salud, y vigilar regularmente el desempeño. La movilización social por parte de asociaciones profesionales, organizaciones no gubernamentales y medios de comunicación también fomentará el compromiso de los gobiernos en la lucha anti-tabáquica y el manejo normalizado de los casos.

References


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