

Editorial

The unbearable cost of severe asthma in underprivileged populations

A. A. Cruz¹, P. J. Bousquet²

¹ProAR, Faculdade de Medicina da Bahia, and CNPq, Brazil; ²Département d'Epidémiologie Clinique, Biostatistique, Santé Publique et Information Médicale, Groupe Hospitalo-Universitaire Carémieu, Nîmes, France

Alvaro A. Cruz
ProAR, Faculdade de Medicina da Bahia
R. Eduardo Santos, 147 conj.509
41940-455 Salvador BA
Brazil

Accepted for publication 4 January 2009

The prevalence of asthma is increasing in many countries following trends of urbanization and westernized lifestyle (1). In various regions, these characteristics of modern societies follow an improvement in socioeconomic status. As a chronic illness, asthma has a major impact on the life of the individual as well as the family, and the economic burden of asthma is high (2), in particular among uncontrolled asthmatics (3–5). Most studies on the cost of asthma focused on direct and indirect costs to the health system (6). However, direct expenditures incurred by the families of subjects with asthma are often overwhelming.

Asthma prevalence and severity increase everywhere in the world, and particularly in underprivileged populations (3). There are underserved individuals living in large urban centres of high-income countries with limited access to health care (7). In various mega cities of low- and middle-income countries, asthma prevalence is very high and most of the population cannot afford paying for the proper treatment of persistent asthma (8, 9). These unfavourable scenarios generate a situation in which dozens of millions of human beings suffering from asthma cannot afford to breathe well (10).

Social inequities may not be addressed fully by regular welfare and employment policies. Major noncommunicable diseases (NCD) such as cardiovascular

disease, diabetes, chronic respiratory disease and cancer pose a major barrier to development in low- and middle-income countries, as well as among excluded populations in affluent societies (11). It requires broad health promotion – disease prevention strategies and a coherent health system response, combining a strong primary health care with proper support of secondary and tertiary levels. The successful efforts to reduce NCD in high-income countries reflect adequate use of these principles. Recent trends to revive primary health care in countries such as Brazil, India, China, Thailand, Spain and New Zealand, are mostly driven by inadequate health system response to NCD and the need to improve access to health care (12). Nevertheless, many countries continue to focus only on a narrow range of conditions, with a priority to communicable diseases. Despite significant progress in health outcomes over the last 30 years, inequities continue to increase and there are gross disparities between countries at all levels of health expenditure (13). The Commission of Social Determinants of Health of the World Health Organization has recently stated: 'Social justice is a matter of life and death. It affects the way people live, their consequent chance of illness and their risk of premature death. We watch in wonder as life expectancy and good health continue to increase in parts of the world and in alarm as they fail to

improve in others', and 'to reduce health inequalities is an ethical must' (13).

The paper published by Franco et al. in this issue of *Allergy* (14) quantifies the high cost of severe asthma to underprivileged families and measures the impact of a successful public health intervention for control of asthma (ProAR) on their budget. The manuscript provides evidence that severe asthma leads to catastrophic expenditures to poor families, which were still not enough to give access to proper treatment control the disease. Moreover, it demonstrates the major benefits achievable by treatment based on current guidelines, even in low-resource settings, in a strategy previously shown to be cost-effective and resulting in incremental savings as compared with managing exacerbations in emergency rooms and hospitals (15).

Low-income populations, minorities and children living in inner cities experience disproportionately higher morbidity and mortality because of asthma (16). In poor households, relatively small costs on health can be disastrous and have been considered as catastrophic expenditures. Previous publications estimate that families spending 50% or more of their nonfood expenditure fit in this category (17, 18). Recent surveys have shown that the proportion of individuals with persistent asthma reporting use of inhaled corticosteroids (ICS), the cornerstone of treatment, is very low in various continents (19–21). The cost of regular treatment is unaffordable to families in low-resource settings (9), resulting in considerable higher proportion of uncontrolled asthma, which is associated with greater economic burden to families and health systems, loss of productivity and deterioration in quality of life (22). In many countries, asthma is managed as an acute disease (23). Because of economic obstacles, a majority of the population of low- and middle-income countries lack access to basic asthma treatment such as ICS (9). The challenge we must face was to provide global access to core asthma medications, particularly ICS, at affordable prices, to improve implementation of treatment guidelines and to encourage better health care provider and patient education (20).

Caring for a child with a chronic disease remains a time-consuming activity for mothers. In low-income settings such as in inner city environment in the US, asthma in children is inducing depression in the mothers (24). Children of low socioeconomic status are more likely to require higher resources because of their asthma (25). In developing countries, childhood asthma affects the child's daily activities, schooling, family life and finances (26). In inner city asthma in the US, education with or without case management services enhances the health of children with asthma thereby reducing associated costs (27). A targeted home-based environmental intervention improved health and reduced service use in inner-city children with moderate-to-severe asthma. The intervention is cost-effective when the aim was to reduce days with asthma symptoms, and reduces costs (28). In Ankara, Turkey, adequate control of asthma in children was found to play a key role in decreasing the total direct costs of paediatric asthma, although it increases the medication and outpatient costs (26).

Clear messages to policy makers should arise from the experience of ProAR, in line with the vision of the Global Alliance against Chronic Respiratory Diseases of 'a world where all people breathe freely' (29): (i) recommendations for the treatment of severe and/or uncontrolled asthma from best evidence-based current asthma guidelines are applicable and effective in low-resource settings; (ii) free management of the most severe cases of asthma according to the guidelines, in reference centres, not only restores the patient's capability to breathe but also alleviates the economic suffocation of poor families further impoverished by the cost of the ailment; (iii) the strategy of ProAR, in Salvador da Bahia, Brazil, reduced health resource utilization, decreased the costs with asthma to the public health system and could be adapted to similar settings elsewhere. This provides a remarkable opportunity to use current knowledge and available technology to attenuate social inequalities. In dealing with financial stenosis to the underserved, inaction is not an option. Considering the recurrent near asphyxia of those with severe asthma, inaction is unacceptable.

References

- Masoli M, Fabian D, Holt S, Beasley R. The global burden of asthma: executive summary of the GINA Dissemination Committee Report. *Allergy* 2004;**59**: 469–478.
- Accordini S, Corsico A, Cerveri I, Gislason D, Gulsvik A, Janson C et al. The socio-economic burden of asthma is substantial in Europe. *Allergy* 2008;**63**:116–124.
- Cazzoletti L, Marcon A, Janson C, Corsico A, Jarvis D, Pin I et al. Asthma control in Europe: a real-world evaluation based on an international population-based study. *J Allergy Clin Immunol* 2007;**120**:1360–1367.
- Colice G, Wu EQ, Birnbaum H, Daher M, Marynchenko MB, Varghese S. Healthcare and workloss costs associated with patients with persistent asthma in a privately insured population. *J Occup Environ Med* 2006;**48**:794–802.
- Serra-Batllés J, Plaza V, Morehon E, Comella A, Brugues J. Costs of asthma according to the degree of severity. *Eur Respir J* 1998;**12**:1322–1326.
- Sullivan SD, Turk F. An evaluation of the cost-effectiveness of omalizumab for the treatment of severe allergic asthma. *Allergy* 2008;**63**:670–684.
- Clement LT, Jones CA, Cole J. Health disparities in the United States: childhood asthma. *Am J Med Sci* 2008;**335**:260–265.

8. Cooper PJ, Rodrigues LC, Cruz AA, Barreto ML. Asthma in Latin America: a public health challenge and research opportunity. *Allergy* 2009;**64**:5–17.
9. Mendis S, Fukino K, Cameron A, Laing R, Filipe A Jr, Khatib O et al. The availability and affordability of selected essential medicines for chronic diseases in six low- and middle-income countries. *Bull World Health Organ* 2007;**85**: 279–288.
10. Bousquet J, Khaltaev N. Global surveillance, prevention and control of chronic respiratory diseases. Geneva: World Health Organization, 2007. Available at: <http://www.who.int/gard/publications/en/index.html>.
11. World Health Organization. 2008–2013 Action plan for the global strategy for the prevention and control of noncommunicable diseases. Geneva: WHO, 2008. Available at: <http://www.who.int/nmh/Actionplan-PC-NCD-2008.pdf>.
12. World Health Organization. The World Health Report 2008 – primary health care: now more than ever. Geneva: WHO, 2008. Available at: <http://www.who.int/whr/2008/en/index.html>.
13. World Health Organization. Commission on social determinants of health – final report. Closing the gap in a generation: health equity through action on the social determinants of health. Geneva: WHO, 2008. Available at: http://www.who.int/social_determinants/en/.
14. Franco R, Nascimento HF, Cruz AA, Santos AC, Souza-Machado C, Ponte EV et al. The economic impact of severe asthma to low-income families. *Allergy* 2009;**64**:478–483.
15. Franco R, Santos A, Nascimento H, Souza-Machado C, Ponte EV, Souza-Machado A et al. Cost-effectiveness analysis of a state funded programme for control of severe asthma. *BMC Public Health* 2007;**7**:82–87.
16. Amre DK, Infante-Rivard C, Gautrin D, Malo JL. Socioeconomic status and utilization of health care services among asthmatic children. *J Asthma* 2002;**39**:625–631.
17. Su TT, Kouyaté B, Flessa S. Catastrophic household expenditure for health care in a low-income society: a study from Nouna District, Burkina Faso. *Bull World Health Organ* 2006;**84**:21–27.
18. Wyszewianski L. Families with catastrophic health care expenditures. *Health Serv Res* 1986;**21**:617–634.
19. Neffen H, Fritscher C, Schacht FC, Levy G, Chiarella P, Soriano JB et al. Asthma control in Latin America: the asthma insights and reality in Latin America (AIRLA) survey. *Rev Panam Salud Publica* 2005;**17**:191–197.
20. Ait-Khaled N, Enarson DA, Bissell K, Billo NE. Access to inhaled corticosteroids is key to improving quality of care for asthma in developing countries. *Allergy* 2007;**62**:230–236.
21. Laloo UG, McIvor RA. Management of chronic asthma in adults in diverse regions of the world. *Int J Tuberc Lung Dis* 2006;**10**:474–483.
22. Global Initiative for Asthma (GINA). Global strategy for asthma management and prevention (revised 2006). Vancouver: GINA, 2006. Available at: <http://www.ginasthma.org/>.
23. Ouanes-Besbes L, Knani J, Nciri N, Dachraoui F, Nouira S, Abroug F. Chronic outpatient management of asthmatics attending the emergency department: a survey from a country with low income. *Eur J Emerg Med* 2006;**13**:21–25.
24. Celano M, Bakeman R, Gaytan O, Smith CO, Koci A, Henderson S. Caregiver depressive symptoms and observed family interaction in low-income children with persistent asthma. *Fam Process* 2008;**47**:7–20.
25. Lodha R, Puranik M, Kattal N, Kabra SK. Social and economic impact of childhood asthma. *Indian Pediatr* 2003;**40**:874–879.
26. Beyhun NE, Cilingiroglu N, Sekerel BE. The cost of childhood asthma and its determinants in Ankara, Turkey. *Turk J Pediatr* 2007;**49**:179–188.
27. Karnick P, Margellos-Anast H, Seals G, Whitman S, Aljadeff G, Johnson D. The pediatric asthma intervention: a comprehensive cost-effective approach to asthma management in a disadvantaged inner-city community. *J Asthma* 2007;**44**:39–44.
28. Kattan M, Stearns SC, Crain EF, Stout JW, Gergen PJ, Evans R 3rd et al. Cost-effectiveness of a home-based environmental intervention for inner-city children with asthma. *J Allergy Clin Immunol* 2005;**116**:1058–1063.
29. World Health Organization. Global alliance against chronic respiratory diseases action plan 2008–2013. Geneva: WHO, 2008. <http://www.who.int/gard/publications/>.