

Affordability of inhaled corticosteroids as a potential barrier to treatment of asthma in some developing countries

N. Ait-Khaled,* G. Auregan,[†] N. Bencharif,[‡] L. Mady Camara,[§] E. Dagli,[¶] K. Djankine,** B. Keita,** C. Ky,[†] S. Mahi,[‡] K. Ngoran,^{††} D. L. Pham,** O. Sow,[§] M. Youssef,^{§§} N. Zidouni,[‡] D. A. Enarson*

International Union Against Tuberculosis and Lung Disease: * France, [†] Burkina Faso, [‡] Algeria, [§] Guinea, [¶] Turkey, ** Mali, ^{††} Cote d'Ivoire, ^{§§} Vietnam, ^{§§} Syria

SUMMARY

SETTING: The cost and availability of the medications required for the treatment of asthma may represent potential barriers to effective management.

METHOD: A survey of prices and policies for components of asthma treatment in 1998, in Algeria, Burkina Faso, Ivory Coast, Guinea, Mali, Syria, Turkey and Vietnam.

RESULTS: Medications were consistently available in only four of the eight countries studied. The cost of essential medications for standard case management varied by over five times for beclomethasone and by over three times for inhaled salbutamol. In all but two countries, the cost of one year of drugs for treatment of a

moderate, persistent case exceeded the monthly salary of a nurse in that country. The essential drugs list included inhaled salbutamol in five of eight countries and beclomethasone in three of eight. The costs of medications were lower where generic preparations were available and, to a lesser extent, where the medications are on the essential drugs list.

CONCLUSIONS: The cost and availability of medications vary widely, and may represent an important barrier to effective management in some low and middle income countries.

KEY WORDS: asthma; management; low-income countries; inhaled corticosteroids; affordability

THE TOLL OF ASTHMA on a global scale is immense. The World Health Organization (WHO) estimated the prevalence of asthma at more than 150 million cases in 1997.¹ The International Study of Asthma and Allergies in Childhood (ISAAC) determined the prevalence of asthma symptoms in children aged 13–14 years to be substantial.² It was highest in Oceania (25.9%), with lower levels in North America (16.5%), Latin America (13.4%), Western Europe (13.0%), Eastern Mediterranean (10.7%), Africa (10.4%), Asia Pacific (9.4%), South-East Asia (4.5%) and Eastern Europe (4.4%). The prevalence was higher in urban than in rural areas, and in children than in adults. Adverse outcomes of asthma (deaths and avoidable hospitalisation) preferentially affect segments of populations with a lower socio-economic level,³ such as Maoris in New Zealand and African Americans in the United States.

An important advance in assuring quality of care for these patients was made in 1992 with an International Consensus Report,⁴ and in 1995 with the Global Initiative for Asthma.⁵ The ability of standardised case management to reduce adverse outcomes in asthma has been shown in New Zealand.⁶ Conse-

quently, and based on the international consensus process, the International Union Against Tuberculosis and Lung Disease (IUATLD) published a guide for management of asthma in adults in low income countries,⁷ basing the case management on the use of inhaled corticosteroids and salbutamol for the management of cases of persistent asthma.

To evaluate the practicability of these recommendations, an IUATLD working group undertook a survey to determine the cost and availability of the recommended medications in the countries represented by the members of the working group.

MATERIAL AND METHODS

Members of the working group prepared a standard questionnaire that they used to gather information for their respective countries. Members from Algeria, Burkina Faso, Ivory Coast, Guinea, Mali, Syria, Turkey and Vietnam submitted completed questionnaires on the price of medications based on information gathered from the government authorities concerning policies and salaries, and from pharmacies concerning availability and cost. Additional information on

Table 1 Prices, in US dollars, of 200 doses of aerosol medications for the treatment of asthma in eight low and middle-income countries in 1998

Location	Beclomethasone 250 µg	Salbutamol 100 µg
Algeria	5	3
Vietnam	6	3
Syria	12	2
Ivory Coast	13	7
Mali	15	8
Turkey	16	2
Guinea	17	6
Burkina Faso	27	7

Table 2 Comparative costs, in US dollars, for a year of treatment for a case of moderate persistent asthma in eight low and middle-income countries in 1998

Location	Monthly salary of a nurse	Cost of asthma treatment
Algeria	120	52
Vietnam	35	60
Syria	65	104
Guinea	100	128
Ivory Coast	200	132
Turkey	300	136
Mali	81	152
Burkina Faso	70	244

management of patients, professional fees and costs of examinations, was obtained by a second questionnaire.

The original questionnaire specifically requested information on the market availability of inhaled corticosteroids and the market prices at the time of the survey (1998). Two preparations were evaluated: beclomethasone at a dose of 250 µg and inhaled salbutamol at a dose of 100 µg. Specific information was requested concerning the form of administration, the dose per unit, the number of units per box or per inhaler, and the minimum price in US dollars for the inhaler of preparations available. To standardise costs for purposes of comparison, the amount of medications required to treat a case of moderate persistent asthma according to the definitions of the Guide was used.⁷ This implies the use of 1000 µg daily inhaled beclomethasone and 100 µg twice daily salbutamol. It was assumed in this model that the case remained stable over the period and required a single level of treatment during this time.

RESULTS

Inhaled beclomethasone was commercially available in a number of the countries surveyed. It is always available in Algeria, Ivory Coast, Vietnam and Turkey. It was occasionally available in the market in Burkina Faso, Mali and Guinea. At the time of the survey, it was not available in the market in Syria.

The cost of medications in the countries surveyed is illustrated in Table 1. It was lowest in Algeria and Vietnam, where generic preparations are used, and highest in Burkina Faso (more than five times higher than in Algeria). The supply of essential medications in Algeria was coordinated by the Ministry of Health and was obtained through international tender, following the essential drugs policy of that country. The cost of inhaled beclomethasone was at least three times that in Algeria in all the countries surveyed except Ivory Coast, Vietnam and Syria. The cost of inhaled salbutamol showed less variation among the countries surveyed. It was lowest in Syria and Turkey,

Table 3 Comparative costs, in US dollars, for selected health services in eight low and middle-income countries in 1998

Country	General practitioner consultation	Specialist consultation	Spirometry	Chest radiograph	Daily rate in hospital
Public service					
Algeria	1.00	2.00	2.00	1.00	2.00 (meals)
Burkina Faso	1.00	1.00	Not available	5.00	1.00–6.00
Guinea	1.20	1.20	3.00	6.00	1.80 (no meals)
Ivory Coast	0.80	0.80			1.00–5.00
Mali	2.00	2.00	Not available	6.25	5.00 (no meals)
Syria	No charge	No charge	No charge	No charge	No charge
Turkey	10.00	12.00	No charge	10.00	10.00 (meals)
Vietnam	0.72	1.50	3.60	1.50	5.00 (no meals)
Private service					
Algeria	5.00	10.00	15.00	10.00	100.00
Burkina Faso	4.00	12.00	7.00	17.00	80.00
Guinea	3.60	11.00	Not available	11.00	55.00
Ivory Coast	30.00	33.00	75.00	33.00	66.00
Mali	5.00	10.00	Not available	10.00	50.00
Syria	2.00	5.00	4.00	6.00	15.00
Turkey	40.00	50.00	50.00	20.00	120.00
Vietnam	1.50	3.00	5.00	2.20	25.00

Table 4 Policies concerning medications for the management of asthma

Country	Inclusion in essential drugs list		Availability in generic form		National consensus	Insurance access
	Salbutamol	Beclomethasone	Salbutamol	Beclomethasone		
Algeria	Yes	Yes	Yes	Yes	Yes	Yes
Burkina Faso	No	No	No	No	No	None
Guinea	No	No	Yes	No	No	Very few
Ivory Coast	Yes	No	No	Yes	No	70% of salaried
Mali	Yes	No	Yes	No	No	No
Syria	Yes	Yes	No	No	No	Yes
Turkey	Yes	Yes	Yes	Yes	No	No
Vietnam	No	No	Yes	Yes	No	No

and highest (more than three times as high) in Mali, Ivory Coast and Burkina Faso.

The relative cost, estimated as the cost of treatment of a case of moderate persistent asthma over the period of one year, is shown in Table 2. With the exception of Algeria and Ivory Coast, the cost of one year's treatment was higher than the monthly salary of a nurse in each of the countries surveyed. Table 3 indicates the comparative charges for various health services in the public and private sectors in the countries studied. Clearly, the charges are substantially higher in the private as compared with the public sector. Charges also vary widely in the private sector among the countries compared, with the highest charges in Algeria and Turkey but with relatively high charges also in Ivory Coast. The charges in the public sector are surprisingly similar, with the exception of Turkey, where the charges are higher.

Table 4 provides information on policy for asthma management in the countries studied. Beclomethasone was included on the list of essential drugs in Algeria, Syria and Turkey; inhaled salbutamol was on the list in Algeria, Burkina Faso, Ivory Coast, Syria and Turkey. Generic preparations of beclomethasone were available in the private market in Algeria, Ivory Coast, Turkey and Vietnam; inhaled salbutamol was available in generic form in Algeria, Guinea, Mali, Turkey and Vietnam. A national consensus on the management of asthma was in place only in Algeria. Access to health insurance for reimbursement of medication costs was possible for all patients in Algeria and Syria and for the majority of salaried employees in Ivory Coast.

In Algeria, where international procurement of generic preparations from the essential drugs list is the practice, the cost of drugs for asthma treatment has been estimated. In this setting, the annual cost for long-term treatment of a severe persistent case is US\$92, for a moderate persistent case US\$52, and for a mild persistent case US\$32. The cost of medications for patients with chronic asthma is reimbursed for those patients with health insurance in Algeria.

The difference in cost of medications, comparing countries with and without the policy, could be estimated. For beclomethasone, the greatest difference

was associated with the availability of generic preparations (\$10 versus \$18) and slightly less for its presence on the essential drugs list (\$11 versus \$16). The price was highest where neither policy was in place.

DISCUSSION

The improvement in cost-benefit ratio of the use of inhaled salbutamol and inhaled corticosteroids in the treatment of asthma has been demonstrated in industrialised countries.^{8,9} A study in Sri Lanka confirmed these findings in a low income country.¹⁰ The benefit to the community of these medications is dependent on their availability and affordability. A previously published study had indicated that these medications were even less frequently available than was the case for the current study.¹¹

Clearly the availability and cost of medications for the treatment of asthma are key obstacles to the effective treatment of such cases, in spite of the fact that it has a very favourable ratio of cost-benefit. Recent progress in improving case management of asthma in low income countries has been made by adding beclomethasone 250 µg to the essential drugs list recommended by the WHO.¹² There is also a need to identify producers of generic preparations of good quality. In addition to these international activities, national governments might add these medications to their essential drugs list and include them in their procurement procedures. Even so, the cost of treatment for patients with chronic asthma is clearly greater than many citizens can afford.

Evaluation of cost-benefit should be extended to more countries to evaluate the potential cost-savings of standardised case management. In addition, methods of payment, such as health insurance, may be required if the majority of patients with chronic asthma, who live in low income countries, are to get the care they need.

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R É S U M É

CADRE : Le coût et la disponibilité des médicaments nécessaires au traitement de l'asthme représentent des obstacles potentiels à la prise en charge adéquate des patients.

MÉTHODE : Etude concernant les prix des médicaments et autres composantes du traitement de l'asthme en 1998 en Algérie, Burkina Faso, Côte d'Ivoire, Guinée, Mali, Syrie, Turquie et Viêt-nam.

RÉSULTATS : Les médicaments n'étaient disponibles en permanence que dans quatre des huit pays. Le coût des médicaments essentiels pour un traitement standardisé variait selon les pays : jusqu'à cinq fois plus cher pour le béclométhasone inhalé et trois fois plus pour le salbutamol inhalé. Dans tous les pays excepté deux, le coût en médicaments pour traiter un cas d'asthme modéré per-

sistant excédait le salaire mensuel d'un infirmier dans le pays correspondant. Le salbutamol inhalé était inscrit dans la liste nationale des médicaments essentiels dans cinq des huit pays, et le béclométhasone inhalé dans seulement trois des huit. Le coût des médicaments était plus bas lorsque les génériques étaient disponibles. L'inscription des médicaments sur la liste nationale des médicaments essentiels jouait également un rôle dans l'obtention des médicaments à moindre coût mais de façon moins importante que l'utilisation des génériques. **CONCLUSIONS :** Le coût et la disponibilité des médicaments varient considérablement selon les pays et peuvent représenter un important obstacle au traitement des patients asthmatiques dans les pays à revenus faibles ou intermédiaires.

R E S U M E N

MARCO DE REFERENCIA : El costo y la disponibilidad de las drogas necesarias para el tratamiento del asma pueden representar barreras potenciales para un manejo efectivo. Estudio efectuado en Argelia, Burkina Faso, Costa de Márfil, Guinea, Mali, Siria, Turquía y Vietnam en 1998.

MÉTODO : Estudio de precios y políticas para los distintos componentes del tratamiento del asma.

RESULTADOS : Las drogas fueron accesibles con seguridad en sólo cuatro de los ocho países. El costo de las medicaciones esenciales para el manejo estándar de los casos varió más de cinco veces para la beclometasona y más de tres veces para el salbutamol inhalado. En todos

los países menos dos, el costo de un año de tratamiento de un caso de asma persistente moderado excedía el salario mensual de una enfermera de ese país. La lista de drogas esenciales incluía el salbutamol inhalado en cinco de los ocho países y la beclometasona en tres de ocho. El costo de las drogas era menor cuando existían preparados genéricos y, en menor extensión, cuando las drogas están en la lista de medicamentos esenciales.

CONCLUSIONES : El costo y la disponibilidad de los medicamentos varía ampliamente y pueden representar barreras importantes para el manejo efectivo del asma en algunos países de recursos escasos o intermedios.