

Management of asthma in sub-Saharan Africa: the Nigerian perspective

A E Fawibe

Abstract

Asthma is a very common respiratory disorder with rising prevalence rates worldwide. The advances in our understanding of its pathogenesis and introduction of new medications in its management have not been of much benefit to most patients in Africa. This is due to various complex and interrelated reasons such as lack of proven diagnostic and monitoring facilities, inadequate knowledge of current management of asthma by doctors, poor compliance by patients, use of traditional medicines of unproven efficacy, fake/substandard drugs, and lack of locally designed guidelines based on local resources. The solutions to these problems require the full participation of all. Governments need to provide the appropriate environment for the care-givers and patients; on the other hand the care-givers need to update themselves on the current management of asthma, while the patients need to take the treatment of their illness seriously and also develop a strong management partnership with their care-givers.

Introduction

Asthma is a global disease with rising prevalence rates, especially among children.¹ In sub-Saharan Africa, the prevalence of asthma ranges from 2% in Ethiopia to 18.4% in Nigeria among children between 13 and 14 years.² However, lack of agreed criteria for defining the condition and its prevalence has made comparisons difficult.

Despite advances in our understanding of asthma and the introduction of new medications in its management, the benefits have not yet reached most patients in Africa countries.³⁻⁵

This article aims to highlight some of the problems of the current management of asthma in sub-Saharan Africa, as well as offering suggestions on how to improve on its present management in our environment.

*Dr A E Fawibe, Department of Medicine, Federal Medical Center, Bida, Niger State, Nigeria.
Correspondence to: PO Box 4923, GPO Ilorin, Kwara State, 240001, Nigeria.
Email: drdemola@yahoo.com*

The current status of asthma management in sub-Saharan Africa

At present the management of asthma in our community is far from the recommended guidelines.^{1,5} This is due to various complex and interrelated reasons as highlighted below.

Lack of proper diagnosis and monitoring techniques

The peak flow meter is designed for the monitoring of asthmatics because it is a simple, quantitative, and reproducible measure of airflow obstruction that can be used for managing exacerbations and daily long-term monitoring. It may also assist in the diagnosis of asthma since it can be used to demonstrate the variability of test results that is characteristic of asthma. At present it is not commonly used in sub-Saharan Africa.⁴ Likewise, patients seen in outpatient clinics rarely have their lung function measured. This is due to a lack of adequate information on the importance of these tests in the management of asthma. Ngom and co-workers⁵ found that 41% of general physicians in Ivory Coast were unaware of the usefulness of forced expiratory volume (FEV) measurements in asthma.¹ None of the patients studied by Erhabor and Adigun⁶ had peak flow rate monitoring of their asthma and only 27.4% of patients reviewed by Salami and Oluboyo⁴ had peak flow monitoring in the emergency department. The management of asthmatics without serial measurements of airflow has been likened to the management of hypertensives without blood pressure measurements.⁷

Injudicious use of asthma medications

Many asthmatics are presently treated by symptom relief with oral bronchodilators.⁸ Although inhaled bronchodilators have been used increasingly, oral bronchodilators are still being used widely in sub-Saharan Africa. This is because inhaled drugs are more expensive than oral medications and also because many patients do not understand the proper techniques of using an inhaler. Furthermore, the inhaled drugs are not included in the national essential drug lists in a number of African countries, even though they are now recommended for such inclusion by World Health Organization. Oral aminophylline is widely used in most of the African countries because it is very cheap.^{4,8} However, there are no facilities to monitor the serum concentration of this drug in most of these countries.

The use of inhaled corticosteroids is uncom-

mon.^{4,8} This is due to lack of awareness among general practitioners and the inability of the patients to afford the medication. Few practitioners in this region of the world are aware that anti-inflammatory agents, especially inhaled steroids, are at present the most effective controller agents in the prevention of asthma attacks. Inhaled corticosteroids are very expensive, hence they are not widely used in these countries. Oral steroids, especially in the form of prednisolone, are still used in the management of moderate-to-severe persistent asthma. Although they are effective in controlling symptoms, and cheap, their prolonged use may result in steroid toxicity, such as osteoporosis and vertebral compression fractures, posterior subcapsular cataracts, diabetes, hypertension, and adrenal suppression.⁹

Despite controversy concerning its efficacy in treating moderate-to-severe acute exacerbation of asthma, and evidence that intravenous aminophylline is less effective than nebulized β_2 agonist,^{10,11} intravenous aminophylline is still the most commonly used agent in relieving symptoms of acute episodes of asthma in sub-Saharan Africa because it is cheap.^{4,6} It is usually given uniformly with little or no consideration for the patients weight, history of prior use of oral aminophylline before admission, and without monitoring serum theophylline concentration during treatment – hence side-effects like tachycardia, nausea, vomiting, diarrhoea, insomnia, and tremor are not uncommon.¹² Subcutaneous injection of adrenaline is also sometimes given because it is cheap.^{4,8}

Poor compliance

Poor compliance is another big problem associated with proper asthma management in Africa, as is the case in the management of other diseases. Common reasons for the poor compliance include the inability of the patient to afford the medications, fear of side-effects, and inability to use the inhaler correctly, which may result in lack of any noticeable benefit to the patient.

Use of traditional healing methods

Traditional methods of healing as a primary way of managing asthma are popular in Africa, as they are in the management of other diseases.^{8,13,14} Traditional medicine is still widely practiced in many African countries especially in the rural areas. A report by Mugusi et al⁸ from the rural areas of Cameroon showed that most of the self-reported asthmatics were using traditional medicines. In Nigeria for example, traditional healers regularly hold trade fairs and many of them claim they have cure for diseases such as asthma, sickle cell anaemia, hypertension, etc. Traditional healing methods tend to have a holistic approach to the treatment of diseases and this may be helpful in removing the possible psychological component of asthma. In addition, some of the herbal medications may contain some active ingredients that may help in alleviating the symptoms of asthma. For example, ephedrine was extracted from the root of a plant called Ma huang (*Ephedra sinica*), which

was first reported being used in managing wheeze in an ancient medical book in AD752.¹⁵ Sodium cromoglycate was originally extracted as Khelling from the root of the Egyptian plant ammivisnega.¹⁶ However, some herbal preparations claimed to be effective in asthma may actually contain some drugs like prednisolone, franol etc, which have been crushed and mixed with other oral herbal preparations.¹⁷ Also there is no adequate documentation of the dosage and toxic effect of most of these herbal preparations.

Lack of proper education

This may actually be a major reason for poor compliance in some patients. The role of proper education in the management of asthma cannot be over-emphasised; in fact it is the first of the six-part programme recommended by the global initiative for asthma.¹ However, few doctors in sub-Saharan Africa find adequate time to properly educate their asthma patients. This is especially important in this region where it is believed that diseases are not only due to physical and psychological causes but also due to astral influences, and spiritual and esoteric causes.¹⁸

Fake and substandard drugs

This is also a very common problem and poses a great danger to the proper management of asthma. It is partly due to the high cost of the standard drugs, which encourages fake and substandard brands.

The way forward

An effective asthma management plan for Africa should include proper diagnosis and monitoring of asthma, adequate education, and medication plans for long-term management. Adaptation of guidelines for asthma management in Africa must be based on local healthcare resources and cultural preferences, rather than depending solely on prepared guidelines based on the healthcare resources of the developed world. Some countries like South Africa have already developed their own local guidelines.¹⁹

Diagnosis and monitoring

The proper diagnosis of asthma is based on the combination of clinical assessment and physiological measurements. Although most cases of asthma can be diagnosed by detailed history and examination alone, classification of severity and further monitoring requires the measurement of ventilatory function. The peak flow meter should be made available at all healthcare centres and all involved in the management of asthma should be taught how to use it to monitor their patients during acute exacerbations as well in the long term. It can also aid in the diagnosis of asthma since it may be used to demonstrate the variability in test results characteristic of asthma. Spirometry – as well as other tests like bronchoprovocation tests, allergy skin tests, etc. – should be made available in the referral centres where cases

of difficult asthma can be referred for proper diagnosis and treatment.

Possible ways by which improved lung function testing could be implemented include:

- peak expiratory flow rate and/or spirometry monitoring at every physician visit
- home peak expiratory flow rate monitoring
- daily pulmonary function tests to help establish parameters for safe discharge and drug doses for all patients admitted to hospital due to acute asthma.

Asthma management

The way forward for the management of asthma in Africa involves the use of proper medications for acute exacerbations as well as chronic cases.

Acute exacerbations

Figure 1 shows a simple and realistic algorithm for the management of exacerbations of asthma. Where available and when patients can afford it, the inhaled short-acting β_2 agonists should be used together with systemic corticosteroids. The use of genuine standard generic inhaled agents should also be encouraged. Alternative medications like intravenous aminophylline which can be life saving may be used where patients cannot afford recommended medications. However, it must be used cautiously in order to avoid dangerous side-effects, especially on the heart. Oxygen, nebulisers, blood-gas monitoring devices, and lung-function monitoring instruments should be made available, at least in the referral centres where very severe cases should be managed.

Long-term management

Since exacerbations of asthma usually reflect either exposure to triggers or a failure of long-term management, any identified trigger factors should be avoided and there should be adequate long-term planning for the management of asthma patients. This should involve the use of controllers, as well as relievers, in contrast to the current practice of symptom relief alone.⁸ Generic inhaled medications can also be made available but they must be properly assessed to be sure that they are not fake or substandard. There should be proper pharmacovigilance by the various regulatory bodies to get rid of fake asthma drugs.

Role of education

Reports from previous studies have demonstrated the importance of patient education in the successful long-term management of asthma.^{20,21} Patients should be educated that although asthma cannot be predicted, it can be treated and controlled effectively so that patients can be free of symptoms day and night, require little or no quick-relief medication, and have normal active lives. Patients need to know that inhaled medication is preferred for asthma because it has a superior therapeutic ratio compared with the currently available oral therapy, since high concentrations of the inhaled medication can

be delivered directly to the airway with high therapeutic effects and few systemic side-effects.¹ They should also know that asthma is no longer considered a condition with isolated acute episodes of bronchospasms but a chronic inflammatory disorder of the airways. Therefore the use of quick-relief medication alone that does not give long-term control, because it does not affect airway inflammation, should be discouraged. They should be taught proper inhaler techniques with a metered-dose inhaler. The need to avoid any identified trigger factor should be stressed. They must be encouraged to play a very active role in managing their asthma.

All health professionals involved in managing asthmatics should receive continuing medical education on asthma management so as to be aware of its current diagnosis and management. Anti-inflammation and peak flow monitoring should particularly be emphasised.

Traditional healing methods

The role of traditional healing methods in the management of asthma has not yet been well investigated in Africa. Until this is done, efforts should be made to ensure that patients take medications with proven efficacies for the control of their disease.

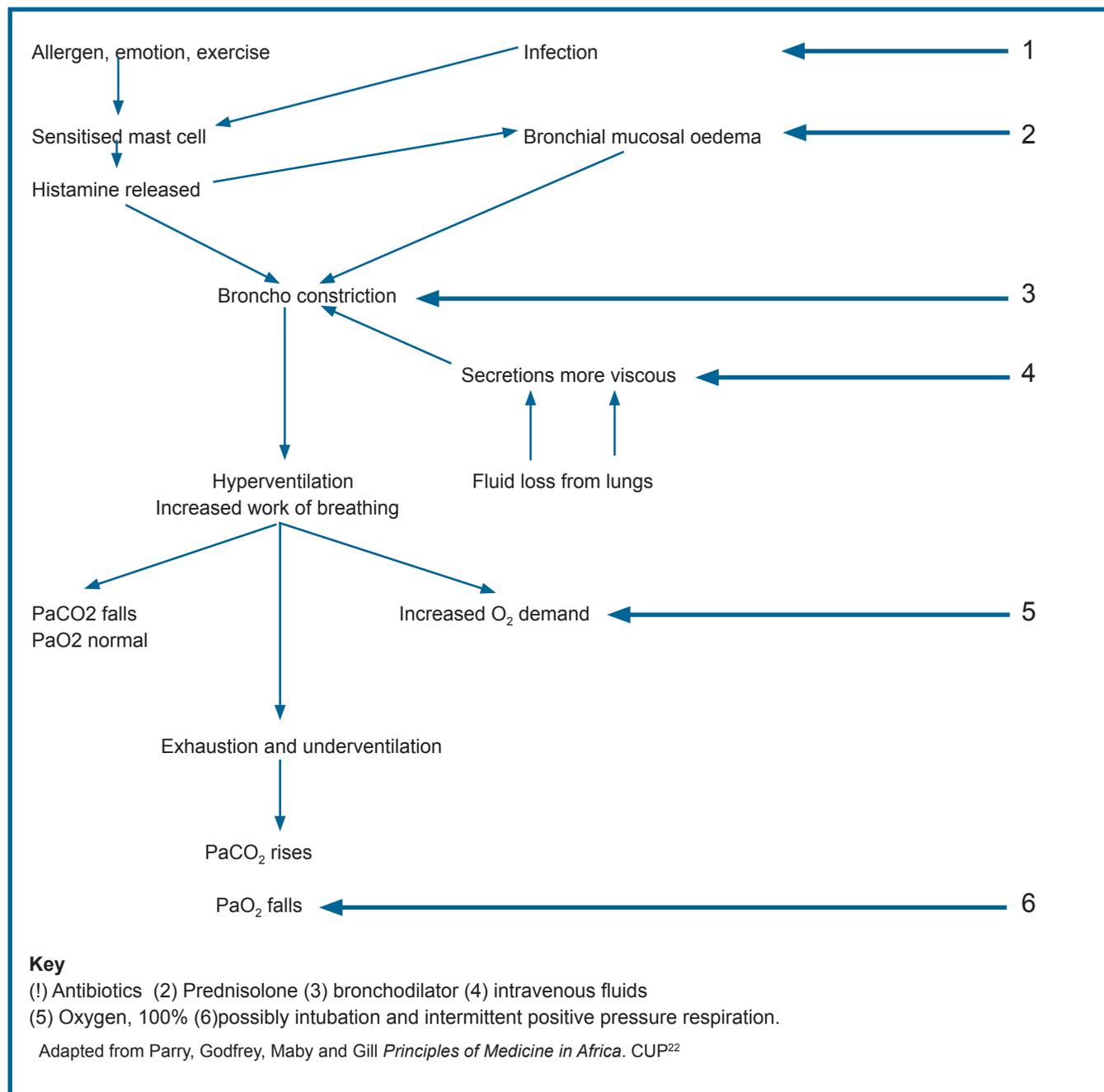
The role of government

Governments should assist in making genuine generic inhaled medications available. Facilities such as nebulisers, oxygen, etc. should be provided in the emergency units of all government hospitals and well-trained personnel should be available to use them. Poverty-alleviating programmes should be encouraged so that patients can be empowered to buy appropriate anti-asthma drugs instead of the less effective ones with more side-effects.

Role of international bodies

The role played by the World Health Organization (WHO) in coordinating international efforts against asthma is commendable. The Global Alliance Against Chronic Respiratory Diseases (GARD) is part of WHO global work to prevent and control asthma. Its vision is to make the right to breathe freely a reality for all, especially in low- and middle-income countries and vulnerable populations like ours. In 1992, WHO and the US-based National Heart, Lung and Blood Institute jointly formed GINA (Global Initiative For Asthma) to cut deaths and disability by developing and implementing an optimal strategy for asthma management and prevention. GINA has developed guidelines on asthma management for doctors, nurses, public health officials, patients, and their families. It has also held a workshop to introduce its programme to public health officials and medical professionals in more than 80 countries, leading to implementation of the guidelines. The activities of these and other international bodies such as the IUATLD (International Union Against Tuberculosis And Lung Disease) need to be more widespread so as to cover the peripheral areas in our environment.

Figure 1 Severe acute asthma: the sequence of events and remedies needed.



The possible ways by which improved drug supply and dispensing could be achieved include:

- A government commitment to improve patients' access to adequate treatment. This could be achieved through the purchase of generic asthma drugs in large quantities and a well-coordinated distribution system to maintain an adequate drug supply to peripheral centres at all times.
- National and international action to improve access to good quality generic drugs. For example, possibly purchasing generic drugs through bodies like the IUATLD in collaboration with WHO.

Conclusion

A lack of proven diagnostic and monitoring facilities, inadequate knowledge of current management of asthma by doctors, poor compliance by the patients, use of traditional medicines of doubtful efficacy, fake/substandard drugs, and lack of locally developed guidelines based on local healthcare resources are some of the reasons asthmatics still suffer needlessly in sub-Saharan Africa.

The way forward involves the concerted efforts of all. Governments should make the necessary facilities available and also ensure that patients are able to afford their drugs. All healthcare providers, especially general

practitioners who are involved in the management of asthmatics, should regularly update themselves on current asthma management. There should be locally designed standardised protocols for asthma management based on the locally available resources. Asthmatics should be properly educated and encouraged to have as much knowledge of their disease as possible. They should be encouraged to develop a strong management partnership with their doctors.

References

1. Global initiative for asthma – Global strategy for asthma management and prevention. NHLBI/WHO workshop report, MD National institutes of health, 1995.
2. International study of asthma and allergies in Childhood (ISAAC) steering committee. Worldwide variations in the prevalence of asthma and allergies in childhood (ISAAC). *Eur Respir J* 1998; 12: 315–35
3. Management of asthma in adults: A guide for low income countries. International Union against tuberculosis and Lung disease, 1996.
4. Salami AK, Oluboyo PO. Bronchial asthma in Ilorin: a five-year review. *Trop J Health Sci* 2004; 11: 19–23.
5. Ngom AK, Kone MS, Danguy EA, Koffi N, Kouassi B. Evaluation of management of asthma in African adults. National survey among general physicians from Ivory Coast. *Rev Mal Respir* 2001; 18: 531–6.
6. Erhabor GE, Adigun AQ. Analysis of intra-hospital deaths from acute severe asthma. *Nig J Health Sci* 2001; 1: 22–5.
7. Stable-forth D. Death from asthma. *Thorax* 1983; 38: 801–5.
8. Mugusi F, Edwards R, Hayes L, et al. Prevalence of wheeze and self-reported asthma and asthma care in an urban and rural area of Tanzania and Cameroon. *Trop Doc* 2004; 34: 209–14.
9. Dunlap NE, Fulmer JD. Corticosteroid therapy in emphysema. *Clin Chest Med* 1984; 5: 669–83.
10. Reed CE, Hunt LW. The emergency visit and management of asthma. *Ann Intern Med* 1990; 112: 801–2.
11. Milgrom H, Bender B. Current issues in the use of theophylline. *Am Rev Respir Dis* 1993; 147: 553–9.
12. Bukowskyj M, Nakatsu K, Munt PW. Theophylline reassessed. *Ann Intern Med* 1984; 101: 63–73.
13. Erinoshio OA, Ayorinde A. Traditional medicine in Nigeria. Federal ministry of Health Lagos. 1985.
14. Sofowora A (Ed). Medicinal plants and Traditional medicine in Africa. Ibandan, Nigeria: Spectrum Books Ltd., 1993.
15. Wang Tao. Herbs Ephedra. In *AD752 Tang dynasty*, Vol 9, pp 266. Wai-Tai-Mi-Yao. Reprinted by Peoples Health Publication Co., 1994.
16. Howell JBL, Altounyan REC. A double blind trial of disodium cromoglycate in the treatment of allergic bronchial asthma. *Lancet* 1967; 11: 539–42.
17. Morice A. Adulterated homeopathic cure for asthma (letter) *Lancet* 1986; 12: 862–3.
18. Lambo JO. The healing powers of herbs with special reference to obstetrics and gynaecology. In *African Medicinal Plants*. Ed. Sofowora EA. Ife, Nigeria: University of Ife Press, 1979.
19. South Africa pulmonology society adult asthma working group. Guidelines for the management of chronic asthma in adults – 2000 update. *S Afr Med J* 2000; 90: 536–48.
20. El-Hefny A, Tarrf H, El-falaky M, Ekladios E. Role of environmental control and parental education in the long term of asthmatic children. *J Egypt Med Assoc* 1994; 77: 253–67.
21. Parker SR, Mellins RB, Sogn DD. Asthma education: a national strategy. *Am Rev Respir Dis* 1989; 140: 84–853.
22. Bayu T, Warrel DA, Femi-Pearse D. The Lung. In *Principles of Medicine in Africa* 2nd Edition. Eds Parry, Godfrey, Mabey, Gill. Oxford: Oxford University Press, 1984; 761–816.