Editorial

Pharmacological economics and asthma treatment

José Roberto Jardim

In an ideal situation, every person should 'receive his or her share of health care'. However, reality does not often match the ideal. Resources are finite while human beings have infinite wants and needs. Although it has been said that 'health is priceless', it certainly has its costs.

The discussion regarding the inequity between how much needs to be invested in health care and the availability of resources has been a constant throughout the ages. Only the effort and the ingenuity of our public health administrators have managed to narrow this gap. Despite the difficulties in obtaining resources, it has been possible to achieve certain advances in health care: there is a steady increase in longevity and quality of life; rehabilitation has succeeded in helping people with disabilities recuperate functionally and professionally; and the cure rate has increased in various clinical situations.

However, there is almost constantly a certain tension between consumers and health administrators, leading to a confrontation between the government, which prefers cheaper medications, and consumers, who prefer medications that are more effective. Given the complexity of such decisions, it was natural that a new science combining the principles of economics with those of medicine should arise: health economics, also known as pharmacological economics, or pharmacoeconomics.[1,2] The basic principle of this new science is not to economize but to generate knowledge regarding how to make the best use of health resources while taking into account the needs of the community. Pharmacoeconomics, to some extent, is based on the fact that people need to make decisions about health care and want to know the worth of such decisions, as well as on the knowledge that bad decisions are generally costly.

Pharmacoeconomics, in its current form, was conceived in 1978, when three professors of pharmacy at the University of Minnesota - McGhan, Rowland and Bootman - began to evaluate and to teach the concepts of cost-effectiveness of using aminoglycosides in burned patients. However, the term pharmacoeconomics was first used in 1986, by Townsend.[2]

In Brazil, socioeconomic inequality and strong governmental interference, together with gross technical and administrative inefficiency, provide the context for health care. This triad draws attention to the importance of achieving maximal efficiency in the use of material, human, and financial resources in order to generate savings.

The allocation of medical resources creates the need to determine the safety, efficacy, and effectiveness of any planned intervention. Efficacy is defined as positive functioning of the intervention under ideal conditions. Effectiveness is the positive functioning of the intervention under the day-to-day conditions in which the patient lives. A medication might have an excellent effect when it is given to the patient under ideal conditions, such as in the hospital or in the outpatient clinic, but can lose that advantage if the patient stops taking it due to its cost or side effects. In such cases, an economic analysis is important. Those two concepts are also accompanied by the concept of efficiency through the question: "Are we achieving the best benefit from the resources we are using?"[1]

When two or more strategies are compared, their benefits and costs should be considered. Therefore, various types of economic analyses can be carried out. The simplest way to evaluate the appropriateness of a new proposal is illustrated in Figure 1. The ideal model is one in which the benefits are equal to or greater than the costs.

However, in an economic analysis, the possibilities of achieving a greater benefit even at a higher cost or of achieving a smaller benefit at a lower cost should also be considered.

There are four types of economic analyses: cost-minimization, cost-effectiveness, cost-utility, and cost-benefit.[1,2]

In the cost-minimization analysis, the prices of two interventions producing equal benefits are directly compared. This is a quite uncommon type of analysis, since it is almost impossible to have two interventions producing exactly equal results in medicine.

The most common type of analysis in medicine is the cost-effectiveness analysis. It compares the effectiveness of treatments producing the same outcomes. If one of the treatments is cheaper and has a better outcome, the choice is obvious. If one of the treatments is more effective but more expensive, the treatment presenting the lowest cost per outcome is preferred. This type of analysis cannot be used to compare different diseases or programs. Therefore,
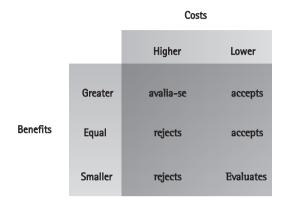
Figure 1 – Economic analysis in health.

the objective of this type of analysis is to indicate the therapeutic option through which it is possible to achieve the best clinical result per monetary unit applied.

The cost-utility analysis seeks to consider the patient satisfaction with the treatment or intervention used rather than the direct results or outcomes provided by the medication. Patients are often displeased with the side effects of antineoplastic drugs. In this case, appropriate tools can evaluate, for example, the health-related quality of life. This type of analysis was little used until recently. The concept of the unit of measure known as quality-adjusted life years, which associates remaining lifetime with the best possible quality of life, has been recently introduced. It is necessary to define whether it is more beneficial to the patient to have increased survival and a lower quality of life or vice versa.

Cost-benefit analysis is often confused with cost-effectiveness analysis. Cost-benefit analysis seeks to identify the treatment option that makes it possible to reduce costs or to increase profits. This is a quite rare type of analysis in medicine, since it puts a price on the life of the patient, which is not ethically acceptable.

This issue of the Brazilian Journal of Pulmonology features an interesting study evaluating the impact of a free program for asthma patients that has much to do with pharmacoeconomics. The program proved to be highly cost-effective. An analysis of the quality of life of these patients would surely show that the program has a favorable cost-effectiveness ratio.

Pontes *et al.*[3] evaluated 269 patients suspected of having severe asthma after they had received free treatment with an inhaled corticosteroid and a short-acting β_2 agonist. The patients participated in the Bahia State Asthma and Allergic Rhinitis Control Program, whose objective is to be comprehensive and to benefit a substantial number of patients with asthma and rhinitis in that state. The results achieved are comparable to those obtained in other areas of Brazil, making us believe that patients with asthma respond in a quite homogeneous manner, regardless of where they live.[4]

The initial results after a one-year follow-up period are quite favorable: the number of courses of corticosteroids was reduced to one-third in relation to the previous year; the number of days missed from work or school per patient-year was reduced from 11.36 to 1.60; and the number of emergency room visits dropped to one-ninth of that observed in the preceding year. The authors conclude that a program designed to control severe asthma in outpatient clinics can lead to a pronounced reduction in the demand for health resources.

This study proves, once again, what has long been taught in medical school: chronic diseases require continuous follow up, with uninterrupted treatment. Unfortunately, our health policies have not prioritized this type of treatment. Asthma is a chronic inflammatory disease and requires continuous anti-inflammatory treatment. However, few Brazilians have the means to afford the medications. The result of this policy is that an overwhelming number of patients seek emergency room treatment and miss school or work. This leads us to the summation of two costs evaluated in pharmacoeconomics: the direct costs (those that are directly associated with the intervention, such as the purchase of medications to treat the asthma attacks, the costs of hospitalizations/additional examinations, and the salaries of the professionals involved in the treatment); and the indirect costs (school or work days missed by patients and companions, together with the transportation costs related to emergency room visits). In the area of health, we still have what are known as intangible costs, such as personal or familial suffering, which are quite difficult to measure.

Unfortunately, Pontes *et al.*[3] did not stratify the patients according to severity, use of resources in the previous year and the response to treat-

ment. It would be interesting to know whether the patients having visited the emergency room a greater number of times, and therefore presumably presenting a higher degree of inflammation, required higher doses of oral or inhaled corticosteroids. Although we have treated most patients with doses of corticosteroid that are practically fixed, it is possible that the treatment can be individualized and that a substantial number of patients can receive lower doses of medications, thereby reducing the costs. This measure is always quite welcome by the authorities involved in the funding of projects such as this.

It would have been interesting if the authors had classified their cases as 'uncontrolled', 'controlled', 'well controlled', or 'totally controlled'. The classification of asthma as intermittent or persistent has never been extremely useful for the orientation of the treatment team. Asthma has frequently been classified as persistent only during the period in which the patient was not receiving the proper medication. In such cases, upon receiving the recommended treatment, the patient with persistent asthma became a patient with intermittent asthma, and the orientation was for a milder treatment, which made the patient return to the previous stage of persistent asthma. Classifying asthma by the degree to which it is under control is a more practical way of monitoring asthma patients, and the updated guidelines of the Global initiative for Asthma recommend doing so.

Asthma is considered a public health problem in Brazil, where there are more than 350 thousand hospitalizations, and approximately 2500 deaths, per year.

This number of deaths is apparently small in comparison to the more than 30,000 deaths from chronic obstructive pulmonary disease or pneumonia. However, given the current knowledge and safety of the treatment, these deaths are unacceptable. A project that could result in all economically disadvantaged asthma patients receiving their medication would revolutionize the treatment of chronic diseases and establish a landmark. There are efforts being made to implement the National Asthma Plan, discussed in May of 2006 in the city of Brasília. These efforts are receiving support from several medical societies, including the Brazilian Thoracic Society, as well as from patient support groups, in collaboration with the Ministry of Health Department of Basic Care. This dream is close to becoming a reality.[5]

Let us hope that this study by Pontes *et al.* will trigger other studies related to pharmacoeconomics in this area or in the area of other chronic respiratory diseases in Brazil.

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