

COST-EFFECTIVENESS-ANALYSIS AND THE CONCEPT OF QUALITY ADJUSTED LIFE YEAR (QALY) IN ROMANIA

SORIN PAVELIU^{1*}, CIPRIAN-PAUL RADU², FLORIN TUDOSE³,
CATALINA TUDOSE⁴, ANDREEA LETITIA ARSENE⁴

¹*Titu Maiorescu University, Faculty of Medicine and Dental Medicine, Bucharest, Romania*

²*National School of Public Health, Management and Development in the Medical Field, Romania*

³*Clinical Universitary Emergency Hospital Bucharest, Romania*

⁴*Carol Davila University of Medicine and Pharmacy, Bucharest, Romania.*

*corresponding author: sorinpaveliu@yahoo.com

Abstract

The article presents the Romanian status regarding the use of indicators like quality-adjusted life years in the decision making process at the level of the health care system, presenting also some ideas for the improvement of the actual situation, for the patient's benefits.

The authors analysed the literature covering the pharmacoeconomics and the quality-adjusted life years and they performed a Romanian legislation review covering the health insurance, resources allocation, national health programs and the drugs market.

Romania took a step forward by demanding pharmacoeconomic data for the decision regarding the free-of-charge drugs or the ones with co-payment from the patients. But there are several barriers which block the effective utilization of pharmacoeconomic studies in the decision making and management: the lack of regulations regarding the development of pharmacoeconomic studies, the lack of national guidelines for the authors, the lack of a central agency for Health Technology Assessment. Moreover, Romania has a great problem regarding the calculation of the real cost for the diseases, and this represents also a major barrier for the process of pharmacoeconomic studies standardization.

Romania has to adopt quickly resource allocation criteria based also on the economic deficiency of the health interventions. The use of pharmacoeconomics studies for resources allocation could support the improvement of the health budget.

Rezumat

Articolul prezintă situația din România privind utilizarea indicatorilor ce reflectă anii de viață câștigați și calitatea vieții în procesul de luare a deciziilor din sistemul sanitar, venind și cu propuneri de îmbunătățire a situației existente în beneficiul pacienților.

Autorii au făcut o analiză a literaturii de specialitate, a articolelor pe această temă publicate și a legislației din România privind alocarea resurselor, asigurările de sănătate, programele naționale de sănătate și piața medicamentelor.

România a făcut un pas înainte prin solicitarea de date de farmacoconomie pentru fundamentarea deciziei referitoare la medicamentele compensate și gratuite. Lipsa unui cadru legal de realizare a studiilor de farmacoconomie, a unor ghiduri naționale de urmat

de către cei care le realizează, lipsa unei instituții cu rol în evaluarea noilor tehnologii medicale constituie multiple bariere în utilizarea efectivă a studiilor de farmacoeconomie, în luarea deciziilor și managementul sistemului. Mai mult, România are o problemă în calcularea costurilor reale ale unei boli, ceea ce este o piedică majoră în standardizarea analizelor farmacoeconomice.

România trebuie să adopte rapid criteriile de alocare a resurselor în concordanță cu eficiența îngrijirilor de sănătate. Utilizarea studiilor de farmacoeconomie în alocarea resurselor poate contribui la schimbarea percepției negative asociate bugetului sănătății.

Keywords: resources allocation, pharmacoeconomics, quality adjusted life year (QALY), health technology assessment (HTA)

Introduction

The conflict between insufficient resources and needs is the source of the economic science. The growing need for new medical technologies and drugs and insufficient funds are subject to increasingly large control pressure and have justified the development of a new border science - pharmacoeconomics. Pharmacoeconomics is a part of health economics and economic evaluation of health interventions, comparing costs and results of two treatments (even if sometimes the alternative is no treatment or a healthcare intervention without drugs).

The pharmacoeconomic studies are analytical tools, increasingly and frequently used in making decisions about resource allocation and management of medicinal products in health insurance systems. Even if these studies are not the main argument in the decision of the administrative and policy approval of drugs or therapeutic programs, to date, 19 countries of the European Union (EU), including Poland, Hungary, Slovakia [1] have developed guidelines for the analysis of pharmacoeconomic studies from the manufacturers files issued for their products to benefit from public funding sources.

In most cases, the use of pharmacoeconomic studies is made with other economic evaluation studies by institutions specialized in Health Technology Assessment (HTA). Table I shows the main EU institutions having this role, designed to analyze the studies provided by industry and independent experts or even to conduct their own studies to provide a support for policy makers in making the best decision. On the other hand, these institutions never do assessments on the economic affordability of an intervention. This dimension is combined with available health budgets and most often is up to decisions makers from parliaments, governments [2].

Table I

Institutions which make economical evaluations of the medicines, from some European countries (after Garrido and colabs., modified) [3,4,5]

Country	Institution
Austria	Pharmaceutical Evaluation Commission
Belgium	Medicine Reimbursement Committee
France	Department of Assessment of Health Products and Procedures / HAS – Haute Autorité de Santé
Germany	Institute for Quality and Efficiency in Health Care (IQWiG)
The Netherlands	Health Care Insurance Board
United Kingdom	National Institute for Health and Clinical Excellence (NICE)
Sweden	The National Board of Health and Welfare (NBHV) / Dental and Pharmaceutical Benefits Agency
Bulgaria	Committee for the Positive Drug List
The Czech Republic	Drug Categorisation Committee
Estonia	Pharmaceutical Committee
Hungary	Technology Appraisal Committee
Latvia	State Medicines Pricing and Reimbursement Agency
Lithuania	Pharmaceutical Reimbursement Committee
Poland	Agency for Health Technology Assessment
Slovakia	Categorisation Committee
Slovenia	Health Insurance Institute

The pharmacoeconomic analysis includes many instruments, such as cost-utility analysis, cost-clinical efficacy analysis, cost-minimization analysis and cost-benefit analysis. From these, the most used to prove the efficacy of a new medicine compared with another medicine, with an old technology, or with the most frequently used one, are the cost-efficacy analysis (CEA) and its variant - the cost-utility analysis.

Cost-effectiveness analysis is based on resources, costs of related treatments, and the results that are measured by gained life years (most often months of life gained, although it can be measured by healthy living days, *etc.*). The disadvantage of this analysis derives from the fact that there are prescription drugs with primary benefit related to the quality of life and not to its extension. In such situations it is recommended a cost-utility analysis, where results are assessed by the utility brought by such treatment and expressed by the natural units that include both quality of life and its extension, such as QALY (Quality Adjusted Life Year), EuroQol *etc.* [6]

The number of pharmacoeconomic studies has increased exponentially in recent years, but need to find a unit of measurement that allows the comparison of studies determined that the cost-utility and QALY unit to be predominant.

The term QALY (quality-adjusted life year) was used for the first time in 1976 by Zeckhauser and Shepard [7], but the concept was introduced by Klarman *et al* in 1968 when the assessment of the efficacy of dialysis was performed [8]. It was Pliskin *et al* (1980) [9] who defined it in the form that we use today, thus completing the theory of the usefulness of an intervention from the medical point of view.

The concept and the theory imposed relatively difficult. In a paper published in 1992 were counted only 51 trials that used this unit of measuring during the whole year [10]. After QALY was accepted as standard, the number of the papers based on this unit of measuring exponentially increased, annually being in present hundreds or even thousands of them. [11]

We conducted a literature review, on national and international books regarding health economics, economic evaluation and pharmacoeconomics, and also the articles published between 2005 and 2010. At the same time we made a critical analysis of laws, regulations over the period 2000-2010 covering the financing of health services, health insurance, national health programs work, pharmaceutical market.

What are cost-efficacy analysis and the concept of cost-effectiveness threshold?

The Cost-effectiveness studies analyze the costs based on the outcomes of the various treatments in natural units of measuring, but also on biological markers or years of life saved. This way of comparing of two technologies (medicines based interventions) is very advantageous when the outcomes are expressed in the same unit; otherwise the comparison is impossible. In addition many interventions have focused on quality of life patient outcomes.

Therefore, today it is widely used a complex unit of measuring, able to analyze both life prolongation and its quality -QALY and the studies are named cost-utility analysis (in fact, a variant of CEA). The global benefits offered by a treatment are quantified by the additional number of QALY offered – health gain based on quality gain and/or duration of life (lifetime).

QALY = The change in the quality of life due to health state (a better life) multiplied by a quantitative change of life (a longer life) [12]

The quality of life in a particular state of health is expressed by the utility, which is the value that individuals attach to different health states and evaluate on a scale from 0 to 1, where the lower limit and upper limit of death is the complete health. [13]

Establishing health state utility associated with each post-drug intervention is not an easy process, but rather delicate and subjective. In general, utility is determined by the investigation (among the sick people, in the general population) using one of the following types of techniques: (1) visual analogue scale or thermometer type (Visual Analogue Scale - VAS), (2) exchange time (Time Trade-Off - TTO) or (3) Standard bet (Standard Gamble - SG).

The comparison of the Cost-effectiveness of two types of medicines based intervention, leads to four possible conclusions:

- the new medicine is less effective, but more expensive and then the decision of rejection would be implicit;
- new drug is more effective and cheaper and then the decision to accept the decision;
- new drug is less effective but less expensive, a situation rarely found in practice because the manufacturers focus on a higher efficacy when they decide to invest in the development of a new medicine;
- the new drug is more effective (as demonstrated before the pharmacoeconomic analysis) and more expensive: in this situation, the question that needs to respond pharmacoeconomic studies is the level of cost-effectiveness compared with other drugs or interventions with a threshold limit. [4]

The main parameter of pharmacoeconomic studies is ICER (*Incremental Cost-Effectiveness Ratio*) named ICUR (*Incremental Cost-Utility Ratio*) in case the effects are expressed in QALY.

$$ICER = (C1 - C0) / (E1 - E0)$$

where C1 – is the cost of the new technology, C0 – is the cost of the technology with which the comparison is done, E1 the outcomes of the new technology and E0 – the outcomes of the old technology, expressed in natural units of measuring (in the case of ICER) and using QALY (in the case of ICUR). For cost-utility analysis an additional QALY gained represents in fact the value for ICUR.

The threshold for the cost-efficacy of an intervention is still a subject under debate and controversial because there are both advocates who support it or the contrary opinion [12].

The threshold for a QALY

Taking into account that different countries have different terms of sustainability regarding the willingness to pay for a certain therapeutical intervention, the analysis of a pharmacoeconomic study has to be done, among many others things, based on the value considered threshold for an

additional QALY, threshold beyond which the intervention is considered inefficient compared with others.

The main arguments against this kind of threshold are based on the fact that the main assumptions of this concept are not accomplished:

- perfect equivalence of the health programs except the costs;
- the obtaining of consistent outcomes as a result of the intervention;
- the availability of constant marginal costs – situations almost impossible to find in practice;
- QALY real value decreases with age even if the health status is constant;
- the existence of budget constraints inevitably limited of which must be funded increasingly more health programs even if several interventions are shown to be cost-effective in the same time;
- the use of the same perspective for all studies, being preferred the societal one;
- many of the classical therapeutic interventions do not have the cost-efficacy studies being used before the pharmacoeconomics take-off.

Though, the economic models are based on this kind of starting points and are later validated by practice [12].

The National Institute for Clinical Excellence (NICE, Great Britain) is one of the best known government agency which conducts and analyses the cost-efficacy studies. NICE rejects the settlement of a limit threshold for efficacy for a QALY, for several reasons:

- there is not a theoretical or empirical support widely recognized for the settlement of a limit threshold;
- there are also situations in which NICE might wish to exceed the threshold,
- the settlement of a limit threshold implies the recognition of the cost-efficacy as the main argument for evaluation;
- the existence of monopolies in some fields (areas) or sub-domains, makes the comparisons impossible [2].

NICE's point of view raised new questions, the answers for some of them being, however, already unanimous. First of all, those who are not specialized in pharmacoeconomics might ask if the existence of a limit threshold, of economic analyses and even of a specialized agency will not lead to a shift of the decision from policy makers or administrative competence to researchers or economists. The answer for this question is final: the pharmacoeconomic analyses represent just one of the criteria the policy makers have as a support for their decisions.

On the other hand, the use of a threshold or not is connected with the model of allocation of resources in each health system. Thus, systems where health insurance is mandatory where the allocative model is population, which seeks to maximize the resources available for health is more likely to use such a threshold. In health systems where there are more free market mechanisms used and where the individual choice is on the first place (*i.e.* USA) using such a threshold is not desirable. For example U.S. Oregon experiment showed that people prefer to fund services with reduced effectiveness, but very appreciated.[14]

Another question is related to the rigidity of the limit threshold. Some prefer an official limit threshold, clearly defined, adopted by the government institutions while others prefer just a custom value, a value of common sense. In the first case, the decisions makers are relieved, in the second case there is a chance that some decisions are often subjective, ultimately leading to solving of a health problem just for few but, with enormous financial difficulties for others (ordinarily more numerous).

Another subject under debate is the existence of a limit (or of a range with a lower limit and an upper limit).

The threshold values of a gained QALY in several countries

To see what is the optimal value of a QALY in Romania for a new technology, it seems useful to review accepted values in different countries.

The United States of America were among the first countries who declared, even if in an informal way, the limit threshold for an additional QALY to be considered cost-effective – the value of 50.000 \$. This limit is the base for the administrative decision from the USA for many years – at least 20 years – period of time that can be considered very long taking into account the age of the pharmacoeconomics and the moment when QALY was introduced for the general use. But, what is worrying is the fact that during this period both the USA's GDP (gross domestic product) and the amounts allocated for treatments increased in a staggering way without a change in the threshold limit for QALY mentioned above. The decision does not have to surprise too much because, in this way, the industry was pushed toward a permanent increase (raise) of efficiency in the favor of the payers, ultimately for patients.

Also, Great Britain is not in a much different situation, the acceptable limit recognized in the specialized papers, but unaccepted officially by the specialized institution – being between 20.000 and 30.000 pounds per extra QALY. [15]

In 2007, some producers rebelled against the decision of rejection for the inclusion on the list of compensated treatments accepted by the National Health System (NHS) of some new drugs. The trial was lost because the court was not empowered to judge the cost-effectiveness, but just to verify how the procedures are respected. One thing was brought in front of the public opinion: even in Great Britain there is not a transparent and documented methodology for the settlement of a limit threshold for an additional (extra) QALY [16].

In 1992, the World Health Organisation (WHO) also involved in the settlement of a limit threshold for an intervention to be considered cost-effective. Things became even more complicated because WHO decided to use another unit of measuring the utility - DALY (*Disability Adjusted Life Years*) but this unit is rarely used.

In its report from 2002, WHO made the proposal for the settlement of the level limit of efficacy at three times less than the level of GDP/individual for a DALY [17].

A summary of international experience on the lower and upper limits for a QALY gained in various countries is presented in Table II [4,18,19].

Table II
Limits of cost-effectiveness for a QALY gained proposed by experts (specialists) or institutions from some developed countries

Country	Possibly accepted value
Australia	€23,000 - €43,000/QALY
Germany	€20,000- €40,000/QALY
Sweden	€35,000 - €55,000/QALY
USA	\$50,000/QALY (unchanged since 1982)
Canada	€20,000- €100,000/QALY
United Kingdom	£ 20,000 -30,000/QALY €29,500 - €44,250/ QALY
The Netherlands	€20,000 - €80,000/QALY

Development of economic evaluation and pharmacoeconomics in Romania

Romania is at an early stage regarding the use of economic evaluation and pharmacoeconomics for fundament of management decisions in the health system. Although initial steps have been taken to develop a

health technology assessment agency, we can say that there is such an agency and that the only steps taken in this area are those in pharmacoeconomics. The Ministry of Health and the National Health Insurance House (NHIH) require now basic information regarding the cost-effectiveness of medicines.

Unfortunately, beyond these early attempts and efforts made by the Ministry of Health and National Health Insurance House among drug producers, not any other initiative of economic evaluation and determination of cost per QALY have been performed in other areas of healthcare. In spite of this, in Romania year emerge and introduce new technology (new types of paraclinical and clinical interventions like robotic surgery) In addition, in Romania there are currently no regulations or guidelines that can standardize even these first efforts of developing pharmacoeconomic studies.

In Romania failures in financing drug consumption are common, given that patients, professionals and the pharmaceutical industry argue the most effective use of technology without focus, and most often, and economic effectiveness of new drugs. On the other hand, given the economic crisis, the National Health Insurance House (NHIH) is forced to face the control of strongly increasing expenditure, but without direct interest to limit new technologies. In contrast, an analysis of the Framework Agreement for the social health insurance and its implementing Regulations of 2008, 2009 and 2010 showed that annually, new services and technologies in the basic package of services were introduced, although each year the funds were insufficient to cover existing services.

A summary review of the best-sold drugs in Romania in the last five years showed that, although clearly there have been no major changes in the pathology of the population (or would not have been expected in such short intervals), from year to year winners in the battle for funds have always been others. This proves the dynamism of the market mechanisms in pharmaceuticals, the existence of moral hazard at both the patient and the service provider (doctor, pharmacist, distributor, manufacturer), but the lack of universally accepted criteria for allocating resources and decision making. This leads ultimately to an inefficient allocation and other categories of patients are deprived of the necessary treatment services.

Arbitrary divergent interests of various categories of patients cannot be done without using, where possible, the same units for all, for example looking for a QALY cost-effectiveness limits for a QALY gained.

The analysis of the top five best sold drugs in 2009 (NeoRecormon[®] – Epoetinum beta, Pegasys[®] – peginterferon alfa-2a, Preductal[®] –

Trimetazidinum, Nurofen[®] – Ibuprofen and Zyprexa[®] – Olanzapinum) shows a wide range of problems to be addressed: from chronic renal failure, neoplastic disease, hepatitis, cirrhosis and heart disease to mental illness or to relieve pain and fever [20]. Is there a relationship between consumption of these medications and the cost per QALY gained by using them? Our answer is certainly not, because the basis of the recommendation and use of drugs are not such indicators.

As there is no data in Romania regarding cost-effectiveness of these treatments, we called for information to relevant literature synthesis. It is worth mentioning here that pharmacoeconomic analysis results from one country may be imported into another country, having in view, in particular, very different costs from one country to another (not only drug costs but also indirect costs of working force, with avoidable hospitalizations, with absence from work).

International literature provides various data on the cost per QALY for these drugs, showing very large variations. For example, the use of Epoetinum alfa in patients with anemia induced by chemotherapy in Sweden, the value of a QALY gained is € 24,700, which is reflected in the range of affordability in this country, established by The National Board of Health and Welfare [21]. Results in Sweden are comparable with those collected in the UK, where a systematic review of Wilson et al. in 2007 regarding cost effectiveness and Darbopoetinum Epoetinum alpha and beta in patients with anemia associated with cancer, analyzing the data to three different companies have found values ranging from £13,000 to £28,000 for a QALY gained [22].

International studies are published for Peginterferon alfa-2a, showing a cost/QALY which varies depending on the comparator chosen, with values from € 7,865 to € 19,941 [23,24]. Meanwhile, the National Institute for Clinical Excellence in the assessment file of Peginterferon alfa-2a presents results ranging from a dominant therapy (i.e. cost-effectiveness better than standard therapy) in cost per QALY of £ 3,500, depending on the Specific type of patients with hepatitis B receiving the drug [25]. How do we make decisions if there are no cost-effectiveness studies, i.e. on the third product from the top five, namely trimetazidinum, for which the authors could not find any such study?

Are medications used in Romania cost-effective compared to the specific conditions of our country? Pharmacoeconomics can bring specific answers to this question, although there is no doubt that all drugs should be used only if such studies exists. Instead there are efficacy studies in which

patients use the drugs, whether they pay directly out of pocket or through health insurance.

The model followed by countries that have begun to use pharmacoeconomic data to support decision is to require as a condition of accepting the settlement from public sources pharmacoeconomic studies for new drugs not yet in use. It is obvious that it is much easier to make decisions for accepting or rejecting the settlement of a new drug, than excluding the payment to those already on the market and, already used by patients with various diseases.

Romania has made a small step forward and joined the countries that require pharmacoeconomic data to base the decision on compensated medicines and those provided free to the population. Thus, both the Minister of Health decision no. 720 of 2008 on free and compensated medicines and other National Health Insurance House regulations approved in the same year require annexation of pharmacoeconomic studies to the drug candidate dossiers to be included on the compensation list or in therapeutic programs [26,27,28].

Cost-utility studies conducted in economically advanced countries are difficult to translate in countries like Romania because there are considerable differences in the services provided, resources are limited and there is inconsistent care for the whole population and actual cost of care varies significantly. Furthermore, our country has a problem in the calculation figures and defines the real costs of a disease, including treating it. It is no wonder that until now has not yet been assessed by health authorities a reasonable limit for a year of life saved or a QALY gained.

There are attempts, otherwise commendable, for the cost per QALY calculation made by some authors in Romania, but their estimates were based on their methodology and not on some analysis of standards and guidelines published by an authority in Romania.

For example, a poster presented at ISPOR (International Society for Pharmacoeconomics and Outcomes Research) in 2009 by Lupu *et al.* concluded that the value of ICUR of € 7,558 per QALY for Rituximab® is highly cost-effective when compared to other compensated treatments in Romania [29]. In another study from 2009 regarding the cost-effectiveness of tocilizumab in Romania, Ancuta et al have obtained a value of ICER of 58,866 RON for a QALY (about € 14,000), value considered favorable when compared with other accepted treatments for reimbursement of the National Health Insurances House [30].

The reason behind the use of the pharmacoeconomic studies is that of increasing the efficiency of the system and offering to the decision maker

the evidences on the most cost-effective decision. The simplest approach (non-existent in any health system) would be to have the economic evaluation studies available for all interventions (including drugs).

Decisions should be based on results achieved and resources available. On the other hand, decisions must take in consideration other issues including accessibility, equity, bioethics, socio-economic conditions, etc. For example the extent to which policymakers could act to stop the settlement of a product already used by patients, provided that it is the only alternative for the disease, but has a very high cost per QALY gained?

In the same time, the absence of the threshold from which a certain technology is considered cost-effective, the decision of the administration is not for the use of the patients and paradoxically contributes to the inefficient health care system.

Which could be the threshold value for a gained QALY in Romania?

Romania can go only in the direction followed by other EU countries regarding the introduction of new technologies, namely the application based on the reason of decisions on new technologies and economic studies for pharmacoeconomic evaluation.

In the absence of such QALY threshold limits, defined and officially established, we can imagine different scenarios and comparative empirical basis for assessing that value.

An empirical method is based on the recommendation of the WHO DALY threshold value to 3 times GDP *per capita* and a rough equivalence between a DALY and QALY. Using the data from the Human Development Report from 2009, data based on those provided by the World Bank for the year 2007, we can estimate as a limit for a DALY for Romania the amount of € 16,506 [31]

By applying the formula used for the calculation of the limit values for a DALY in the well-developed countries and comparing these values with the lower limits accepted for a QALY (chosen based on the assumption that the recommendation is intended for the poor countries) we can find that for a DALY it corresponds between tree to five QALY. Taking into consideration the limit threshold of € 16,506 for a DALY, the average value deducted in this way for a QALY would be of € 4,401 (between € 5,502 and € 3,301) [15].

The use of this method is objective in that: linear transformations between QALY and DALY cannot be performed, as the parameters used for the calculation are different (the evaluation of the quality of life and the disability scores respectively), specific for each country [11].

Another way for estimation of a QALY value could be based on the extrapolation of the data from the well-developed countries using PPP (*Purchasing Power Parity*) used by the World Bank in its reports. Given that most studies are from highly industrialized countries, the data being reported in their purchasing power, we consider that this number should in turn be adjusted for PPP. Taking into account the GDP/*capita* in PPP US\$ difference between Germany, the Netherlands and Romania it results a ratio of 2.7-3.1 to 1.

Applying this ratio to the lower limit value for a QALY gained, of € 20,000, the same in both countries, we get to the conclusion that the minimum value for a QALY gained in Romania should be of € 6,929 (average between € 7,407 and € 6,451).

We must take into account that the methodology for settling a QALY is strongly affected also by the social status of the population. Therefore, it is expected that wealthy people are willing to pay more in order to get a benefit from the field of health compared to a poor person who has the main objective the survival and the priority allocation of their resources to provide food and shelter (rent, utilities), etc.

QALY takes into account individual health but when there is a large discrepancy between the individual and the state's vision for health care may it be necessary to estimate a new negative correction threshold for an extra QALY, established by authorities. Returning to the comparison with Germany and the Netherlands we can make a correction to the level of a QALY obtained, through the share of total health expenditure of the consolidated state budget. Thus, we found a proportion of this expenditure of 16.5 and 17.6% respectively, compared with Romania, which granted only 12.4%, which implies a ratio of 1.33 to 1.41 to 1. With this correction, the value of a QALY gained (assessed by GDP *per capita* in PPP U.S. \$), would reach the threshold value of € 5,057, a value intermediate between the two empirical estimates made above.

We anticipate that a "Willingness to pay" study could demonstrate that Romanians, having very low financial resources, are willing to pay for their health less money in absolute numbers, compared with wealthier people from other countries which are normally more willing to seek treatments. The percentage of GDP allocated for health is in fact a reflection of the interest and importance the population gives to health by its representatives.

A study of the willingness to pay could develop the desire of most part of population to have acces to the new medical technology (including

medicines) from public funds (including public health insurance), when they need, without any interest for their cost (due to moral hazard).[32]

The use of a scientific methodology involves the compliance of several steps as follows:

- we need to prove concern for official recognition of the health costs (direct and indirect); this would give an impulse to the entire health industry, as there should be needed the settlement of a proportionality between different services – in line with the private markets rates and also a match among various hospitals which provide services;
- Romania has to choose for a uniform way of measuring utility; in addition to the QALY indicator, widely advertised, there is the indicator EuroQol (EQ-5D), commonly used in the EU, which is probably the most appropriate solution, worldwide there are adaptations and validations that would ease the implementation process in Romania;
- the Ministry of Health (MOH) should engage in debate and adopt a strategy for using new technologies, and to facilitate the development of the community's role in implementing that strategy;
- the MOH, NHIH or other institutions involved in evaluating new technologies should adopt and publish a guide for the assessment and economic evaluation of pharmacoeconomic studies based upon all other European countries model.

Finally, MOH and NHIH, along with a group of specialists working in Romania and abroad and representatives of government and private insurance, unions, [33] should decide, including the resources available, acceptable values for a QALY gained for new technologies that are intended to be introduced.

Setting limits on the value of a gained QALY from scientific calculations and decision to use economic evaluation studies in the introduction of new technologies will lead to results that will be affected by health care costs, economic situation, the epidemiological data, the discounting rate used, and particularly the way in which Romanian citizens view their state of health [34]. In this way however, the enormous amount of pharmacoeconomic information coming from the well-developed countries can be used almost immediately, creating scientific decisions on a more solid foundation than in present (the models are already developed and should be adapted to local values of cost and efficiency).

Conclusions

Facing permanent financial imbalances that give rise to serious ethical problems in the supply of medicines, Romania must adopt quickly the criteria for the allocation of the resources, consistent with the financial strength and equity of care between different types of pathologies. The use of the pharmacoeconomics and the setting of the limits for a QALY gained are the necessary steps to ensure that in the near future the administrative decisions will be based on other arguments than those strictly political or emotional.

A threshold limit of cost-effectiveness is a necessity, but it must have an indicative nature under limited budgets. The existence of a rigid threshold would lead to long-term elimination of modern treatments and a much too relaxed one will cause inequities among different categories of patients. The use of pharmacoeconomic studies as a base for the health budget would erase its negative image as a „black hole“.

From another perspective, the integration in the European Union must be endorsed also in paying respect to its values. In the field of health, one of the few recommendations of the EU is just to base the policy decisions on Health Technology Assessment.

It follows that Romania needs to express as soon as possible its own limits and aspirations, otherwise the Ministry of Health and NHIH rest as mere "spectators" to market mechanisms (but in a market totally dysfunctional health services and having a need for mandatory regulators) and not "judges" and "officials" for the benefit of patients.

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