

**Prof. Dr. Alfred Radner**

# **HEALTH ECONOMICS**

## **1 The Health Services as a Part of the Economy and of Society**

The economy is a manifestation of society. The health services constitute that area of the economy which deals with the lives of individuals. Therefore they are the one facet of governmental activity which more than any other accompanies a person throughout his entire life. The individual citizen is directly affected by them; they touch his most central concern — his fear of death. When one's life is endangered, being uncertain of whether one can obtain adequate medical care is, after all, a frightening experience.

Because of their crucial importance for all of us and because they permeate all areas of life, the health services constitute a very useful indicator of society in its multitudinous manifestations — economic, cultural, social, etc. We can use them to perceive and to demonstrate various societal phenomena.

Health policy is a central aspect of social politics, and as society changes, so do the responsibilities delegated to it. In the second half of the previous century it was concerned with ensuring the survival of poorer persons when they because of sickness were unable to work. Today that is no longer true, since labor laws now mandate a continuation of salary payments in case of illness and provisions have also been made for accidents and retirement.

In former times even a minor ailment could pose a threat to one's existence. Today, in contrast, financing therapies for moderately to extremely serious sicknesses, for example kidney dialyses and organ transplants, is a much more urgent problem. Their affordability is threatened when too large a proportion of the funds allocated is used to pay for treatments for minor ailments.

It is primarily because of advances in our knowledge that the health services are now in financial straits. Medicine has made such tremendous progress both because of its availability to nearly everybody and because of recent scientific breakthroughs. The fact that all kinds of therapies are accorded to ever greater segments of society has led to an increased feedback of experience, which in turn provides impulses for further developments. Especially in West European countries almost all of the scientifically tested and approved examination and healing methods are offered to the entire population. This is more or less independent of the wealth, earnings or social status of the recipients.

## **2 The Health Market Exemplifies the Multiple Interrelationships which take place in the Course of Economic Activities**

Human social life gives rise to multitudinous interactions. By observing and analyzing these, science tries to detect recurring patterns and from them to predict future developments. However even after the most complex analyses and most thorough research studies have been made, unexpected actions and reactions occur which render all previous experience and knowledge irrelevant. The reason for this is that life processes do not unfold in a purely deterministic fashion in the spatial and temporal dimensions; they apparently also display inherent dynamic tendencies. These underlying "primordial" forces constitute objects of scientific research. Previously they were what was really implied by the term "philosophers' stone", and they still elude comprehension. We can only strive to find an approximation to the "fundamental equation" which describes their mode of action by refining our thought processes with the help of sophisticated analytical methods. In that way we might gradually come closer to an understanding of these phenomena.

It is necessary to impart a coarse structure to the multilayered network of human relationships and to the human condition which they largely determine. That is why several separate areas of interest have been defined such as culture, science, the social sector, health, etc. The extent to which these fields are interrelated and the nature of their mutual influences are often overlooked. Every activity, whether in the cultural or the health sector, inevitably has economic consequences; therefore no kind of endeavor can exist in isolation. For example, a well-designed legal framework is a prerequisite for the development of culture. So are economic security and the availability of health services.

### **The Health Sector Influences all Areas of Human Activity**

This sector follows us from womb to tomb. It influences our primary concerns, and has a bearing on all life-processes and their interrelationships. In Kant's sense, life and health are ends in and of themselves and not means to attaining an end. For this reason, all of our economic achievements serve to maintain our health. Self-preservation is our strongest instinct. That is why all of our strivings, directly or

indirectly, consciously or unconsciously, are oriented toward it. Therefore by observing this area we can most readily recognize structures and developments related to our existence.

The significance of this sector is also shown by the fact that financing medicine and especially the health services is one of our most pressing problems. It is a focal point of public and private concern. Various fields continually vie with one another for funds. We often hear that as a consequence of the rapid developments it will soon be impossible to pay for health benefits. Similarly, representatives of the economy, the theater, culture in general, the military, road construction, etc., complain that there is no — or not enough — money available for their respective areas.

One special concern is financing care for the aged. The “graying” of the population now poses considerable problems for society in general. Due to the astonishing advances in medicine, life and vitality are being maintained up to much higher ages than was previously possible. Unfortunately, this results in elevated costs.

## **Competing Interests**

These soaring expenses are giving rise to antagonisms. A few people, it is angrily claimed, are grabbing enormous benefits, and compelling the others to foot the bill. But whenever an individual's own interest is at stake, he insists on having the very best care available — and damn the costs! Clearly much of the complaining is due to conscious or unconscious egoism. There is a general concern, that sufficient medical resources will not be available when one desperately needs them, because of others having made excessive use of them.

That is the point of departure for our sociopolitical ruminations. People of course compete economically in other areas of life as well. Once upon a time, when they were living in the primeval jungle, they fought each other with clubs, and today they fight to obtain legislation which will promote their particular interests; decrees, taxes, fees and other regulatives with which the state redistributes income. In former epochs, might was right, but nowadays our coexistence is based on rules. Every field of economic and social relevance is involved in this competition, and each individual is a member of various interest groups.

## **3 Health Care as a Part of the Service Sector**

All of the services (the so-called tertiary sector) are affected by overproportional cost increases and financial cutbacks. This is the case in education, culture, theater, sports- and free-time facilities, as well as in streets, railroads, air- and other forms of public transportation. For all of these areas, which are considered to involve public interests, the state has declared itself to be more or less responsible. Deficits that occur in them are paid partially or entirely by the government. That is also true for the health services.

One common denominator for all of the aforementioned is that their costs are not covered by their incomes. In other words, there is no functioning market mechanism operating in this sector. In the medical field the dominance of the health service providers has prevented competition from arising. The controlling elements that do exist affect only the benefits offered and not their costs. These are funded in a rather roundabout manner; the way it works is not immediately apparent to the user. He, however, has to pay the taxes and fees with which the deficit is covered in order to assure the uninterrupted availability of the services.

It can be readily seen that the controls do not suffice, and that explains the current explosion in costs. The more the services are utilized, the wider the gap between intake and outlays becomes, and the deficits progressively increase. We are, of course, talking about inadequacies in the financing and not in the benefits themselves, the net value of which usually cannot be determined. Even when it can, it is not really taken into account.

This can best be shown by example. Let us assume that at a certain unguarded railroad crossing 30 accidents occur each year. The damage thereby incurred amounts to 30 million Austrian shillings (about 2.5 million US dollars at the current rate of exchange). To eliminate this danger an underpass is finally constructed at a cost of 100 million shillings. This sum is listed under "expenses", but the savings from the accidents that have thereby been prevented never appear in the statistics, although these in just a few years exceed the construction expenditures.

If all of the potential accident victims who enjoy the security afforded by the underpass would contribute to the costs, the deficit could be easily paid off. The tunnel might even prove profitable.

## **Measuring Value**

It should be mentioned that the compensation sums paid out for damages are added to the gross domestic product (GDP); it increases by that amount. That does not, however, coincide with a real increase in the national fortune.

Conversely, if damages never occurred, and no repairs ever had to be made, the gross domestic product would be reduced. The workers in an entire branch would then be jobless; that might even bring about a structural crisis. We can therefore see how inadequately the gross domestic product reflects the actual standard of living.

There is a multitude of benefits that cannot be shown, or at least not adequately shown, in terms of monetary value. In other words, the sum that is paid for them is in no way proportional to the gains they confer. Conception and birth have been essential aspects of human existence ever since the origin of our species. Without them, humanity would cease to exist. In the absence of traumatic events, a birth normally occurs when the embryo has attained the necessary stage of development. This process is independent of the availability of financial resources, but nonetheless the costs associated with it have steadily increased; they now normally amount to \$ 4,000.—(in US-dollars). However, if all the human births on this planet were so expensive, Third-World peoples would not be able to afford to have children. Fortunately, parturition is not an economically determined process.

The key question, however, is what the \$ 4,000.—which a normal delivery costs really pays for. Certainly it does not serve to bring about the birth, but rather to spare the new mother avoidable pain and the danger of infection, to protect her life and her health, to shield the child from birth-associated injury and to prevent traumas that might lead to permanent handicaps.

### **The Impossibility of Determining the Cost Effectiveness of Benefits**

Because of the inadequacy of medical aid in primitive societies the death rate during birth and childhood is high there. Children with handicaps who would be able to survive in industrialized countries are condemned to die in the bush.

The costs of the birth go to pay those who aid in the delivery and take care of the child. Although it is important to assess the value of the services they perform, there is no absolutely objective method for doing so. Due to the general availability of competent obstetric aid, newly born babies with handicaps nonetheless have a better chance of survival; they routinely receive intensive medical treatment and whatever care they need. Of course, that involves expenses. In primitive societies weak babies die soon after birth, and they therefore are no great financial burden for either the community or their parents. In countries where the medical standard is higher, so are the costs.

The act of conception is clearly essential for the survival of the species, but as we all know, the process of fertilization is a purely natural one and does not entail any costs. That is, however, not true for artificial, in vitro fertilization and embryo-transfer; for these \$ 10,000 or more has to be paid. Here too, costs arise as a result of services which are not a part of the natural scheme of things. These expenditures, however, must be weighed against the value of a human life and the possibility of helping childless couples satisfy their deepest yearnings. For many of them that means the difference between a fulfilled and a frustrated life, and that is of much greater importance than money. Therefore the people involved are readily willing to accept the necessary fees.

The examples dealt with here all have had to do with values that cannot be expressed in monetary terms. They involve services and benefits whose cost-effectiveness is not objectively determinable. This is the case for the health offerings in general. It is impossible to rationally weigh their prices against the benefits derived from them. What must be evaluated is the extent to which they succeed in improving the quality of life and bringing about freedom from pain. That is the goal of research and of human striving in general.

### **Effective Preventive Measures Lead to Higher Costs – Both of these are not Inversely Related!**

In the area of preventive medicine the relationship between outlays and benefits is also difficult to determine. Politicians may maintain that by promoting health-consciousness and diagnosing ailments at an early stage costs can be avoided, but the contrary is often true. A prolongation of life really means greater expenditures, since elderly people require expensive medical treatment and care. They are afflicted

by a host of chronic diseases such as Alzheimer's and osteoporosis. The costs of the medical services that a person "consumes" in his last year of life have experienced a fourfold increase during the last 12 years. That shows us, that having people see the doctor regularly and adopt a healthy life-style fit by no means reduces the costs of health care; instead, these measures elevate them. They do, however, result in a better quality of life and a greater life expectancy.

#### **4 Health Expenses are Related to Affluence**

Affluence is known to alter the demands made on the service sector. This area, especially the health service field, is currently growing at an unprecedented rate. Medical care is primarily needed by older segments of the populace, and the percentage of senior citizens is of course sharply increasing. So is the number of handicapped people, and besides the care for these individuals is continually being improved. More elderly men and women, more disabled persons and increasing medical progress mean higher health costs.

#### **Medical Services as Consumer Products**

Medical services have become consumer products in the broadest sense of the term. Individuals are no longer willing to endure even a minor illness or a slight indisposition — even one that objectively constitutes no danger whatsoever — without consulting a physician or taking advantage of palliatives. The benefits of medical science have now become available to everybody, and the populace is well-informed about and willing to accept innovations. The fear of sickness and disease has also grown considerably; more than ever people are determined to live longer and enjoy the full potentialities of modern existence.

A well-developed health system is one of the pillars upon which the stability of our society is based. The value of health is experienced primarily in its loss; as long as one is free of pain and suffering, it is merely an abstraction. However the individuals who make decisions concerning welfare and for example determine what benefits sick people receive are generally robust. Most of them do not really understand what it means to be sick, and what consequences illness entails.

The view that "health is our most important possession" leads in a democratic society to the demand that every sickness be treated. Because of our increasing ability to alleviate suffering, the question as to which medical services should be made available is not only a financial but also an ethical one. It is related to such issues as the "right to life" and the "right to die".

Politically a balance has to be attained between funding treatments for minor ailments and those for incurable diseases, between paying for routine preventative measures and for spectacular ultramodern therapies, between maintaining physical fitness and fighting disease. Usually it is at best possible to attain an instable, temporary equilibrium between these alternatives.

## Defining “Health“

In order to establish a successful system of medical care policies, one has to understand what is meant by health. That is where the difficulties commence. This word is namely not at all easy to define. The basic question is whether it is fundamentally different from sickness, or merely a different state of the same basic condition, namely of life?

There have been a number of attempts to address this issue from medical, sociological, philosophical and psychological points of view, but it has not yet been possible to arrive at conclusive and universally valid definitions. Of course, everybody seems to know what health is, since it ranks first in the list of society’s values. Besides, it constitutes a significant economic factor; the costs for its maintenance are increasing.

The examples of definitions given below serve to elucidate the difficulties

- “Health is the state of complete physical, psychological and social well-being; it does not just mean being free of illnesses and infirmities.“
- “Health is the ability to function physically and psychologically, in an individual and in a social context, that results from both the subjective sense of well-being and the objective physical resilience and capability to bear stress.“
- “Socially seen, health is the ability of a person to uninterruptedly fulfill those functions which are delegated to him within the framework of his societal relationships; it also means the absence of an imminent threat to his future ability to do so.“
- “Biologically seen, health is the coordinated interaction of normal functional processes with the normal metabolism.“

This list of definitions could be indefinitely prolonged. From the perspective of the individual “health“ can be seen to mean “well being“. Society regards it as the “ability to do what others expect of one“, and for the physician it entails well-functioning organs and a lack of disturbances in physiological processes. According to the varying viewpoints, the term “health policy“ is therefore seen in different lights.

The development of modern medicine would be inconceivable without a constant expansion of social security. The growth in medical services is fueled by the demand for public assistance in the safeguarding of life and the realization of the prevailing ideal of an existence free of illness. A further impulse for it is provided by the decreasing readiness to bear pain or even unpleasantness.

This “solidarity“ of the social system with those who are suffering does have some negative effects. It seems that there is a tendency for individuals to be less and less willing to take precautionary measures. The “right to health“ is interpreted as a right to medical treatment. “Health maintenance has become a ware — something that one receives, and not something that one does.“

Often, the patient’s biological uniqueness is overlooked. He is increasingly being regarded as a mere statistic. Sicknesses are treated, and not sick people. The

personal service aspect has become less important in medicine; what the patient receives from his physician is seen as a quasi-material benefit.

Medicine's scientific basis encourages the belief that it is almighty. That can have fatal consequences for the patient. He is led to feel that he doesn't have to do anything for his health. Should he become sick, the doctor will "repair" him. The physician is regarded as a kind of mechanic.

## **5 The Social and Health Systems as Regulators of the Labor Market**

Precisely the labor market is a neuralgic point in every national economy. In contrast to the production factor "capital", the factor "labor", similar to the factor "land", can only be increased to a limited extent. The social system directly protects persons who cannot work, whether because of old age, sickness, invalidity or other reasons, or who society feels should not work because they are too young. These individuals are assured an income by the social system, and are therefore not compelled to seek employment. Working could be detrimental to their health or it could prevent them from getting a proper education.

People who because of sickness or old age give up their jobs would in the absence of social security not be able to do so. In many cases an employer might refrain from firing them in spite of their sagging performance. He would keep them on for social reasons, even if they constituted a hindrance, their presence increased the danger of accidents and they were a source of tension and arguments.

If individuals are able stop working as soon as it becomes medically advisable for them to do so (eg. because of old age, sickness, handicaps, invalidity, etc), that has a positive effect on productivity. Only those who can perform efficiently and are able to work hard remain on the job. It is, of course, possible to reintegrate an employee, either when he is able to resume work or when there is a shortage of labor.

The social system makes it feasible for people to cease toiling when continuing to do so would have a negative effect on their health. They are not compelled to sacrifice themselves for the sake of the family or to keep from starving.

## **6 Social and Health Benefits as a Substitute for Property**

The social benefits guaranteed by society are increasingly serving as a substitute for property. Knowing that one will be able to receive welfare payments confers some of the same advantages as earnings from property, since it also insures the availability of income in case of sickness or invalidity after retirement. It can of course never be a complete substitute for material possessions, stock and bonds, since one can only enjoy it under certain special circumstances. On the other hand, however, it affords a degree of security that is much greater, since it is guaranteed by the entire populace.

## **7 Health and Societal Structure**

In the last few years a change has taken place in the social and health systems. Before that time, aiding sick persons was its primary objective. Nowadays it aims to protect the physical and mental condition and the productivity of the greatest possible number of individuals.

Our society has undergone upheavals as a result of industrialization, urbanization and the growth of the tertiary (service) sector of the economy. There is of course a feedback between these developments and the health services. This has led to a shift in emphasis in medicine.

Initially dealing with acute infections and life-threatening ailments (including their symptoms) was its primary concern. Later, curing degenerative diseases assumed greater importance. As a result of the involvement with these, the demand for prophylactic measures increased. To insure the continued success of the various preventative efforts now being undertaken, there must be an intensive cooperation between administration, technology, medicine and planning



## *Factors that have effects upon the health system*

### Changes in the aims of the health system

- \* Improved standard of living
- \* Progress in medicine
- \* Patients come from wider segments of society
- \* Changes in level of demands
- \* Greater health-consciousness of populace
- \* Changes in habits regarding medications

### Changes in the world of labor

- \* Changes in the biological rhythm due to the machine
- \* Women take on jobs
- \* Factors at the place of work conducive to sickness

### Social environment

- \* Psychosomatic factors
- \* The environment causes neuroses
- \* Living conditions

### Psychological factors

- \* Low value accorded to social goods
- \* Estimating future needs
- \* Health goods do not confer prestige
- \* Lack of knowledge concerning the costs
- \* Lack of market mechanism for health benefits
- \* The system is not interested in being controlled

### Change in the nature of risks

- \* Increase life expectancy
- \* Overweight
- \* High blood pressure
- \* Abuse of nicotine
- \* Alcohol abuse
- \* Abuse of medications
- \* Little exercise
- \* Psychosocial stress
- \* Combination of risk factors
- \* Traffic accidents

### Others

- \* Inducation from society and the health system
- \* Increase in medical benefits
- \* Increasing number of cases
- \* Use of physicians to provide
- \* Certification for employers, schools, sports, etc.

## **Absence of a Market for the Benefits of the Health System**

The regulating mechanisms that operate in the private sector of the economy — services or goods in exchange for others, supply and demand — do not apply to the public health system. For that reason, it is not subjected to competition, there is no spontaneity in its adaptation to new conditions, in its replacement of “goods“ by others, or in its offering of services. The system is not regulated by a market; rather, its efficiency is only indicated by the degree to which needs are satisfied.

How great the necessity for health-political goods is can be measured by such parameters as “requirements“ and “irrefutable need“. It is however unclear where the information about these comes from, and whether it is correct. Mostly the impetus for providing it is spontaneous. Besides, there is no “price“ for the articles in question, and therefore they cannot be accorded a market value. How much a particular one is worth depends rather on the amount of input needed to make it.

## **Health Risk Factors**

An individual's health risk is affected by his personality, his state of health, whether he is cautious or careless, his psychological, physical and physiological constitution and his bad habits such as drinking, smoking, overeating, gambling, etc. Investigations concerning the frequency and geographical distribution of diseases have shown that there are a host of different causes for them. It is advisable to examine as many of the hazards as possible in order to be able to determine what protective measures should be taken. The conditions and activities leading to illness have varied in the course of civilization, but nowadays the following are the most significant ones — and their importance is growing:

## **Main Reasons for the Increase in the Costs of the Health System**

The principal reasons for the skyrocketing costs in the health system fall into three categories. First of all, there are inflationary tendencies, and the quantity and quality of the health offerings is increasing along with the growth of the economy. These factors are merely nominal, however, since they do not involve any changes in the relations between the various sectors.

Another reason for the higher costs is the altered structure of society. Families are, for example, less able to provide care nowadays, people are more fitness conscious, the life expectancy is higher, etc. Many of the services which an individual normally used to perform for himself or his dependents have now been delegated to others. The old ethical obligations still exist, however, especially since nobody is willing to do without health benefits when he himself is in need of them. If a person is unable to fulfill his duty personally, it is only reasonable to expect him to pay for its being done. Money is, after all, an abstracted form of work. The new costs in this category therefore arise as a result of delegation. That means that services which were traditionally provided gratis by dependents have now been monetarized.

The third category has arisen through scientific progress. New discoveries about the causes of diseases and innovative therapeutic methods have brought about an increase in the work that has to be accomplished. The costs which that entails can

however readily be borne by society as long as the productive segments of the populace are able to fulfill the needs of both the non-productive persons and the health sector employees.

*Reasons for the Increase in Costs in the Health System*

I

---

Changes in the value of money and increased productivity

---

II

---

Changes caused by altered social conditions

Costs of delegating work

---

III

---

Scientific progress

---

The categories I and II do not involve any significant increase in the amount of work that is performed; they merely have to do with the redistribution of labor or with apparent increases resulting either from inflation or from a simultaneous growth in all economic sectors.

Category III, in contrast, deals with the effects of the increase in knowledge — the surges in demand for new products or services which result from it. These pose genuine challenges for the health system. The costs they entail can of course be met by enhanced performance, but they can also be covered with the help of resources taken from other areas of the economy, for example from ones that have been subjected to rationalization or in which the demand has subsided.

### **Possible Ways to Manage the increasing Costs of Health**

Doing so will necessitate:

- an increase in work productivity through rationalization
- keeping expenses constant and spreading certain benefits out over longer periods of time. That can result in a decline of health system prices relative to those in other areas of life.
- the mobilization of either more lifetime labor or more money or natural goods.
- adjusting the incomes of those professionally involved with healing so that they are comparable to those in other areas.

The kinds of measures indicated above would keep hospital and medical costs down.

## *Managing the cost of the health system*

Increasing work productivity through rationalization

Health service incomes should not be excessive, since these services have to be generally affordable

Making services cheaper by keeping prices constant in spite of inflation

Mobilizing additional lifetime work resources

The intention of me is to bring my concept of the health system into harmony with our economic vision, and also to promote the attitude that its benefits can continue to be made available in the future if we only make the necessary effort.

*Anschrift des Verfassers:*

Prof. Dr. Alfred Radner, Universität Linz,  
Freistädterstraße 313, A-4040 Linz  
Tel.Nr. 0043 / (0)732 / 24 68 - 71 45  
Fax:Nr. 0043 / (0)732 / 24 68 – 71 46  
e-mail: [alfred.radner@jku.at](mailto:alfred.radner@jku.at)  
[www.medizinrecht.jku.at](http://www.medizinrecht.jku.at)