

MENAGEMENT IN HEALTH CARE PRACTICE A Handbook for Teachers, Researchers and Health Professionals	
Title	EFFECTIVENESS, EFFICIENCY AND EQUITY
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Module: 1.6	ECTS (suggested): 0.75
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Keywords	Equity, Efficiency and Effectiveness
Learning objectives	After completing this module students and public health professionals should have: <ul style="list-style-type: none"> • Increased their awareness of equity, efficiency and effectiveness. • Understood the tools for assessment of the health service equity, efficiency and effectiveness. • Explored the similarities and differences between equity, efficiency and effectiveness.
Abstract	Health is perceived as most precious good, and people feel its vulnerability. Societies have been trying to absorb, ameliorate or compensate consequences and health risks with varying emphasis and varying success. Due to the uniqueness of good health to a persons' ability to live the life he or she wants, health care and performance of health care systems are under critical observation. In this context many discussions swivel around ethics, justice, equity, equality and fairness, very often using these notions interchangeably. Sometimes they are used as arguments to challenge every economic consideration by claiming "the freedom of therapeutic choices", and pointing out the humanitarian aspect of an individual's health and the danger of withholding intervention options or rationing. It is not surprising to see, that many health care professionals and patients see a certain incompatibility between financing, operational aspects of health care, like allocation of resources, and ethical expectations. Nevertheless, this is not necessarily so. In the following we will discuss what principles should rule a health care system. Furthermore conflicts and trade-offs between performance measures like effectiveness and efficiency and equity considerations will be discussed.
Teaching methods	After introductory lectures students will work in small groups divided according to their countries. They will be given the case study to discuss the question of equity and effectiveness in a health system. Next, they will participate in debates in order to recognize and to discuss the possibilities for change and improvement of equity and efficiency in their case study health system
Specific recommendations for teacher	<ul style="list-style-type: none"> • work under teacher supervision /individual students' work proportion: 30%/70%; • facilities: a teaching room; • equipment: computer, LCD projector.
Assessment of Students	Multiple choice questionnaires and debate discussions.

EFFECTIVENESS, EFFICIENCY AND EQUITY

Helmut Wenzel

THEORETICAL BACKGROUND

Introduction

Health is perceived as most precious good, and people feel its vulnerability. Societies have been trying to absorb, ameliorate or compensate consequences and health risks with varying emphasis and varying success. Due to the uniqueness of good health to a persons' ability to live the life he or she wants, health care and performance of health care systems are under critical observation. In this context many discussions swivel around ethics, justice, equity, equality and fairness, very often using these notions interchangeably. Sometimes they are used as arguments to challenge every economic consideration by claiming "the freedom of therapeutic choices", and pointing out the humanitarian aspect of an individual's health and the danger of withholding intervention options or rationing. It is not surprising to see, that many health care professionals and patients see a certain incompatibility between financing, operational aspects of health care, like allocation of resources, and ethical expectations. Nevertheless, this is not necessarily so. In the following we will discuss what principles should rule a health care system. Furthermore conflicts and trade-offs between performance measures like effectiveness and efficiency and equity considerations will be discussed.

The provision of health care takes place in a complex system (see figure 1). In the framework for producing health, the citizen's health or patient's outcomes are determined by several factors. It is quite obvious that primarily the configuration of the existing structure of the care environment and the processes by number and quality make up the frame of action and finally determine the patient's outcomes. Nevertheless, the state of the art of medicine, training, education, and last but not least the financial resources define the portfolio of feasible interventions. Thus, the organization of health care, e.g. financing, and provision of care is a limiting variable in this context which deserves specific attention.

The set-up of the health care system is critical to an appropriate and feasible care. In Western economies health economists think that a suitable organizational make-up of a health care system should fulfil the following criteria (1):

- Sovereignty and personal responsibility of citizens;
- So-called secondary liability of state-run actions;
- Equity (horizontally and vertically);
- Effectively and efficiency;
- Sustainability and stability;
- Legal certainty;
- Transparency.

Determining Factors of Health Care

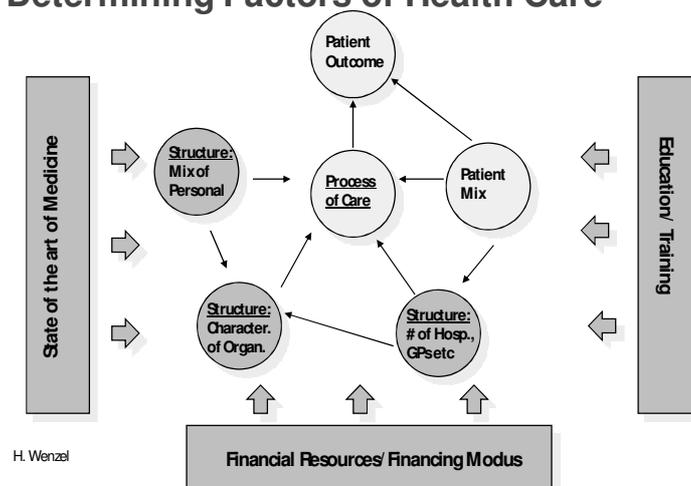


Figure 1: Determinants of Health Care. Source: Helmut Wenzel, unpublished

Besides criteria that pick out more or less aspects of self-conception and self-determination - like sovereignty, personal responsibility, and elements of performance, e.g. stability - effectiveness and efficiency are seen to be equally important. Furthermore, we expect that the access to health care and the available care should not be limited by the social standing or financial potential. Limited resources and its usage always raise questions of justice. Equity considerations are therefore inseparably linked to fair processes of resource allocation. The relative importance (weights) of the various criteria might be different in different societies. They have to be seen in the light of a societal consensus - a kind of societal treaty. In this treaty it is laid down how a society is made up. Basically important considerations have to be made with respect to the questions whether the societal self-conception is socialistic, communistic or more liberal. Is the governance autocratic or more democratic? And finally is the economy based on free-market or more regulated? Depending on the combination of the above features, the expectation on the quality of a health care system might vary substantially. Anyhow, questions will come up like, what health services should be publicly funded, how indications for particular interventions should be defined, whether societal groups need specific attention and how.

Researchers from different scientific disciplines have been working on justice, ethics or equity in health care with various tools, paradigms and intentions. Philosophers (2) with the view on justice and ethics came to a similar appraisal as economists who specify criteria for an appropriate health care system. However, the philosophers' view is more focused on the "direct" human needs and consequences. Justice is understood here as an equivalent of normative ethics, and the way how moral topics are analyzed. It describes primarily a set of tools and methods (3). They conclude that four principles should be the basis for an ethical evaluation of health care, independent from the make-up of the system. They are seen as a kind of normative guidance. Those principles are (1) *respect for autonomy*, (2) *beneficence*, (3) *non-mal-efficiency* and (4) *justice*. Researchers with focus on 'medical ethics', aiming specifically at regulating the relationship between patient and health care professional, have been specifying six principles that should guide the behaviour of an ethical doctor. These principles are: (a) *preserve life*, (b) *alleviate*

suffering, (c) do no harm, (d) tell the truth, (e) respect the autonomy of the patient and (f) deal fairly with patients.

None of these principles are absolute or independent; each may conflict with the others. There might even exist trade-offs which are quantity-dependent. Hence, the binding character of those principles is “prima facie”, which means that the binding is unless it conflicts with another moral principle. If it does, one has to choose between them (4). The resolution of such conflicts is a matter of personal value judgment. Unfortunately, philosophers don’t provide a method for this kind of appreciation and for solving value conflicts. Following Samuelson’s definition of economics this is the typical domain of economics and health economics. He states” the study of how men and society end up choosing, with or without the use of money, to employ scarce productive resources that could have alternative uses, to produce various commodities and distribute them for consumption, now or in the future, among various people and groups in society. It analyses the costs and benefits of improving patterns of resource allocation (5).

Equity and Ethics

As mentioned earlier, fairness, justice and equity are notions that are often used synonymously to describe concerns about access to health care and the amount of care citizens will get without discrimination. The Office of Health Economics (OHE) outlines this concern as follows: “Efficiency is not everything. We are also concerned with what is fair. If we had a market distribution of health care, then only those who could afford to pay would be able to purchase it. Most people regard that as unacceptable. This is a major reason why most societies regard health care as different from other commodities”.

Questions regarding equity have been the main reason for government involvement in health care world-wide. OHE further states “A concern about equity was one of the main motivating forces behind the creation of the National Health Service (NHS) in the UK. William Beveridge, the architect of the welfare state, argued for a health service which would provide treatment "to every citizen without exception, without remuneration limit and without an economic barrier at any point to delay recourse to it". Equity has remained a major goal within the UK system. A concern about equity has also been reflected by other countries' approaches to health care. McGuire, Henderson and Mooney have pointed out that the introduction of public health insurance in Canada in 1971 "was explicitly stated to be motivated by a concern to make health care utilization less dependent upon income". Blewett has suggested that in Australia "The introduction of Medicare in February 1984 was designed to ensure that all Australians have access to medical and hospital services on the basis of need". Even in the US, which has the most market orientated health care system in the developed world, the state intervened to provide Medicare and Medicaid to help the poor afford health care”(6).

The Content of Equity

Looking at literature, there seems to be no uniquely correct way of defining equity and its determination. Mooney for example listed seven possible definitions: Equality of expenditure per capita, inputs per capita, inputs for equal need, access for equal need, utilization for equal need, marginal met need, and health. He finally comes to the conclusion that a mix of equal inputs for equal need and equal access for equal need might be the most practical (feasible) description of equity (7).

WHO refers to equity as “principle of being fair to all, with reference to a defined and recognized set of values”. More concretely it says “equity in health implies that ideally everyone should have a fair opportunity to attain their full health potential and more

pragmatically, that no one should be disadvantaged from achieving this potential, i.e. everyone should have geographical and financial access to available resources in health care ..." (8). The crux with this statement is that it establishes a relation between the undetermined notion "equity" and the undetermined notion "fair opportunity".

A more illustrative definition comes from Mayberry et al. stating equity means to "provide care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status" (9).

For further considerations it turned out to be useful to distinguish between horizontal and vertical equity. Horizontal equity means equal treatment for equal conditions; it applies especially to the delivery of health care, e.g. equal resources, utilization, and access per head. Most discussions refer to this. In this case, the efficiency and equity aspects will tend to move together. Nevertheless, most conflicts are seen in vertical equity. Vertical equity deals with the question whether unequal cases are treated unequally. In prevention one could think about a case where for a majority of a population the risk could be reduced a little and would save fewer lives than concentrating the same resources on a few at high risk. The case could be even more delicate when we assume that the few are at higher ages. Another example, if there was a rare blood type of which the hospital only has access to one unit of blood, and they at the same time receive two patients who both need one unit of that rare blood. One of them is a 22 year old recent college graduate who was in an accident with a drunk driver, and the other is an 80 year old widower, who has been sick for 5 years. Representatives of a "fair innings" approach (10) would say that we should give the unit to the 22 year old because there is more life to be lived by him than the sick 80 year old man. Another case with ethnically grounded disparities and conflicts between efficiency and equity deals with kidney transplants. The efficiency of transplantation could be improved by human leukocyte antigens (HLA) matching. The closer the match the better is the chance of a successful transplant. From the viewpoint of using scarce resources efficiently this matching makes sense. Gaston et al (11) found out that this policy discriminates black patients for whom it is less likely to find a match. They conclude that for the sake of equity diminished efficiency has to be accepted.

The Philosophical Basis of Equity

Even when we refer to the universal principles mentioned earlier the application of moral rules comes to different results. Obviously, the definition of equity and its practical use depends on the underlying, not always overt - philosophical theories. To understand ongoing discussions and solutions offered in the literature one has to come back to the philosophical theories. The different schools can be classified into: *Utilitarianism, Rawlsian, Entitlement/libertarian, Egalitarian, Deontological, Virtue and "Rights" oriented theories.*

Each of them has a specific focus. The underlying concept of *utilitarianism* is maximizing for the greatest utility for greatest number. This is compatible with economic efficiency considerations. Critical question is whose utilities are meant? The *Rawlsian* position expects an allocation conducted under a 'veil of ignorance', aiming at balancing between higher and lower risk in people who are discriminated by nativity (Rawls, 1971). "Veil of ignorance" means that a principle of allocation would be called just, when people would agree on the principles in a situation where they don't know whether they are sick and whether they would benefit from the principle. In fact this theory assumes total risk averseness, and leads to a position of less well off in society being maximized. *Entitlement/libertarian* (Robert Nozick, 1974) holds the view that individuals are entitled to get what they have acquired "justly" within a market situation. Emphasis is put on

freedom of choice and property rights, assuming minimal state involvement. This is similar to utilitarianism. Moral rules as a strict guiding principle play the central role in *deontological* and *virtue* based theories. Moral rules like ‘do to others as you would have done to you’ (Kant), depict an absolute moral code of how life should be lived. *Rights based theories* focus on indisputable ‘rights’ which cannot be overridden, e.g. ‘right’ to life. They are absolute and inflexible.

According to their main focus they also can be divided into theories that deal primarily with *distributive justice*, highlighting fairness of outcomes and those that look at *procedural justice* concerned with the processes in achieving the outcomes. Figure 2 gives an overview.

Categorising ethical theories

	Individual	Society
Process	Entitlement Deontological Virtue	→
Outcome	←	Utilitarianism Rawlsian Egalitarian Rights

Figure 2: Categories of Ethical Theories. Source: Health Economics Network UK

The definition of equity is as multifarious as the heterogeneity of philosophical theories. Which philosophical concept is appropriate for a given health care system and which definition of equity should be chosen depends on the societal consensus. Even when we accept that the four ethical rules are universal, the application of ethics to practical decision-making is very much guided by the expectation of a society. A kind of lowest denominator is the criterion of equality of access which is consistent with most ethical theories and consistent with efficiency (it preserves consumer sovereignty).

Guidance for Analyzing Equity in Health Care

Disparities may occur at different parts of a network. At the level of the health care system, at an individual and community level and, last but not least, on a patient-provider level. Mayberry et al. propose a theoretical framework for the analysis of disparities. Figure 3 shows those parts of a kind of influence network. Indicators of inequality are access, use and health outcomes.

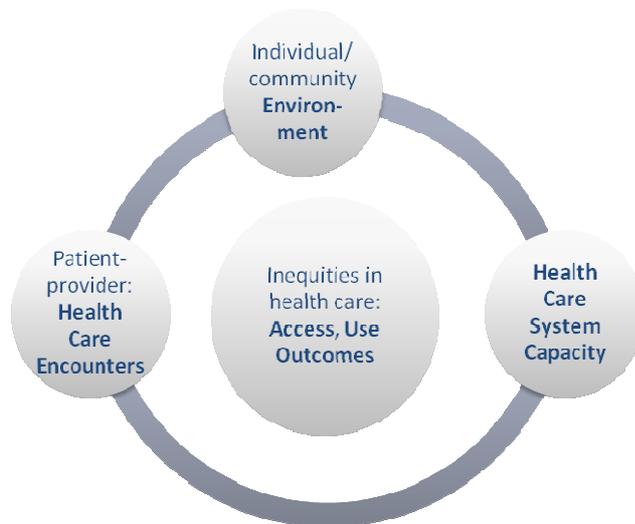


Figure 3: Three Dimensions of an Influence Network of Inequalities. Source: Based on Mayberry (9)

The individual/environment entity covers factors like socio-cultural norms and values, social network and cohesions, and individual health promotion and care-seeking behaviour. The patient-provider part focuses on communication between patients and provider. This includes factor as trust, respect, patient participation in clinical decisions and ability to navigate the health care system. Finally, the capacity of the health care system is put on a test-bench. This is, in a narrow sense, the classical topic for analyzing equity.

The basic practical problem facing an equity policy is to find out which patients are the worst-off and should receive priority. Practically it is not easy to determine the degree of inequality. Rutten even stimulates the creation of an aggregate measure of expected misery (12). At least, on a national or regional level disparities can be determined by calculating measures of statistical dispersion like a Gini Index or a Suits Index, to display disparities in financing or health.

Economics in Health Care: Compatibility or inexpiable Polarity

Many clinicians and citizens don't feel comfortable with economically grounded assessments. They believe that allowing costs to influence clinical decisions is unethical. They are mistaken in this belief. It cannot be ethical to ignore the adverse consequences upon others of the decisions you make, which is what 'costs' means from an economist's view. Of course, there are some important ethical issues in deciding what costs to count, and how to count them. But these dilemmas are equally strong with respect to what benefits to count and how to count them, some of which expose ethically untenable assumptions about such widely-used clinical criteria as survival rates. One of the advantages of systematic economic appraisal tools, like cost-effectiveness analysis is that it exposes these hidden assumptions, and requires explicit judgments to be made about which ethical position is appropriate in a particular policy context. By creating transparency this should have the important incidental benefit of improving the accountability of policy-makers to the community they are serving (13).

In opposition to these cited conflicts economists should have no difficulty in seeing their own work in the health care field as being directed towards the fulfilment of those same ethical principles. According to their professional

terminology they would probably name it differently. Williams points out that, for instance, the demand to preserve life and alleviate suffering would be seen as a description of the objectives of health care, concentrating our attention on improving both the length and quality of people's lives. The postulation to do no harm would be seen as a request to minimize the risks of adverse effects from treatment and even as a plea for prevention. Telling the truth is a general duty accepted by all analysts, and respecting the autonomy of the patient would be seen as referring to the need to have the patients' values count rather than those of the practitioners when decisions about treatment are being made. But the final item on the list - about dealing fairly with patients - reminds us that we will seldom find ourselves dealing with situations in which only one patient's interests are affected, so that we will have to face the problematical question of how much weight to attach to the (possibly conflicting) values of each affected individual in such circumstances. And in any system in which the individual patient pays only part of the costs of care, the number of individuals who are affected in one way or another by a treatment decision may be very large indeed (14).

Consequently, economists have been trying to overcome the vagueness and high level argumentation by breaking down those principles into applicable principles, processes and tools. The health economist is seeking, through the use of appraisal techniques to help decision-makers to maximize the benefits of health care within the constraint of whatever level of resources society has chosen to devote to health care. These benefits are seen as improvements in people's length and quality of life in which the distribution of these benefits between individuals is a matter of some importance. Clearly, there is nothing there that conflicts with conventional medical ethics. Even the stress laid by economists on the need to examine carefully the 'trade-offs' that are established at the margin between the competing good things that we seek in health care, simply mirrors the relativity of ethical principles and the acknowledged need to strike a balance between them. The difficulties seem to arise because economists go further than others do in the quantification of these elements. We must now explore why they do so, and for this purpose adopt a somewhat different perspective, that of welfare economics (14).

Williams explains that economists have sought to avoid making explicit interpersonal comparisons when judging whether one situation is better or worse than another, and a whole branch of the subject - i.e. 'welfare economics' - has grown from that ambitious objective. The basic idea is to separate 'efficiency' from 'equity', with 'efficiency' being kept free of interpersonal comparisons of welfare, all such judgments being encompassed in 'equity'. The definition of efficiency which achieves this separation is due to Pareto (and hence is often called Pareto-efficiency) and it declares a situation to be efficient if in that situation it is not possible to make anyone better off without making someone else worse off. If resources are being used 'wastefully' it should be possible to put them to some other use which will not harm the person from whom they are taken but will benefit those to whom they are given, thus the initial situation would have been 'inefficient'. The same would generally be true if resources are lying idle or are underutilized.

In the Paretian framework it is the individual's own judgment of whether he or she is better or worse off that counts, not the judgment of any third party; thus it observes very strictly the ruling to respect the autonomy of the individual. No judgments are made about the *status quo*, which is simply accepted as the starting point, our only concern being whether or not some change is an unambiguous improvement on it. The realm of application of this strict Paretian notion of 'efficiency' is, however, severely limited, since there are very few changes in real life that do not adversely affect the welfare of somebody or other. To ease this restriction on the applicability of the strict efficiency criterion, it was

extended to cover situations in which the potential gainers from a change could fully compensate the potential losers, and still have some gains left over (compensation being paid in money terms, say). But identifying actual gainers and losers precisely, and setting up an incorruptible mechanism to enable such compensation actually to be paid, would in most cases be very costly. So this 'compensation principle' in turn got watered down to include cases where the compensation did not actually have to be paid, thus under the '*potential* Pareto criterion' it has only to be shown that for a change to be declared 'efficient' the gains must on balance outweigh the losses (gains and losses generally being evaluated in money terms). To decide whether gains outweigh losses they must be measured in commensurable terms, so there has grown up a strong tradition of quantification and valuation, which has been applied to all kinds of gains and losses, including the value of life and safety. Calculating the 'efficiency' gains and losses in this way still leaves us with the distributional consequences to think about, and these are typically transferred to the 'equity' realm to be evaluated separately. In practice they are often ignored, however, in the hope that in the long run, over a multitude of different activities, they will all wash out. Thus the efficiency calculus as used in practice by economists does not really achieve the desired avoidance of all interpersonal comparisons of welfare. At best it says there are no losers, and it assumes that it does not matter who the gainers are. At worst it says that there are both gainers and losers, but it is up to somebody else to look at the equity implications (15).

Dealing with Limited Resources

No health care system can satisfy all the possible demands made upon it, so decisions about allocating resources are of particular importance. The allocation takes place at different levels: i.e. allocation between institutions and by type of care. For instance decisions have to be made about the amount of money that should be devoted to hospitals, even different kind of hospitals, and how much money should go to ambulatory care. Those decisions are very often overlapped by regional or municipal considerations that lay outside the health care sector and the appropriate provision of care. There are connections to other sectors of a national economy and respective goals, like strengthening the regional economic performance.

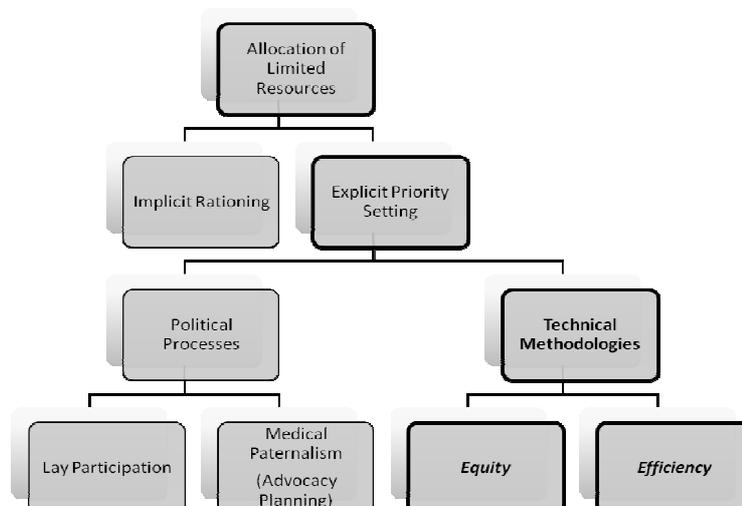


Figure 4: Alternative Ways of allocating limited Resources. Based on: J. Coast et al (15)

Even more complex are decisions that have to allocate money between the different kinds of prevention, cure and rehabilitation. Again, facing the fact that resources will always be limited, the question is how this task can be achieved in a way that satisfies most of the expectations of modern, democratic societies. According to Coast (15) more or less two options exist: Rationing and explicit priority setting.

Rationing is a crucial issue, sometimes it is even misunderstood. Health care rationing refers to “any planning, resource allocation or pruning of ineffective or unproved processes” (16, 17). Rationing is thus merely another term for stating that we must decide how to allocate our limited resources (18). Much rationing takes place by controlling the access to the health care system. It is not only debatable who is entitled (or authorized) to make these decisions. It is also critical how the rationing procedure looks like and what are the relevant criteria and who defined it. In an *implicit* rationing procedure the decisions and the preferences are not revealed, which is hardly acceptable in modern societies. There is no real awareness of the principles used. In contrast, *explicit* rationing is concerned with making clear the decisions that have been made and the basis upon which the decisions have been made. It results from political bargaining processes and/or technical methods as promoted by economist. In political processes the consent of society could be received by either lay participation in the decision processes or by the anticipation of the citizen needs by experts. In the late sixties this kind of effort to integrate as many citizens with their specific needs as possible in political planning processes was called advocacy planning. The basic and progressive idea was that experts (and politicians) would be able and willing to anticipate the problems of those people that have not the ability to participate in political processes in a democratic appropriate way. In reality this approach was not very successful and should not be seen as a significant option. In contrast economists rely on the “art” of making rational choices and promote that choices should be made more explicit and be based on efficiency appraisals (19).

Looking at the very nature of health economics the starting point is straightforward, “In the beginning, middle and end was, is, and will be scarcity of resources” (20), and the issue of choice and priorities. Taking a choice - priority setting means that a decision has to be made not only about what to do, but also what to leave undone. Opportunities forgone - what we leave undone - is central to health economics. Opportunities forgone are cost: “The cost of a unit of a resource is the benefit that would be derived from using it in its best alternative use.” (21) The concept of cost in health economics is different to the concept of cost in accounting that relates to cash outlays. Therefore, when economists argue that attention should be paid to efficiency in health care they are implying that health care programmes, treatments and procedures should be compared not only in terms of their relative benefits, but also in terms of their relative costs, i.e. benefits forgone.

The Concept of Efficiency

The concept of efficiency is central to the models and techniques proposed by economists. Economic theory believes in the rational nature of men (paradigm of *homo oeconomicus*). This further leads to the assumption that each individual wants to maximize its degree of satisfaction, which is measured in terms of benefits. In order to maximize the benefits the individual will make sure that the last unit of money spent will create the same amount of benefit. Efficiency can be classified into different forms:

1. Technical efficiency, with two sub forms:
 - a) *Cost-efficiency*: Product applications or intervention strategies which achieve a given health outcome at the lowest level of resource utilization are called

efficient or economical. This is also called operational efficiency and sometimes cost-effectiveness (22). It refers to the so-called fixed effectiveness approach, too.

b) *Output-efficiency*: Product applications or intervention strategies which generate the best possible outcome or goal achievement for a given resource input are called efficient or most productive. This is also called fixed cost approach.

2. Allocative efficiency

Looks at the combination of goods that have to be financed and goes beyond looking for the most cost-effective types of interventions. This could mean that what conditions should be treated is subject to evaluation as well. The theoretical foundation is the definition of efficiency of Pareto (so called Pareto-efficiency). A situation is perceived to be efficient if it is not possible to make anyone better off without making someone else worse off.

Efficiency evaluations include an assessment of resource input (or costs) and outcomes. Generally speaking, efficiency is measured by the relationship between the level of accomplishment of these goals (consequences) and the resources used or expenditures. The fact that something is efficient does not necessarily mean that it will lead to cost reduction; cost reduction and efficiency generally represent two different perspectives. An intervention can be called efficient when an additional resource input or higher cost are required to achieve a better outcome with a higher, overcompensating benefit.

Therefore, even those interventions which are more expensive than established alternatives, but which exhibit higher performance of medical tests in terms of predictive value, greater effectiveness in treatments/interventions, more safety, fewer side-effects, etc. may be efficient.

Whereas private accounting is generally limited to factors measurable in monetary terms, classical economic analysis extends the examination to qualitative and intangible costs and consequences. It explicitly attempts to measure factors which are difficult to evaluate monetarily. Statements regarding the relative economic efficiency of intervention strategies compared require an examination of the entire spectrum of costs and consequences of interventions.

There are different ways to define and to measure benefits. Some of those methods are based on the principles of welfare-theory, some are based on the assumption only that men are deciding in a rational way (pragmatic decision-makers). Other methods incorporate the preferences of patients into the desirability of outcomes. Table 1 gives a short overview.

The appropriate choice of a method depends not only on the availability of data; it rather has to be guided by the purpose of the assessment. Insofar scientific strictness is the guiding principle. The various stakeholders have different views and goals (see figure 5). The usage of the results determines the viewpoint and consequently the number of effects measured and the way how they are valued. Health economics literature describes three different perspectives an analyst can take when determining the cost and benefits of a health program: *welfarist*, *extra-welfarist* and *pragmatic* (decision-maker oriented). Each of those perspectives have specific objectives, are based on different principles and assumptions, values the costs and benefits differently and therefore demands specific data. A welfarist has a strong welfare economics theoretical background. He puts considerable emphasis on the valuation from an individual's viewpoint, thus preferring the willingness-to-pay method or the method of prevailed preferences to the human capital approach. A pure perspective of the health sector budget holder is taken by the extra-welfarist.

The pragmatist's view theoretically is the weakest. Choosing the appropriate evaluation approach not only depends on the problem being addressed, but also on the institutional framework and the measurement challenges (24). Within the scope of the operationalization of an evaluation project one must crosscheck the research question with the specific attention and motives of stakeholders and subsequently find the relevant outcome measures and criteria of economic performance and the respective evaluation method. Finally one has to cover topics like level of evidence needed, the economic criteria and the decision rules to be applied.

Table 1. Study Types and Goals

Type of Study	Goal
Cost-Minimization Analysis	Determine the least expensive intervention strategy for accomplishing the same medical outcomes.
Cost-Effectiveness Analysis	Determine the more efficient intervention strategy for accomplishing the same type of medical results in terms of cost per medical outcome measures (cost per life years gained).
Cost-Utility Analysis	Determine the more efficient intervention strategy for accomplishing the same type of medical results in terms of cost per constructed summarizing unit of outcome (cost per Quality-Adjusted Life Years).
Cost-Benefit Analysis	Assessment in money terms of whether an intervention strategy is efficient, i.e. worth doing, and comparison with alternative intervention strategies to determine which is 'most' efficient.
Cost-Consequence Analysis	Determine a listing of the medical and economic consequences of alternative interventions - used to indicate their consequences without summarizing.
Cost-of – Illness	Determine of the cost of illness - used to indicate the need for treatment or the potential economic benefits from improved intervention strategies.
Quality-of-Life Study	Relative assessment of intervention strategies regarding patient health outcome. The health outcome is measured by disease specific health status parameters or general quality of life instruments.

Source: Wenzel H, Hysa B. Economic Appraisal as a Basis for Decision Making in Health Care (23)

Effectiveness and Efficiency

Efficiency can be seen as the final stage of a logical process of three steps measuring economic performance from efficacy to effectiveness and finally to efficiency (see figure 4). Without efficacy and without effectiveness no efficiency is possible. Efficacy and effectiveness both describe to what extent a goal could be reached. If a goal cannot be reached, any resource input is wasted and therefore inefficient. Historically effectiveness measurements come from engineering science where technical performance had to be measured. The result has been typically displayed as physical units per resource used. In the health care sector for example cost per saved years of life or prevented cases. The measure of effectiveness can be multidimensional. This can lead then to challenges when making the comparison with and without a project. For that reason analyst always try to

have one outcome measure either by finding an algorithm to aggregate the various indicators into one measure or by applying measures that are multidimensional, like a quality of life measurement scale. Cost-Utility Analysis (CUA) specifically takes this into consideration.

Medical and Economic Benefits vary

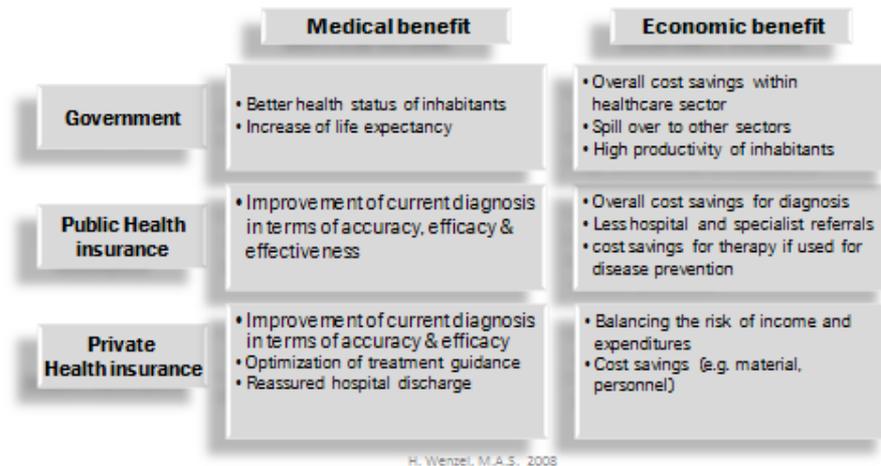


Figure 5: Medical and Economic Benefits from different Viewpoints. Source: Wenzel, Presentation at EDMA meeting in Brussels, 2008

Efficacy is a specific measure of effectiveness used in the health care sector. Efficacy is the study outcome under ideal, i.e. controlled conditions and is expected to be an unbiased proof that an intervention works. It is a “proof of principle”, based on randomized clinical trials (RCT). Controlling for possible confounders implicates that compliance is higher than in real life and the patients are highly selected (exclusion of certain conditions, i.e. multi-morbidity, age and gender) and therefore not representative for a specific target population. Transferring efficacy data directly to a target population would lead to an overestimation of the effects. As a next step one wants to know now how it works under real conditions in a target population. This kind of evaluation provides effectiveness data. It is the classical area for empirical studies of health services research and public health. If efficacy and effectiveness are proven, efficiency analysis would be the final step, then. As efficiency depends on the health care system, the viewpoint of the evaluation and therefore on the number of effects and assessed data of efficacy and effectiveness do not necessarily lead to efficient results.

In summary one can say, that efficacy and effectiveness data are prerequisites, and in terms of formal logic, essential but not sufficient conditions. It happens that effective interventions are useful and efficient in one country but not in others. One has to be cautious to transfer (uncritically) data between various countries. The study types shown in the table above will deliver different kinds of information that might not be suitable for any research question. A cost-effectiveness analysis (CEA) will only display relative efficiency, i.e. compare only two alternatives aiming at the same objective. Therefore many economists express their concerns whether a CEA is suitable for comparing across different forms of health care (allocative efficiency) thus providing technical efficiency only. A cost-benefit analysis (CBA) displays absolute efficiency, like in a business

investment calculation, where the return of investment is calculated. The valuation of life (saves years of life) in terms of money has been disputed for many reasons. Equity issues are seen in way how the valuation of saved cases of different ages are weighted or how life and health will be valued. Nevertheless, there are many ways to carry out a CBA. The valuation of physical units, like saved years of life, can be based on willingness-to-pay or on the human capital approach. With the willingness-to-pay approach the preferences of citizens or patients are used to put a monetary value on time. From an economic perspective this is the adequate way.

Performance can be defined in a Medical and an Economic Sense

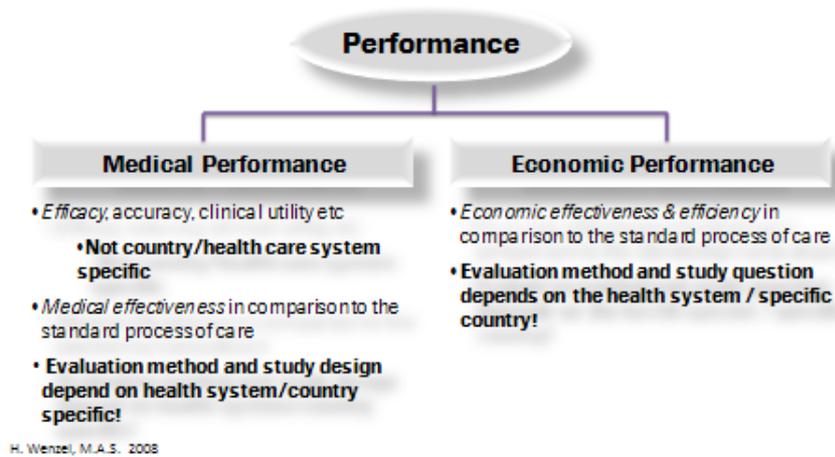


Figure 6: Medical and Economic Performance from different Viewpoints. Source: Presentation at EDMA meeting in Brussels, 2008

In practice there is much preparatory work required. With the human capital approach lifetime is valued based on the earnings of person that are either forgone or could be saved when life is prolonged and/or morbidity is prevented. It has been a challenge to value lifetime of pensioners, housewives and children in an acceptable way. In spite of that, this approach has some advantages with respect to feasibility (availability of data). In addition to the question whether a type of valuation is in line with the evaluation goal and the design, it is the human capital approach that contributed to the disrepute of economic evaluations and raised ethical questions.

Conclusion

In conclusion one can say that the request for efficiency and inherently effectiveness and for equity has the same roots: It is scarcity. So, efficiency and equity are flip sides of a coin. Equity without efficiency is not feasible, and efficiency without taking equity into consideration is unethical. There is no universal agreed ethics for objectives of the health care sector. But equality of access is consistent with most ethical theories and consistent with efficiency - it preserves consumer sovereignty.

EXERCISES

Task 1.

After introductory lectures students will work in small groups divided according to their countries. They will be given the case study to discuss the question of equity and effectiveness in a health system. This exercise should take 45 minutes.

Task 2.

For the next exercise, they will be grouped in two larger groups, the first group will be pro equity oriented and the second group pro efficiency oriented. They will participate in debate (pro equity vs. pro efficiency). The aim of the discussion is to explore the possibilities for change and improvement of equity and efficiency in their case study health system. The exercise will be concluded with discussion summary given by teacher. It is recommended that exercise lasts 90 minutes.

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