Future Vision Of Regional Health Care

Chapter One - Introduction

Over coming years, the health sector in European countries will experience rapid changes. An aging population, limited government health budgets, and expansion of sophisticated medical and information technology are all factors that will have a strong impact on future health care. The economic consequences of these trends will be seen in the financing, regulation, organisation and management of health care.

Health care systems are built on national structures and tradition. The subsidiary principle has been applied in health care and social support systems in international agreements including treaties in the European Union. Yet some trends are similar and some problems in common across nations. Even if we can observe diversity between regions and systems, there is also certain convergence over time in many areas of health care in the European Union.

This report presents the results from a project co-financed by the European Union through the Network for Future Regional Health Care (Future Health), which is a network operation funded through the Interreg IIIC programme. The goal of the operation is to promote sustainable and cohesive development of regional health care systems in partner countries through co-operation and learning from each other's experience, and through building up model systems usable in different national and regional environments.

The report is organised in six chapters. Chapter Two describes and discusses the universal megatrends that most countries are facing. In the third chapter the impact of these trends on health care organisation is described. The fourth chapter focuses on the demand for a new managerial system in health care, relating to this development. In the fifth chapter the vision of future regional care is analysed. Chapter six provides concluding remarks.

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Chapter Two - International Megatrends

Definitions And Categories Of Megatrends

The health care systems in European countries share similar experiences and trends but also differences in organizing their services. Governments play an important role in financing and regulating the sector, whereas the provision of care is supplied by a variety of actors. At the same time there are long-term trends common for all industrialized countries, such as the development of innovative and costly new technologies, and demographic changes, where the number of elderly will have an increasing impact on future needs and service demand. In addition to globalization development in general and the European integration in particular, some well-recognised external factors will influence most national health systems.

The purpose of this chapter is to present the current *megatrends* of relevance for future health care. These are defined as changes in the population structure, in the socioeconomic and political situation, in medicine, health care systems, equipment technology, medical information technology, hospital design and building technology. The concept of *megatrend* differs from the more common trends that refer to an emerging pattern of change likely to impact government and to require a response. All such trends can be studied using similar standards questions, such as: is the trend significant? Is it broad-based? Is it international, national or regional in scope? Is it short-term or long-term? Is it measurable, trackable, and observable? Is it actionable? Are there innovative responses to address new circumstances?[1]

Hence, the definition of a megatrend is a large, social, economic, political, environmental or technological change that is slow to form but continues relentlessly over several economic cycles. Once in place, megatrends influence for decades a wide range of activities, processes and perceptions, ranging from the level of individuals to that of governments. Megatrends are those underlying forces that drive trends.

Most developmental megatrends overlap each other. Therefore, their separate presentation is arbitrary by necessity, while a separate description is the only way to provide necessary details and create an overview of the future. Furthermore, while megatrends certainly vary in their strength across time and place, the vast majority of them seem to be discernible across the entire European continent. Lastly, while megatrends and trends affect societies in general and their infrastructure in particular, their effects on health systems are usually reactionary, prompting some form of action or adaptation.

In this section, general megatrends are described and illustrated with some basic statistics. Each setting is followed by a more specific assessment under the headline "Impact on Health Service Systems".

[1] Another related concept is an ***issue,*** which is a controversial, debatable, or "hot" topic or an innovative state action.

Category 1: Demographic Shifts

The first category refers to changes in various aspects of population structure. The demographic shifts involve changes of population size, racial and ethnic makeup, birth and mortality rates, geographic distribution, and age, but also the distribution of income.

- **Megatrend: Aging populations**

The change of the population structure with more elderly is a major megatrend that will influence societies in several ways. In coming decades the elderly will not only form a larger part of the population, but they will also have higher income and probably better health status than their predecessors. The change of income distribution across age-groups will influence buying habits, as well as demand for various forms of elderly care and health care.

A workforce gap will be created, when the large baby boomers' cohorts retire. With some national variation, this development is a common trend in most European countries. Table **1** describes recent statistics and trends of traditional measures of the health status of the participating countries.

Table 1: Mortality rates and life expectancy, 2000 and 2002

	Infant mortality rate, (per 1,000 live births)		**Mortality rate, under-5 (per 1,000)**		**Life expectancy at birth, total (years)**	
	2000	**2003**	**2000**	**2003**	**2000**	**2003**
Cyprus	5.6	4.1	6.6	5.0	77.9	79.4
Denmark	4.9	-	5.7	-	77.2	-
Estonia	8.4	7.9	8.4	7.0	70.9	71.8
Finland	3.6	3.3	4.3	4.0	77.9	78.7
Germany	4.4	4.1	5.3	5.1	78.4	78.7
Greece	5.9	4.0	6.6	4.7	78.2	78.9
Latvia	10.4	9.4	12.4	12.4	70.6	70.9
Lithuania	8.6	6.7	11.3	8.5	72.2	72.2
Sweden	3.4	3.3	3.9	4.0	79.9	80.1

Source: European Observatory on Health Care Systems/WHO 2005

Demographic trends show that the proportion of Europeans 65 years and older is expected to grow from 16.1% in 2000 to 27.5% by 2050, while the proportion of the population aged over 80 years (3.6% in 2000) is expected to reach 10% by 2050. According to some analysts, this increase in the proportion of older people will cause health care spending to spiral out of control or at least lead to increasing strain of the care system in its attempts to meet the demand for services. They refer to the fact that generally more money is spent on health care as people age. The average annual per capita spend on health care for people 65 and older is approximately three times as high as the average for all age groups, while that of the cohort 75 and over exceeds the average spend by a factor of seven.

It is true that health expenditures typically increase with age. If this age-related cost-escalation is analysed closer, however, it explains only one quarter of the total rate of health care increment over time. Thus, if the total upward tendency of health care costs amounts to four percent, the described ageing explains only approximately one percent of annual increments.

Yet the change in age structure will have an effect on both the demand-side, with more needy elderly using health and social services, but also on the supply side, as the competition for the workforce will increase from the previous decades (Figure 1).

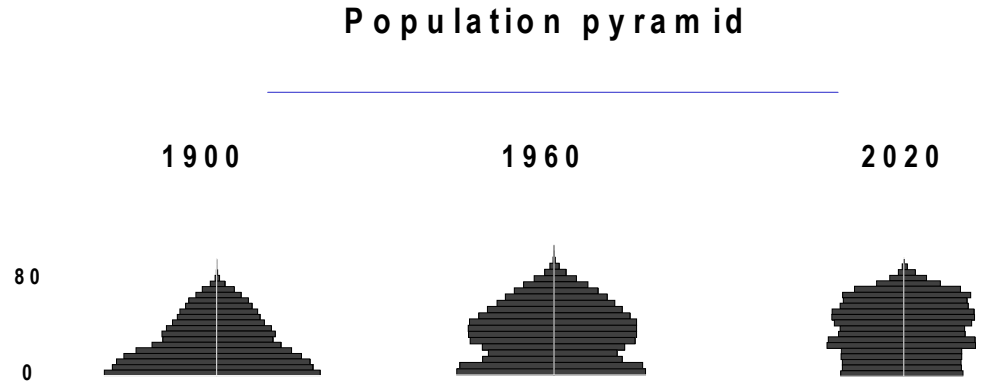

Figure 1: The development of the population pyramid in Europe
Source: WHO/Euro

We also know that extrapolation from current utilization is probably biased in many ways. The consequences of the development are based namely on the assumption that the patterns of population morbidity and service utilisation will remain unchanged. We also know that the complex interaction between demand and supply influences strongly the utilisation of services.

As already stated, the impact of ageing on the health care system is not unique to any country. Several OECD countries have experienced a rapid ageing of their populations and yet been able to manage their cost pressures well. The international evidence reviewed indicated that even modest economic growth should enable most countries to come smoothly along with the growth of their elderly populations and even increase moderately their health care spending over time.

Future generations of ageing citizens may even enjoy better health than the current ones. This suggests a hidden potential for a positive development trajectory, provided that people continue to take steps to control the risks of their own lives, to improve their lifestyle and thus to stay healthy longer. However, the problems related to nutrition, notably to the obesity and lack of sufficient bodily exercise vary across strongly in countries and regions, and, especially, across socio-economic boundaries in all Member Countries.

Impact on Health Service Systems:
The share of demand directed to the so-called degenerative diseases will increase, probably almost linearly with the growing proportion of elderly population. Also the need and demand for long-term care is bound to grow. Yet there are signs to suggest that good health could be enjoyed considerably for longer periods than now. On the other hand, the objective health status of the youth is seen to deteriorate simultaneously. Because this has been linked to rapid, hard-to-change alterations in life-styles, the often disseminated visions of active, healthy seniors may never become true. Increasing segregation of senior citizens according to their health status is another and more probable possibility.

- **Megatrend: Immigration, increasing ethnic diversity**

As mentioned earlier, a workforce gap will be created when generations from the 40s retire and numerically smaller, younger generations take over their tasks. Immigration into Europe

provides a chance to fill this gap. Government service provision and goal-oriented naturalisation of new citizens will thus increase in importance.

Impact on Health Service Systems:

Despite marginal changes in regulatory policies, immigration into Europe will remain significant over decades. This serves the interests of the potential immigrants as well as those of the original populations, these being increasingly dependent on young, immigrating labour force. The resultant ethnic diversity is reflected in service delivery as value pluralism, diversity in beliefs and expectations, traditions, and, initially, even in communication between caregivers, patients and their families. At worst, an increased tension between original and immigrant populations may be reflected in increased rates of violence.

- **Megatrend: Growing and shrinking populations**

The rate of population growth will vary considerably across European countries as well as over time. In Western Europe birth rates have increased in many countries, partly due to the development of welfare systems which include increased social support to families with dependent children. In Eastern Europe the development is somewhat worrying, with lower birth rates and negative development of some health status measures. In many low and middle income countries the growth of populations continues with some exceptions. All these trends will influence service demand and have effects on the use of land, water supply, climate and spending of government resources such as education and social support.

Impact on Health Service Systems:
The global population explosion, if it should become reality, affects the European Continent only indirectly. Predicted growth rates differ considerably between European countries. Low birth rates and high standard mortality rates (SMRs) are typical of eastern countries, while immigration keeps the population in growth in southern and western parts of the continent. These changes challenge the infrastructure in dissimilar ways. Both, however, necessitate goal-oriented governmental actions.

- **Megatrend: Sub-urbanization, sprawl**

This megatrend is closely related to the former one. In the 20th century, population growth in urban areas has spilled increasingly outside the city limits, resulting in large metropolitan areas, where the populations purchase most of its services. This (sub) urban sprawl takes place in a variety of ways. It may be reflected in social problems (ethnic segregation), as well as environmental problems (pollution). The effect of living in suburban areas has lead to certain building structures, longer commuting distances to and from the downtown areas and changed consumer behaviour. The needs for an infrastructure and regulation of the side-effects such as air quality and water supply have to be taken into account.

Impact on Health Service Systems:
With the relative significance of primary production (agriculture, forestry, mining, but also manufacturing) diminishing due to automation, specialization, trading and moves towards scale economies, the service industries (including health service production), increase their relative share in national economies. This increases sub-urbanization, which may be amplified further by immigration. This megatrend may be counteracted to some degree by information and communication technologies, which allow more room for distant working. Increased segregation of people may result, with many-tiered and grossly inequitable health care systems.

Category 2: Changes In Political Conditions

The second category deals with changes in political systems and their impact on societies. It involves changes in political conditions, which encompasses the dynamics related to process of electing representatives and officials as well as process of formulating and implementing public policy and programs. Health care has historically been of mostly of local or national concern. This situation has also been also stated explicitly in various treaties of the European Union (e.g. Article 152 of the Amsterdam Treaty).

The Member States have also assumed that they have full responsibility and control over their own health services. Yet it has become increasingly apparent that the Single European market has a substantial impact on health services through rulings by the European Court of Justice (ECJ) and through various directives of the Union. Furthermore, the globalisation of trade and mobility of commodities also has a growing impact on national health care systems.

On the one hand, the European Union seems to increase the political weight of the regions at the expense of that of countries, and, on the other, it underlines continental, i.e., international collaboration. Wealth may in some instances vary more between regions than between individual countries. It is expected that increasing integration and mutual exchange of commodities across boundaries will most likely diminish these differences over time. The number of members of European Monetary Union is expected to grow soon, which also supports the trend towards harmonization and common fiscal policies.

- **Megatrend: Participatory democracy**

The health care system has grown in significance on the political agenda in most countries. With a development towards more participatory democracy, different actors in health care will see opportunities to influence the agenda and to take their own initiatives. We will see more of lobbying of these actors in Europe. Referenda at regional and local levels are also likely to have an impact on the health care system.

Impact on Health Service Systems:
The health care sector will have a pivotal position in participatory democracy. On the one hand, it will be one major determinant of the rate of public spending, be it based on taxation or on social insurance. On the other hand, health care is at least conceived to be one of the most important guarantees of quality of life. Furthermore, in civic societies the health sector will increasingly be the arena of pressure groups, which will vary much in size, economic power, expert knowledge, and political weight. While such groups effectively channel citizen's opinions to the legislative bodies, they can also pose a threat to a balanced development.

- **Megatrend: Privatization/Outsourcing**

The tradition in European countries varies in relation to provision of health services. In the Social Insurance systems the funding and provision of care are separated. This separation is combined with a large share of private providers. The National Health systems have integrated public financing with public provision. Yet the reforms in the latter systems have opened up parts of the sector for private provision also. Here private companies provide public services through sub-contracting agreements.

Impact on Health Service Systems:
Independently of the structure of the system, production of health services and their funding are now seen as separate responsibilities. Decentralization of care provision through privatization and outsourcing aims at increasing technical efficiency through providing more room for professional management, decreasing internal bureaucratic friction and creative entrepreneurial solutions, which also include effective economic incentives. However, sub-contracting in health care necessitates special expertise in setting measurable quality targets for the services and an ability to deal with the multiple and complex issues of legal

responsibility. Public-private mix in activities ranging from capital financing to specialist consultations is another new and challenging field of collaboration.

Category 3: Science And Technology Developments

This section includes those science and technology developments of major importance for health care systems. It covers both advances in scientific research and applications of the results of that research in health services, the 'translational' medicine.

- **Megatrend: Basic biological research and bioengineering**

The advances in DNA-mapping, stem cell research, cloning and genetic engineering are scientific research activities that will most likely influence clinical practice.

Impact on Health Service Systems:
Health care is probably the single most important field of application of bioengineering innovations. This is reflected in research, where the educational background of the scientists is now more often in biological rather than medical sciences. Whether this will create problems in target setting for medical research or in the progress to clinical applications, is debatable.

- **Megatrend: Clinical science**

'Translational' medicine deals with the transformation of findings in medical research into new ways to diagnose and treat patients. The transfer of knowledge is crucial for developing applied solutions to improve health care. In addition, molecular medicine (like receptor-specific drugs) and biological treatments (such as the use of preconditioned immunologically active cells), mini-invasive operations and nanotechnologies will yield new methods for diagnostics and treatment. Improved diagnostic testing will reveal genetic variants such as those predisposing to hereditary diseases. Since a hereditary component is present in many if not most of the degenerative disease of the elderly, this could reduce morbidity and mortality rates but also substantially increase care demand. This development has already prompted a dialogue on ethical issues concerning the application of this knowledge.

Impact on Health Service Systems:
Coming years will see major breakthroughs in the application of stem cell technology, and drug therapy, tailor-made according to the phenotype of the patient. In addition, certain genotypes will benefit from close dietary counselling, currently a commonplace in the case of rare inborn errors only. Designing new drug molecules, however, is more resource-consuming than ever before. This accelerates mergers and acquisitions in industry, leading to monopolistic production patterns, while high drug prices limits their marketing. In fact, marketing costs already exceed the costs of research and development. High drug prices may discriminate against some Member States during their first decades of membership. Nanotechnologies are seen as developmental potential, but their impact until 2015 is predicted to be small.

The clinical effectiveness of all health care technology will be an object for careful impartial scrutiny, independent of all market forces. This health technology assessment (HTA) movement will network effectively between all European countries. Technologies without proven effectiveness will be left gradually without reimbursement. The fact should also be accepted that most technological innovations increase health care costs, and usually relatively more than they increase its effectiveness.

- **Megatrend: Energy sources**

Since the oil-crisis in the 70s, industrialised countries have been painfully aware of their dependence on fossil fuels and of the need for alternative energy sources. Also in Europe, the economic growth of some countries is quite directly dependent on oil price. The environmental consequences of using fossil energy sources are widely known and seek global co-operation for effective solutions.

Impact on Health Service Systems:
The scarcity of fossil fuels leads to increasing prices, which, through the dwindling of national economics, may be felt in the health sector as well. Recyclable energy sources grow rapidly in importance. Fission energy will be necessary to bridge the energy deficit until fusion energy becomes an alternative. This will not happen before the middle of the 21st century. Renewable biological energy sources will be exploited, as well as solar energy. A gradual shift to hydrogen technology in the energy supply chain will diminish particular emissions, which may be reflected even in the morbidity figures.

- **Megatrend: Privacy and security issues**

Information technologies open up new solutions and innovations at a rapid pace. Yet, the adaptation to modern information technology necessitates a thorough consideration of privacy and security issues in many sectors of a modern society. The use of wireless technologies has to be protected from tracking, identity theft and cyber terrorism. The relatively slow implementation of information technology in health services may be also due to the fear of misuse of health-related information.

Impact on Health Service Systems:
While wireless technology has already begun to be implemented in the most modern hospitals, its weak points are also seen. Technologies of strong recognition, based on unique and permanent biological properties of an individual, will gradually replace all other means of identification. Despite all thinkable countermeasures, modern data handling – consisting of data retrieval, processing, storage and exchange - will remain potentially vulnerable to misuse, whatever the motives might be.

- **Megatrend: Information technology**

The use of electronic health records can result in workflow efficiencies in centres and clinics and improve quality of care for patients. Yet only a smaller proportion of clinics and hospitals use fully digitalised health records today. While the use of electronic records has been slow but steadily increasing, many smaller practices maintain strictly paper-based offices.

Another problem has been the fragmentation of implementing information technology. Comprehensive strategic planning will be necessary; creating national solutions, which may then pave the way towards strong international standards.

Impact on Health Service Systems:
No other technology has been predicted to affect health systems more profoundly than information and communication technology (ICT). Unanimity concerning its main forms of applications, both their structure and function, seems to be shared internationally but only slowly.

An electronic, gradually structured, modular, life-long electronic patient record (EPR), based on the general open standards and operating principles of evolving web technology forms the kernel of the system. The information guides the care of an individual patient within one institution and between different institutions. Secondly, the same information allows a detailed reconstitution of the care process and by these means provides legal protection for the provider and patient alike. Thirdly, the same information can be used to monitor the performance and management of any given phase of care pathway or over the entire care process.

Some developmental stages, or 'generations', of EPR can already be foreseen. At the first 'incunabular' stage EPR carries the most features of a printed patient record. Thereafter, its developing structure allows more possibilities to analyze resource use, outcomes, and quality of care on-line and without data re-feeding, The third generation, based on a neural network technology, displays features of automatic learning, guiding the caregiver to use best available solutions even in complex clinical situations.

EPR is also an essential tool in a continuous outcomes analysis. The long-range results of care will be measured systematically using some form of multi-dimensional health-related quality of life (HRQoL) instrument. The direct, indirect and intangible costs of care accrued along patient's path will be related to the change of HRQoL across the care continuum and even discounted for the expected life span of the individual. The crude cost-effectiveness estimate thus obtained will guide care decisions and be used as one tool in setting care priorities.

Electronic prescribing just paves the way for more comprehensive solutions such as EPR.

Disease management will probably gain in strength, because it seems to allow several ways of enhancing the distant monitoring of the clinical course of some chronic, incurable diseases. This group of health problems includes diabetes mellitus, arterial hypertension, asthma, chronic obstructive pulmonary disease, probably some forms of depression and substance dependence as well.

- **Megatrend: Electronic delivery of goods/services**

Numerous factors drive the growth of the internet and e-commerce. With new low-cost technologies, access to the internet has been improved in all Member Countries, whether their economies are mature or in transition. As shown in table 2 the current rate of increase is higher in countries with a slower internet introduction.

Table 2: Internet users per 1,000 people

Country	**2000**	**2001**	**2002**
Cyprus	177	218	294
Denmark	392	429	513
Estonia	272	300	328
Finland	372	430	509
Germany	301	374	412
Greece	95	132	155
Latvia	62	72	133
Lithuania	61	68	144
Sweden	456	516	573

Source: WHO/Euro

This development has not only facilitated the increase of e-commerce, but has also led to implementation and use of web-based technology in the government sector. Governments today use the internet for dissemination of information as well as for taxation policies and law enforcement.

Impact on Health Service Systems:
The leading principles of e-commerce are directly applicable to electronic prescribing, managing the supplies of drugs and other storage items in health centres, wards and clinics. EPR will increasingly serve as the main route of data feeding, thus making many phases of current practices in material flow management obsolete. On-line health care service performance monitoring, outlined above, is another example of e-government, designed to guarantee the best interests of the citizens during the turbulence of continuous change.

A large part of preventable morbidity is now seen as resulting from living habits, including amount of exercise, dietary habits, and consumption of tobacco and alcohol. How much the developing information infrastructure is able to support disease prevention in large population bases is still unknown. According to one scenario ICT will only deepen the current health-split in western populations, when those strata already in good health (and usually well-off) reap most of the gains. The relative position of the indigent, less computer-literate population

strata gets worse. This development may have implications for solidarity in European societies, and may be reflected in the willingness to share the increasing costs of health care.

Category 4: Economic Dynamics

Economic dynamics are changes in the production and exchange of goods and services both within and between nations as well as movements in the overall economy such as prices, output, unemployment, banking, capital and wealth. Interdependence between economies has increased and even if the economic dynamics are a link to better growth and wealth, there are also side-effects to be considered. The areas seen as especially vulnerable to the increased exchange and flow of material resources are education, and social and health care. Investments into these human infrastructure and long-term success factors may be left to minor consideration in this competition for resources.

- **Megatrend: Globalization of trade**

Globalization is the flow of information, goods, capital and people across political and economic boundaries. As that definition implies, this is not a new phenomenon since people have always carried information, goods and capital across countries.

It is also well-established that international trade contributes to economic growth. We see that this development has recently become even more marked. Free trade agreements have been implemented between individual countries and groups countries, within the European market and globally through the World Trade Organization (WTO). In health care this has so far affected mainly the pharmaceutical and device market, but also outsourcing of health care related services (such as ICT) and health service investments.

Globalization of trade seems to touch almost all aspects of human collaboration. In developed countries it empowers corporations, it seems, at the cost of governmental structures. High and growing unemployment rates in some countries result from the investments attracted by the inexpensive labour of developing countries and countries in economic transition. The tax base is reduced by unemployment, which puts at risk the financing of welfare services, including health care. Besides continuing automation and innovative streamlining of the working process, the countermeasures to increase European competitiveness include prolonging the working week, cutting benefits, and the postponement of retirement ages (see later). Such measures are opposed loudly in Continental Europe, but their background seems to be gradually understood across societies.

Impact On Health Service Systems:
Within the European Union, free movement of labour and services is predicted to increase local competition in health care to some extent, but also, in the long run, to gradually smooth out differences in prosperity. Meanwhile, the strong flow of educated health care labour, physicians and nurses alike, from low-income countries to more affluent markets is already a growing problem in Europe.

Due to the peculiarities of the market, the global trade in medicines poses some specific problems. When the international community increases moral pressures to segment the pricing of pharmaceuticals according local ability to pay, a growing portion of the medicines is said to end up in the black market and traded back to affluent countries. The profits are pocketed by the dealers, while the position of less affluent countries is not improved.

- **Megatrend: Immaterial Property Rights (IPRs)**

The international agreements through the WTO mentioned before have also dealt with IPRs and, more specifically, with the patent rights of pharmaceuticals. The different standardizations originating from local, state and national levels have been transformed into international regulations.

Impact On Health Service Systems:
Technological development ties up increasing amounts of resources. To guarantee return on investments, more emphasis is being put on the protection of IPRs. The development has not ceased to protect newly designed molecules and devices. The hottest debates involve the patenting rights of parts of human genomes and the like. It is hard to foresee how this battle will end.

The protection of IPRs can be seen as a prerequisite of all reasonable development. However, an ultra-strict application of intellectual property rights poses increasing threats to all development and free movement of constructive ideas.

- **Megatrend: Retirement Issues**

The defined benefit plans for pensioners will not meet the fixed targets. Thus pension shortfalls of varying magnitude can be expected in many systems. This calculation failure may have been based on assumptions of lower life-expectancy but also on unrealistic assumptions concerning the strength of economic growth. As many pension systems to some extent have been based on the principle "pay-as-you-go" the system is particularly sensitive to recessions in the overall economy.

Impact On Health Service Systems:
The general retirement age was set more than one hundred years ago at 65 years. With the fraction over 65s growing in all Member States and gradually exceeding one-fifth of the population, the system increasingly suffers from the lack of benefit payers. The European countries have been predicted to be affected in different ways. In some of them, the problems will be considerable, in some others rather small. Elasticity concerning retirement age and retirement related benefits can be solicited but has proven difficult in several important political environments e.g., in Germany and France. Both countries spend already close to one tenth of their GNP on health. With their population aging, the situation will prove increasingly difficult to handle.

Category 5: Social And Cultural Shifts

Social and cultural shifts are changes in core values, beliefs, ethics and moral standards that direct peoples' behaviour and can influence their participation in the formulation of public policy. For any major changes to be implemented it is important that they are socially and culturally acceptable. Strategies and policies must fully consider and take into account the unique needs of people in different life phases among all racial, ethnic, religious, and cultural groups.

- **Megatrend: Moving from Christian monoculturalism to value pluralism**

Europe is moving away from a society build on a single Christian religion to one with a multicultural tradition. Different religions will have a different impact on education and norms.

The roots of Western health care systems date back roughly one thousand years to the charitable activities of the Catholic Church and its affiliations, the monasteries. Correspondingly, the basic moral coding of all health care used to share Christian values. Today pupils are not taught Christianity as the sole religious norm in school.

Impact On Health Service Systems:
The mix of religions will have an impact on several societal institutions including health services. The status quo is challenged simultaneously by the secularization of Western societies and by the immigration of people and their values from non-Christian world. This development is predicted to continue.

The change is reflected especially in attitudes towards questions related to the reproductive medicine (abortion, sterilization, male and female circumcision), sexual behaviour (STDs, transsexual surgery), to questions relating to the end of the life (euthanasia), but even in apparently value-neutral issues, like stem cell research.

The trend of retaining ethnic identities is gaining ground on the earlier one, which used to put more emphasis on acculturation. This means that the stress felt in the service system is not being relieved, rather to the contrary. Somewhat surprisingly, the equity principle, strongly expressed in old Christian values, but sieved thereafter through eras of humanism, enlightenment, and socialism, seems to keep its place even in new pluralistic societies, including their health care systems.

- **Megatrend: Redefinition of family and role of family**

The nuclear family as the model for households is diminishing. Today there is a trend towards other types of family structures. Single-headed households, unmarried couples and other reconstituted families are examples. We could also note consequences such as the increasing popularity of home schooling systems, as opposed to traditional schools. All these changes will lead to diversity of values.

Impact on Health Service Systems:
The family is losing its position and significance as the basic societal sub-unit. This is linked in complex ways to several simultaneous societal changes, like general secularization (see before), moving from agricultural to industrial society, and better education of women allowing them more material and immaterial independence and thus personal freedom. Families consisting of more than two generations are becoming rare in most European countries, partially due to internal immigration. Both developments affect the healthcare system: the so-called natural caretakers, parents and grandparents but also children, must be replaced by professional ones in infant and elderly care. An enormous amount of unpaid family work has been reassigned to professional services, which then often share the financing with healthcare.

- **Megatrend: from communitarian values to increasing individualism**

The communitarian values that have pervaded many societies for decades, now dispute with a free unregulated market as the key social institution and principal basis of human relationships. The surge of European individualism can also be seen as a reaction to the complete failure of the two totalitarian society experiments in the 20th century, but it is certainly reinforced by the market forces. Here individualism is a Janus-faced phenomenon: on the one hand, it aims at increasing the weight of personal choices, on the other, it makes such choices mandatory, contrasting here to the "one-size-fits-for-all" principle.

Impact On Health Service Systems:
Similar pressures are felt in health sector as well: market forces noisily propose that one should be able to 'shop around' in health care to seek individual solutions, despite the fact that most of such services are financed through society. Consumerism in health care is advocated in the media, although the citizen is almost never a true consumer in health care. This is due to the fact that he or she does not feel the true opportunity cost, like a real consumer does in a normal market. Neither is the information shared symmetrically by the client and the provider in health care market.

Concerning financing of health care, increasing individualism poses a distinct threat to solidarity. This threat is even greater, when the growing share of lifestyle–related diseases is taken into account. Since the same lifestyle choices leading to morbidity are related to individual choices, the argument continues, why should the same individuals not also be responsible for their cure, by paying 'the rest of their bill' as well?

- **Megatrend: Increasing expectations and demand**

The shift within society away from blind trust in experts, and towards an emphasis on public involvement, can be observed in different sectors. Together with the rise of consumerist ideology and the increasing availability of information, the relationship between the doctor and his patient is moving away from paternalism. Patient compliance is replaced by mutual consensus. In addition, we can see increasing and often unfounded expectations as well as demand for immediate access to care. A 24-hour society is no longer a feature of emergency units only.

Impact On Health Care Systems:
For the media, health and health care has become one of the most interesting topics. The area is rapidly evolving, seems to have big promises for the future, touches everybody and is linked to a rapidly growing industry, where the market is imperfect or failing altogether. In addition, a growing part of the information flow, namely, the internet, is outside most public control. No wonder, therefore, that new forms of care open the gates for new demand, while reported mishaps in the system increase the share of defensive medicine. Superficial, often inexpert but well-selling 'quality' assessments channel the patient flow away from or towards certain providers, which all tends to increase health care costs, without, in most instances, bringing any measurable gain in effectiveness to the service proper.

Increasing demand will also put pressures on doctors and providers to provide care and services which are not evidence-based. Patients' own perceptions, preferences and societal trends will influence the criteria for receiving treatments. Rates of Caesarean section are an example where we can observe an increasing trend in most European countries (Figure 2).

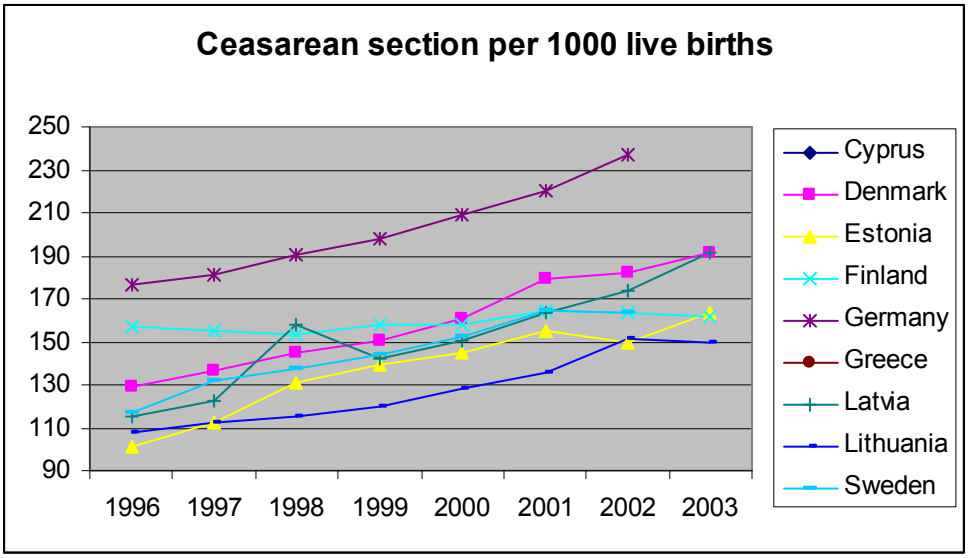

Figure 2 : Caesarean section per 1000 inhabitants, 1996-2003
Source: WHO/Euro

It is obvious that this development is not caused by changes in clinical criteria but is rather an effect of patients´ demands. Many professionals, not least midwives, have questioned this development and see it as the result of the misrepresentation of the risks involved with Caesarean deliveries.

Chapter Three - Institutional Responses To The Megatrends

The causes and nature of forces felt in European health care systems have been itemized in the previous section. The main responses of health sector institutions are described next.

Measuring Health And Health Care

All health sectors are seen as one way to increase personal utility, competing with alternate strategies with the same goal. In Europe most health care is financed from resources collected from the populace through a binding socio-administrative process. Correspondingly, societies display increasing interest in the quality of services, especially the cost-effectiveness of different ways of spending always scarce resources. This is due to the fact that the health produced by the activities of health care is ultimately difficult to separate from the health produced in those same societies by other means, such as health promoting policies in housing, education, family, traffic and occupational safety. Theoretically, the volume of any health care system is then optimal, when the marginal utility-cost ratio of all health care equals that of all other activities in the society, especially those which are financed jointly.

This approach underlines the necessity of choosing the right measures for the outputs in health care. Instead of counting separate intermediates, like office encounters, clinic visits, bed-days or admissions, as is often done to-day, the system must put increasing weight on measuring health gains. A gain must be defined as a position across the time, where health-related personal utility is greater than in absence of health services. According to this interpretation, the gain does not necessarily mean improved health but – as in incurable neoplastic diseases - slower depreciation of health as well.

An intermediate can be used in measuring health benefit in those instances only where the intermediate is proven to be a close proxy of the 'health gain'. This may be the situation in some long term care institutions, which take care of frail elderly people, unable to find any other form of support. Here one ´bed day' may be taken as a product assuming that it fulfils the many and mostly very transparent quality indicators of good long-term care. The same reasoning hardly applies to normal hospital care during an emergency or elective admission. Transparency, where the quality aspects of care are easily and indisputably assessed by any lay person, is not more a feature of modern complex hospital care.

Quality Indicators Of Health Care

Due to the complexity of roles of the provider, the patient and the payer, the quality indicators of health care are also exceptional. After a long international dialogue the dimensions of health care quality defined by the Institute of Medicine (U.S.) and accepted subsequently by Institute of Healthcare Improvement U.S.) and the National Health Services (U.K.) seems now to settle the debate. The six dimensions by these bodies are effectiveness, efficiency, safety, patient-centeredness, timeliness, and equity.

Deeper study reveals that there might be some internal conflict between these indicators. As one example, there is a trade-off between efficiency and timeliness. Efficiency, from the standpoint of optimal regional health care, often means regionalizing services to fewer sites and therefore longer commuting distances. Longer distances to care mean higher time-prices paid, which in sparsely populated areas may make timely care more difficult to achieve.

To monitor and manage the quality of care seriously, all six dimensions should be operationalised and followed on-line rather than in samples. Furthermore, all data feeding should be automated to avoid duplicate work. By these means the described quality indicators could ultimately form a part of the so-called dashboard instruments, which allow a constant, real-time, goal-oriented evaluation of the performance of any given health care institution. The principle of data handling in health care continues in the following section.

Data Collection And Processing To Information

Modern health care is an information intensive industry. Most of the relevant data are collected during care processes, describing changes in the patient's clinical condition but also the consumption of resources, like use of time, capacity, drugs and utilities. Besides guiding the best care over the care pathway and assuring the legal rights and protection of the patient and the providers alike, the data must be sorted out and processed according to pre-set principles to increase their usability.

Accumulating evidence shows that specific efforts are necessary to prevent mass of primary data to swell unnecessarily. This goal is achieved by the minimum data set principle, or vetoing: when any single expert is not willing to include some parameter in the collectively used minimum data set, it should not be included into it. All data collection should thus have a pre-agreed purpose of use.

An electronic patient record (EPR) will be the main template of data collection. Through appropriate processing the raw data are turned into information. Information is used to steer the clinical processes, and enterprise resource planning (ERP), including immaterial investments (expertise, experience, and ordinary labour) as well as material items. The resultant information, processed from patient data, can also be used to support continuous quality improvement, the dimensions of quality being those listed before. This closes the loop.

Care Integration And Managing Need, Demand And Supply Of Health Services

With the average age of patients increasing, the weight of all care is moving gradually from short episodes to a care continuum, where primary health care, specialized care, rehabilitation units and home care must be able to participate without any unnecessary administrative or other barriers. Correspondingly, secured and protected patient information must move without obstacles between various parts of a seamless care chain and be usable with patient's permission whenever and wherever needed. Furthermore, the legislation, features of the ownership of health care facilities and the incentive structure of different providers must be such as to support and not prevent effective collaboration of the partners in care. All care must be provided on that level of the chain, where the effectiveness-cost ratio is optimal.

Care integration can be promoted by shared strategic planning, deploying quality circles, rotation of personnel and ingenious re-division of tasks. The necessary mutual appreciation between professions stems from openness, strong personal relations and shared learning opportunities. Integrated care systems must also have close links to the community to support effectively any reasonable health promoting activity.

The concept of an integrated care system also opens gates to strategies aiming at managing the total volume of services. In order to manage it is important to distinguish between the need, demand and supply of health services. The concept of 'need' in health care refers to the objective volume of ill health in a given population, amenable to health services. An increasing part of the need is now due to individuals' behavioural features, be they overeating, smoking, uncontrolled drinking, drugs abuse, unprotected sex or other reckless behaviour. Health promotion is an umbrella concept for those activities, which aims at reducing the need of health care through diminishing unhealthy choices.

The quantity of care demanded, defined here as the payers' willingness and ability to pay for the treatment, can also be modified through planned action. Many primary contacts can be replaced safely and inexpensively by using electronic contact networks and call centres. The proven price elasticity of demand for care can be used to curtail contacts in primary health care and in emergency departments. In several chronic conditions, time and resource intensive personal care contacts can be substituted using telematic contacts to monitor certain

biochemical and physical proxies. Even the demand for long-term care can be partially replaced by investing in intelligent homes.

An increasing share of health services is consumed at a later stage of life. With the advance of many organs supporting care, several modern technologies can be applied without practically any age limits. The demand for special kinds of services will increase. With an ageing population the prevalence of Alzheimer's disease and other types of dementia will increase. Lastly, the supply of care develops towards shorter admissions, less invasive diagnostic and curative procedures, and effective rehabilitation practices.

Health care technology assessment will prove its value in measuring health gains and relating them to corresponding resource spending. The upcoming European HTA collaboration will have a double focus in the future. Firstly, new as well as established technologies will be tested carefully for their efficacy by using prospective controlled clinical series, blinded for the provider and for the patient, when possible. Secondly, and after adaptation into clinical use of technologies of proven efficacy, their effectiveness must be analysed in everyday use. Recent observations show that efficacy is a necessary prerequisite for any clinical use, which still does not guarantee its clinical value. The only way to guarantee this is a systematic evaluation of the health gains across any pharmaceutical or invasive intervention. Only by these means can the three-fold bias of randomised prospective clinical trials – patient-selections biased by collaborative research, and individual professionals biased by the exceptional dexterity - be straightened out. This will be the arena of strong international collaboration, since all European countries use the same or similar basic technology.

Even the work will be divided in a more flexible way. New vocational training programs will be created and new professional careers accredited. 'Care delivery' will be separated from 'discovery'. Here 'delivery' refers to care pathways, which can be pre-planned down to their very detail. 'Discovery' in turn is used to describe pathways, where the unique problem-solving capability necessitates thorough and many-sided medical education. 'Delivery'-type care may involve complex but teachable technologies (like the application of ultrasound in certain clinical conditions, sewing uncomplicated wounds, shaping casts, tapping spinal fluid, placing central catheters and even giving general anaesthesia) while 'discovery' depends on the caretakers' wide and thorough understanding of complicated medical issues.

The ultimate goal of managing care volumes is to find the best balance of health care with the other sectors deploying the same, permanently scarce, jointly collected resources. Although the goal of balancing the marginal utility-cost ratios across all jointly funded activities may sound rather theoretical, it still is the single most defendable mental model of a good health care. In this model, the health professionals are gradually transformed from patients' advocates to meta-advocates, where the health, and not the means its production, like care technologies or clinical specialties, take the centre stage.

Medical Technology Development

Evolution of medical technology

The main trends in technology evolution will include the following: receptor-specific medication; miniaturization of invasive procedures; and application of information technology as an adjunct to the application of both invasive and non-invasive care.

Currently no true quantum changes are expected to take place within, say, one and a half decades from the present. However, stem cell technologies will evolve in tissue repair beyond their current applications, which are mostly limited to hereditary and malignant diseases of blood cell forming tissues. New ways to use stem cell technology may involve the treatment of burns, bone injury, and even cardiac and neurological conditions. Applied genomics will benefit diagnostics, genetic counselling, and individually tailored medical treatment. Transfer

of genes to cure diseases must await the solving of a number of basic problems. Similarly, application of nanotechnologies will remain experimental over this period.

In research, the goal-oriented attempts to find inexpensive and safe solutions for certain chronic ailments will continue. These diseases include neoplastic disorders, both types of diabetes mellitus, the metabolic syndrome, arteriosclerosis, obesity, chronic obstructive pulmonary disease, osteoarthritis, rheumatic disorders, osteoporosis, and mental disorders, most notably dementia, schizophrenia and bipolar disorder. Any major advance in the management of these diseases towards the so called third phase of care, where excellent results join decreasing costs of care could free substantial amounts of scarce resources to be used elsewhere. A problem, however, is the rigidity of many systems to free-up and re-allocate resources.

The rapid pace of technological change in the health care sector raises medical and economic questions about the effects these changes will have. Technological change may be cost-reducing, when it improves the effectiveness of health care resources, or it may be cost-increasing, when it improves the quality of care or introduces new and costlier diagnostic and treatment procedures. Because new technologies are usually linked to the increase of costs, the hypothesis is quite strong that technological change is the major contributor to health sector inflation. It has been assumed to be responsible for roughly half of so-called medical inflation. The patent-protected prescription seems to be the strongest singular increment factor displaying approximately ten percent annual cost hikes in several participating countries.

The development of new technologies has been one of the major forces for the supply of health services. The shift from in-patient care to out-patient care and day-care surgery is assumed to lower costs but also to improve quality of care. Several studies show that the cost per case has been lowered although the number of patients treated has increased (e.g. cataract-surgery). Similar trends could be observed for improved diagnostic procedures. As stated, new innovative drugs are usually linked to increased costs but also give new treatments or improved treatment for patient groups. Yet the use of new expensive drugs and treatments, (like anti-depressants and kidney transplantation), could also be justified by reducing the deployment of other inputs in health care (such as, correspondingly, institutional care or dialysis treatment).

Resources And Funding

During the past four decades health care has been one of the most rapidly expanding sectors in industrialised countries. Regardless of measure used – total expenditures, employment, or percent share of gross domestic product (GDP) - health care emerges as one of the dominant 'businesses' in the developed world. Despite the fact that the resources available for health services have never been larger, health needs are still insufficiently met. In table 3 the recent figures for the countries participating in the project are shown.

Table 3: Health care spending per capita and as a share of GDP

	Health expenditure per capita (current US$)		**Health expenditure, total (% of GDP)**		**Gov't financing (%)**	
	2000	**2001**	**2000**	**2001**	**2000**	**2001**
Cyprus	909	932	8.0	8,1	49	48
Denmark	2474	2545	8,2	8,4	83	83
Estonia	222	226	5,9	5,5	76	78
Finland	1550	1631	6,6	7	76	76
Germany	2408	2412	10,6	10,8	75	75
Greece	1015	1001	9,4	9,4	56	55
Latvia	191	210	6,3	6,4	56	53
Lithuania	200	206	6,2	6	71	71
Sweden	2268	2150	8,4	8,7	85	85

Source: WHO/Euro

The resources vary across participating European countries irrespective the measure selected. In part the differences in health expenditure figures are explained by inter-national variations in relative input prices, with salaries being considerably lower in Eastern Europe.

The share of health care of GDP has grown steadily from the 60s up until end of the 90s showing some stabilisation thereafter to values somewhat smaller than 10 per cent of GDP. Governmental financing dominates in all countries, although some countries in Eastern and Mediterranean Europe display relatively lower figures. Historical experience also proves that, on average, nations tend to spend more money on health care when gaining in prosperity, not because they have increasing medical needs (see Figure 3). Thus, as viewed from the standpoint of national economics, health care is a luxury good.

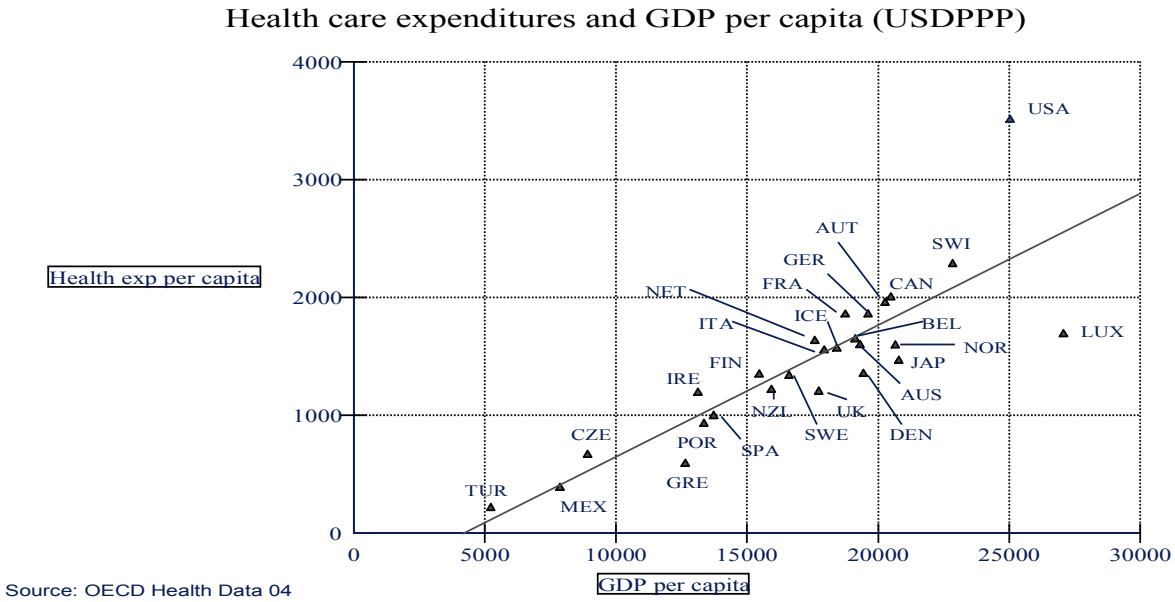

Figure 3: Health care expenditures and GDP per capita (USDPPP)

Since the year 1990 the increase of health care spending follows quite closely the development of the GDP, the relative proportion of GDP devoted to health services having thus been constant. Most forecasts predict that the growth of health care expenditures will be linked to overall economic growth also in the future, exceeding it probably by no more than one or two percentage units. Due to a sluggish growth of the European economies, only minor increments can be predicted in near future.

Health care is an exceptionally labour intensive branch of industry. In most parts of the service system labour costs make up 60-70 percent of total expenditures. However, labour costs will increase faster than GNP due to the looming lack of educated personnel. Therefore, an ageing Europe hardly can expect to solve the increasing need for care by increasing the number of health care professionals.

Organisation Of Health Care Facilities And Networks

The organisation of health care varies across European countries. Although each system has its unique historical background, the systems can be divided in two major groups. The first group of countries constitutes what is called the *Bismarck model* and includes Germany, Austria, The Netherlands, France, and Switzerland. The Baltic states Estonia, Latvia and Lithuania have changed their systems in this direction since the fall of the Soviet Union. In

these systems, relying on a mixture of public and private providers, funding and provision of health care services are clearly separated. The other group of countries belongs to the *National Health Service model,* including countries with a centralised system like the NHS in the UK and the regionalized systems like in the Nordic countries. In this group the funding and the provision of services are integrated under the same health authority. There are also countries characterized by a mix of the two systems, such as the Greek health care system.

Both systems may come under pressures. In certain social insurance systems, well-off people are provided with options to fund their own care. Whether or not and to what extent private insurance premiums are deductible in taxation will be critical from the standpoint of society's solidarity. If not, European health care financing will remain relatively close to neutral, as it is today. If, in turn, the insurance premiums are strongly capped or become deductible, the funding system will be skewed towards a regressive pattern of funding.

The community-based funding system will be in difficulty due to the increasing movement of labour within Europe. Within few years, it is predicted; an increasing proportion of Europeans will earn and carry their entire social insurance as they move from country to country.

Regarding the provision of services there are some common trends irrespective of the differences mentioned above. In several countries the structure of health services dates back to a situation with a fundamentally different technology and division of tasks. Primary health care and hospital care have been strictly separated, using their own budgets and, as in Finland, working under two separate legislatures. Furthermore, occupational medicine and non-occupational medicine may produce duplicate services and again have different sources of funding. Reimbursement of prescription drugs may be separate from the funding of hospital care, which leaves these counterparts in a strange tug-of-war and may even influence the selection of the most appropriate care for the patient.

The volume of somatic inpatient care has been reduced dramatically, and that of the mental health care even more. The expansion of out-patient care and day-care-surgery units requires improved logistics and better co-ordination of the entire care episode.

Medical technology is becoming increasingly advanced and sophisticated. This will have an impact on organizational settings as well. Several studies have demonstrated distinct economies of scale and scope in certain medical technologies. This is an economic issue as the regionalisation of services for some technologies certainly diminishes the unit costs. In addition, increased service volumes in certain specialized areas are closely linked to quality improvements also.

The re-structuring of the hospital sector has already started with a concentration of specialized services, which will require larger catchment areas. In addition this will necessitate better collaboration with out-patient care and primary health service to integrate services over the entire care chain. This will again benefit from well-planned regional collaboration and evolving care networks.

Due to wide variation in population densities, transportation, and types of asset ownership, solutions in regard of the built environment will vary. While monopolistic service production with open benchmarking of quality may be the most appropriate solution in sparsely populated area, some degree of regulated competition may be a viable solution in more densely-populated metropolitan areas.

The Life span approach will ground in all facility planning. The length of product cycle for different environments will vary considerably. One-tenth of the constructed environment will be continuously under some refurbishment. New capacity will be designed to be easily adaptable for various purposes. Space will be reserved to match the unforeseen requirements of data collection and handling, like the creation of intelligent environments.

Among all health care facilities, hospitals can be predicted to undergo the most significant changes. Space for operative and mini-invasive interventions and for intensive care will enlarge further, as well as the facilities for ambulatory diagnostics and treatment. Ward capacity will decrease, since the incentives to keep patients hospitalized will gradually diminish. Furthermore, capacity will be characterised by multiple 'step-down' environments, where the manning – its volume and expertise - follows closely the clinical needs of the patient. These needs range from multi-specialty 24-h intervention readiness to simple janitorial services, i.e., from intensive care to patient hotel.

Education

The education of health sector professionals will also experience a thorough metamorphosis. Academic curricula will focus on the education of critical, system-oriented physicians, who can keep pace with rapid development by deploying tested, trustworthy databases. The new clinically-oriented generation will pay more attention to team work, to the understanding of methodological evaluation, to basic macro and micro economics, even at the cost of rapidly-depreciating details provided by the reductionist research tradition. Simultaneously, research-oriented students will be provided with access to facilities and scientific communities, where the multi-disciplinary exploration of problems relating to prevention, diagnostics, cure, and rehabilitation is carried out in optimal environments.

All major health care professions must learn their mutual strengths, abilities, values and ways to work as early as possible. Health care systems will see new lines for division of labour, and new professions may even emerge. As in provision of seamless care, all singular care processes will be carried out by a personnel and an environment where the interrelation of quality of work and costs are optimal.

Reimbursement practices

Reimbursement principles for health care providers have drawn substantial attention in health policy. A major issue concerns the problem of giving health care provider incentives for effective and efficient utilization. There are critical trade-offs between productivity versus over-utilization of resources and cost containment versus clinical freedom. Traditionally the National Health Systems (NHSs) have relied on the budget system for allocating resources, whereas the Social Health Insurance systems (SHI) have used fee per bed-days or services provided. Table 4 below describes briefly the incentives and problems for each type of reimbursement.

Table 4: Reimbursement principles and incentives

Hospitals	**Consequences**	**Primary care and out-patient care**	**Consequences**
Budget	Waiting lists	Budget	Waiting lists
Fee per-bed-day	Over-utilization (LOS)[2]	Fee-for-service	Use of service
Fee-for-service	Over-utilization (services)	Capitation	Under-utilization
Fee-per-episode (DRG)	Incentives for admission		
Bonus for quality improvement			

Source: Authors' own judgement

Both NHSs and SHIs seem now to move away from fully fixed budgets and fee-for-service and introduce some forms of pre-defined service entities as a basis of reimbursement. Thus the

[1] LOS = Length of Stay

Member States will deploy case-mix descriptions (some form of DRGs[3]). International comparisons of technical efficiency would benefit greatly, if the number of DRG 'dialects' were smaller than is currently the case. Some key DRGs will probably be identically defined, so as to allow the comparison of resource use at a crude level.

In the coming decades, health increment measurements, based on health-related quality of life (HRQoL) measurement, may revolutionize the reimbursement system. Here the ties of the reimbursement to the resource consumption would be weaker than ever. Instead, the measurable change in health status, attributable to the care provided, would serve as the basis of reimbursement. Whether or not and to what extent this development will ever turn out to be feasible depends on results of an on-going active research in this field.

Prioritization of care

Diminishing marginal returns and rapidly increasing opportunity costs of most health programs will soon be recognised by the politicians and citizens alike. Therefore, the decade will see pressures to an open, democratic, cost/utility–based prioritization of care to increase. The strengthening European network in healthcare technology assessment will have a central position in this process.

Health impact assessment (HIA) will also provide some approximate values for the acceptable marginal cost-utility ratios for medical interventions, and it also emphasises the existence of numerous unused or underused possibilities to improve citizens' health status by other joint efforts besides health care proper.

European Health Care Under Reorganization: Markets Or Hierarchy?

In an ageing Europe, health care systems are in transition. The main forces driving the development include an increasing need for elderly care and management of chronic diseases, advances in information and communication technology (ICT) and shared understanding concerning economic scarcity in all care systems.

Economic scarcity has led, on one side, to the pursuit of effectiveness and on the other, to seeking a way to increase efficiency in service provision. The former movement to increase care effectiveness is incarnated in the international collaboration network of technology assessment. The vast body of literature concerning the efficacy of current and emergent health care technologies is being evaluated in a scrupulous process, lead by the Cochrane Collaboration Centre of the UK. The evaluation of cost-effectiveness of different technologies is, in turn, the target of HTA-networking. Estimates of the efficacy, and, increasingly, that of the effectiveness of various technologies, ranging from preventive actions and screening, over diagnostics and treatment, and including technologies used in rehabilitation, are then circulated rapidly in printed and electronic media for the use of professional and political decision-makers. Thus it has potentially a quick impact on health care policy and on local practices.

The ultimate outcomes of this movement should include increasing health gains for the resources used and diminishing small area variation in the use of technologies. Data to prove whether these goals have been reached are still scarce.

Networking to improve technical efficiency aims at controlling the unit costs of care. Internal (managerial) accounting technologies, formal analysis of care processes and their constraints and many ingenious ICT applications have proved their value in improving technical efficiency. The outcomes of this movement should include smaller variation in resource consumption, and, by these means, decreasing unit costs of care and enhanced cost containment. Again, reliable data on whether or not these targets have been met are mostly unavailable. This is in

[2] DRG= Diagnosis Related Groups, a classification system for in-patient care, which has been used for reimbursement as well as for quality review.

part due to the fact that there is little agreement thus far at the European level concerning the way in which the outcomes of any cure and care should be defined.

Most Member States of the EU are expected to have a national electronic patient record, available simultaneously in all service points, at the latest by the year 2020. The systems will also include central archives for medical images and laboratory data. All the technological problems concerning regional comprehensive health care information nets, including those linked to data security and confidentiality, have already been solved reliably.

The data will be collected increasingly in a pre-structured form to allow its reuse for managerial purposes. An effective process of multi-level networking is, however, a prerequisite for obtaining this goal. Strict adherence to international ICT standards and the resultant openness of the system interfaces alone seem not to guarantee the best results. Central co-ordination is required to prevent patchy data system development, which prevents fluent data transport from one service point to another. Some small European countries seem to be well off this goal. Even the largest Western actors, most notably the U.S. and Great Britain, have realised the needs and released the necessary resources for development. The target, a national, life-long, ubiquitously available, progressively more structured, safe and secure electronic patient record, is still at a distance even in these countries.

Hierarchy, (quasi)market - or network?

The basic orientation to create an effective health benefits producing system has fluctuated remarkably in Europe during the last decades of the 20th century. A Weberian hierarchy, strongly promoted by the WHO during the past decades, epitomised in strict division of labour and, correspondingly, that of knowledge, skills and equipment, between the primary health care and hospital care seemed to be regarded as an ideal still by the end of the 70s in many European countries. Despite its predictability, the system was, however, stiff, almost unable to undergo effective natural evolution, adapting poorly to developing care technologies. It was also felt faceless, responding but clumsy to outside public pressures, tolerating, for instance, years' waiting for care. In such a hierarchy, all necessary wisdom seemed to be given from above, 'top down', which kept local initiatives and commitment to a minimum.

The New Public Management of the 80s and 90s tried to remedy the listed ailments by bringing consumer choice, providers' incentives and competition to the system. The purchaser of the care and its provider were separated to strengthen the forces of a quasi-market. Efficiency of care provision was said to increase by market orientation, but whether this was causally related to the changes in steering remains in dispute. However, the new public management was not able to abolish some visible problems of health care systems: remarkable inequity in health care prevailed and even increased in those Member States, who had set forth to strengthen market-steering in health services delivery.

The failure of the quasi-market principle may in part result from the inability of the traditional hierarchy to adapt market behaviour in a relatively short time-period. Much decision power was traditionally vested in the health care professionals, notably in the cadres of physicians. Without proper prior education and practical training many of them felt the new managerial burden simply too heavy. Furthermore, the system seemed to be too much guided by the profit motive. Its linkages to genuine health benefits were often weak.

The form of a network or several networks is the third way to link various health care providers together. While a mature healthcare network is not completely void of features characterising a hierarchy or a market, it still differs fundamentally from both of these:

(1) the importance and basic equality of each one of the knots in the net, representing individual providers, is acknowledged;
(2) almost all knots are linked to several directions in contrast to a hierarchy, where there are only superiors and subordinates;

(3) all "knots" have a voice and not just a possibility but a responsibility to improve the process of care; thus everyone has a voice in networking system; and last but not least,
(4) The focus is on the patient, not on the structure as in hierarchy, neither on the professionals or profit, as in the market-driven system.

Networking and health care quality

Keeping the patient in the central position is another important mental model created to describe good care, namely, the seamless care chain. Here the 'chain' can be easily interpreted as the thread passing through several knots. Other threads may pass through the same knots, partially same knots, or take an entirely different course through the net. What is of importance is that each one of these paths is designed to serve best the interest of the patient in question. Thus a healthcare network epitomises a patient-centred health care system.

Networking and integrated care

Care integration is just another synonym for healthcare network. In the recent CARMEN project of EU, care integration has been interpreted as a *"a well planned and well organised set of services and care processes, targeted at the multidimensional needs/problems of an individual client, or a category of persons with similar needs or problems"* (Henk Nies, 2004). In setting the research agenda on integrated care for older people, Nies also lists the factors which increase the demand for care integration, namely, the shift of care from acute to chronic conditions and shift of the age of the care from the middle-aged to the old and very old, and the shift from considering patients with one diagnosis to patients with many relevant simultaneous diagnoses, which all must be taken into consideration when seeking the most appropriate care modality or modalities.

A prerequisite of success in this situation is effective networking. This in turn, is strongly promoted by:

(1) shared values between all actors in the net;
(2) shared ideas of the best working models including active re-division of labour;
(3) shared ownership of the capacity, which can be replaced by judicious contracting;
(4) shared ICT systems and
(5) shared outcomes measurement.

Health care networking, civic society and health impact assessment

As stated, health is not the product of just the health care system in Western societies, even if health were measured as an extended life span of the population... Most of the additional length, not even to mention the quality of life, is 'produced' outside of health care facilities, by education, by effective family policies, by promoting occupational and traffic safety, and by policing the trade of consumables, just to name a few of the important factors. According to the estimate quoted by the joint program of OECD and WHO, called "Measuring up", more than 80 percent of the increase in life expectancy at birth during the last three decades is due to activities in societies other than health care.

As a corollary of this, the future health care net can be widened to encompass the concept of networking for health. This concept links several other activities to the health care system. First and foremost social services need integration with health facilities, because of the need for elderly care after medical interventions, strengthened with goal-oriented rehabilitation. Social services should be readily and seamlessly available for health care clients with mental problems and drug and alcohol dependence.

A community-based health care network could also benefit from keeping close informal ties to voluntary civic organisations, notably to those working among youth. All constructive measures to help with recognising and controlling avoidable behavioural risks should be welcomed.

Lastly, the promotion of population health should become an integral part of much of local decision-making. An emergent scientific paradigm, health impact assessment (HIA) deals in a structured way with these problems. This widens the scope of planning dramatically while it also builds a bridge from collective to individual responsibility of taking care of health-related issues: for instance, urban planning may be conducive for creating exercise-promoting surroundings, like walking-paths and bicycle routes; however, the habit of regular exercising depends finally on individual decisions.

From Administration To Management

To meet the Megatrends described, and to develop all health care into one integrated system it is necessary develop appropriate managerial ideas, structures and tools. Even if medical technologies change rapidly, we have a tradition characterized by a slow re-conceptualising of health care systems. Health care seems to implement industrial managerial systems after a delay of 20-30 years. Thus in the 1910s, industry organised its factories in departments and divisions. The same occurred in heath care in the 30s. Again, the industrial divisions and departments were organised into processes in the 70s, but discussion about processes in health care was not active until the late 90s.

The old administration dealt with only one single issue a time. Today's managerial target is a complex process located physically in several facilities, which are often scattered in the country or even different countries. The same trend is seen now in health care. The future regional health network, serving a population up to 500 000, is managed and coordinated by one single organisation. There will be no administrative barriers between the various institutions, care will proceed smoothly through the chain as the pre-set and mutually agreed clinical pathway indicates, and neither will there be any administrative hierarchy in the process network. Assuming that the necessary managerial skills are in use in health care some 20 to 30 years later than in industry, this vision may turn to a reality around the year 2020.

Steps of change: new mind-setting of the core actors

The present trend is to change from administration of single matters to management of large processes. Instead of producing visits, admissions and procedures, the regional health care net should be designed to produce measurable health benefits.

Management has to change gradually but without delay. One of the very first steps is that all the counterparts, most notably organised medicine, accepts the limits of national economies and understands the resulting scarcity. Furthermore, the concept of opportunity cost must gradually be linked to all medical decision-making, as well as the diminishing marginal cost-effectiveness or cost-utility ratios of all conceivable care programs.

Managerial accounting technologies into use

Improving cost effectiveness and service quality are two core targets in developing the systems. The efforts to optimise and contain costs have been focused on separate cost centres, defined often as a department or a hospital. Patients are referred forward for various procedures through administrative barriers and queues. Even problems, which could and should be solved promptly in primary care, circulate often in a hospital from one office room to another. The true costs of the patient pathway are rarely calculated, and, surprisingly, no one seems to be interested in them.

It is expected that the application of modern managerial accounting techniques could help straighten the core processes. The 'owner' and the cost structure should be followed closely. Incentives to suboptimise care process could be impeded by describing the total consumption of resources over the care chain, instead of calculating the production costs of separate parts of this chain (such as costs of office and clinic visits, those of admission, of rehabilitation, etc.). A DRG-type product definition could be used not only for reimbursement but also for *patient-based* (as opposed to admission-based) cost-accounting and use of services.

All assets into one basket

One of the ways of managing costs is to develop an approach to strategic asset management. The entire regional service network should form one administrative unit. The asset management should be based on regional clinical pathways, which describe the entire care pathway of a single patient for the most significant patient groups. All phases in this pathway are designed by multi-professional working groups to meet the health-related targets in the most economical way. Often this involves a new division of labour between the professionals.

The feasibility of the selected care pathways are reassessed systematically with the aid of managerial accounting technologies and changed through collaborative action, when necessary. Each step of care must be provided on a level of knowledge and skills where the ratio of the utility produced to the costs incurred reaches its highest value. This may also mean that the patient is able to handle the problem by himself if adequately supported by the system (simple monitoring of biological variables, procedures, follow-up of symptoms, consultation of professionally selected and highlighted sites on the internet, etc.)

Correct activity and outcomes measures into use

To work optimally, a mature health service net needs to administer all regional services delivered from local hospitals to elderly care settings. The results will be measured ultimately in health benefits, including increased personal independence, enhanced subjective health-related quality of life (HRQoL), avoidable deaths avoided or diseases prevented.

Outsourcing and sound public private partnerships will evolve further. The health care system should concentrate to its core tasks and main areas of competence, which range from preventive services, diagnostics of pre-clinical diseases (screening) to clinical services and rehabilitation. Laundry services, bookkeeping, janitorial services, technical maintenance of the facility, non-strategic parts of ICT and storekeeping are no longer among the core skills of a health care organisation. Various forms of public-private partnerships can be expected to produce such services.

All this is already obvious from the discussions at the EU government level. Before such ideas can be put into practice, however, new tools are needed to calculate and optimise the best working practices in regional health services. At present, many of the necessary tools described above are simply not available.

Funding - Ways of collecting and allocating resources

In the member countries of the European Union, the two main lines of health care funding, the tax-paid system and the social insurance system, will prevail in the future.

One major difference between them is the principle of funding: while the social insurance premium is earmarked to be directed into health care activities, direct taxation money not. Therefore, tax money is often a target of further political deliberation. Again, whether this happens mostly at national or regional level, this trend depends on tradition, most importantly on the strength of the legacy of local representative democracy.

Undoubtedly, the future will see an increasing part of health care spending coming from various private sources, from employers and employees, and from voluntary private insurance. How this development will affect the distribution of the financial burden of health care across different income groups remains to be seen. At present, neutrality of financing seems to characterise tax-based financing, while social insurance-based systems are slightly regressive. This difference is in part due to capping social insurance premiums in some European countries.

Good health status of any population is regarded as an important asset in all Member States. Thus it is also to be assumed that a strong public control of health care delivery will also prevail. Such a control is reflected either in direct responsibility in producing health services, as in many tax-paid systems, or careful licensing and auditing the hospitals and clinics against European level quality requirements as in the social insurance–based systems.

Ways of paying for services

Contracting between the payer and the service provider has deep implications for a networking service system. The main systems of payment are capitation and fee-for-service. Here capitation payments pre-estimate the health needs in the risk 'pool' or population, which in a regional healthcare network equals the population to be served. Capitation signifies an *a priori* set care cost for the payer; for the provider, it means guaranteed income for that same period. The problems of capitation hide in quality in its widest sense, how to set volumes, how to agree on the technologies used, how to define providers' liability, and how to prevent under-utilization of service. Fee-for-service is not without problems either: how to define the clinical indications of care to prevent unnecessary service. The fee-for-service system does also give incentives for over-utilization and is prone to cause problems with cost containment.

It is understandable that capitated systems seem to help contain costs better than fee-for-service systems. Due to their indisputable strengths, the optimal system contains some features from both. For instance, the off-hour, or emergency activities can be compensated on a capitated basis, as with a fire brigade, while elective procedures are remunerated per fee for service. Even this solution is not free of problems: how to define an emergency in health care?

Health Care reforms

Many recent health care reforms focus on issues of improving patient flows and the treatment process. These models have a strong influence on hospital design and its integration with other providers. In Europe, the United Kingdom, The Netherlands and Sweden have planned or carried out reforms. Development in participating regions as in East Estonian Hospital Region, in Riga City, in Skåne Region, in Stockholm County and in Vilnius are reported elsewhere in this report. Most of the development takes place slowly with small steps.

The ageing society also prompts the need for fresh thinking. Area-based service systems, where different provider units refer patients to each other's waiting lists, is not the best way to handle the clinical and social problem clusters of an elderly citizen. The future health care net will be based on estimation of population needs. Integrated service programmes, constructed along the client's path in major typical patient groups, should simultaneously serve the best interest of the patient, that of the provider network as well as that of the payer.

The current development can be regarded as patchy and local. All the ongoing reforms aim at strengthening the regional approach, with many features of networking, described in detail before. It has already provided several concrete improvements in service quality, interpreted as contained costs, patient-centeredness, safety, equity, efficiency and effectiveness.

New types of service units will appear. Advice and communication centres, 'call centres', are already a reality between the patient and the care provider. Virtual consultations bring special knowledge to the site of care without moving the specialist. E-prescriptions will reduce the

time for handling the process. Similar changes in other parts of the systems will reform the regional network in the coming years.

Globalization And Harmonization Of Regulations Across Countries

Health policy has thus far always played a subordinate role in the course of European integration. Nevertheless, in some specific cases, health issues have been addressed. Protection against ionising radiation, worker's health and safety and other public health issues like banning tobacco advertising are examples of agreements reached. Otherwise, health services have explicitly been excluded from the mandate of the Union. Yet harmonising some regulations to facilitate free trade and flow of services and people across the Member States also affects the health sector.

This harmonisation work started in the pharmaceutical sector with the system of mutual recognition for approvals of new drugs and later on by the establishment of EMEA (the European Agency for the Evaluation of Medicinal Products). This new organisation involves centralisation and stronger co-ordination of the drug approval and safety procedures. Along with the establishment of EMEA the rules were developed to facilitate a single procedure for approval of new drugs for the entire EU market.

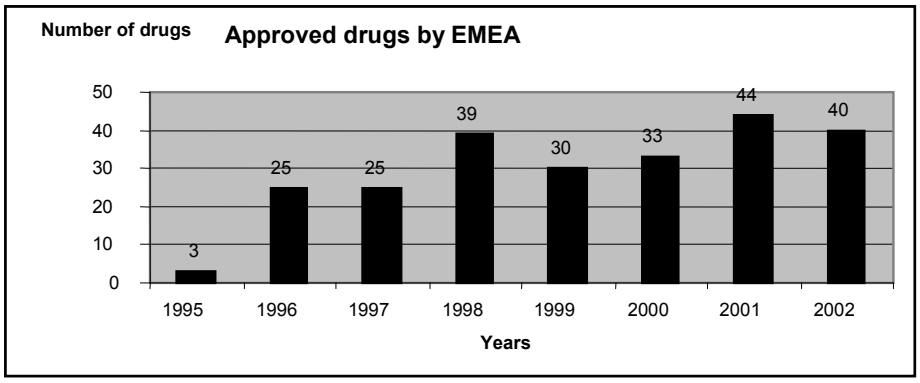

Figure 4:. The numbers of approved drugs by EMEA, 1995-2002
Source: Rehnberg (2002)

In addition to regulations and directives from EU there are verdicts from the European Court of Justice (ECJ) that have strengthened the development towards harmonisation. A set of verdicts from the ECJ have made the development of parallel import possible. The impact of the verdicts from the ECJ on consumer choice and cross boundary flow will be discussed later on in this section. Other issues are the regulation of some monopolies, which are challenged by EU regulations and principles of free trade (as in the case of the pharmacy monopoly in Sweden).

Chapter Four - Vision For Future Regional Care

Health systems are slow to change. This is probably due to the historical ties that influence structure and financing. 30 years ago we could easily recognize most features of the current system. Medical technologies, drugs and treatments have changed and become more sophisticated, we spend relatively fewer resources on in-patient care than on out-patient care, but the overall organisational structure and financing sources have remained basically the same. This might be less true in countries in economic transition, such as in Eastern Europe, where the overall change has also had an impact on the health system. Yet the European health systems share values and have certain characteristics in common. Most of them take distance to more neo-liberal ones like the U.S. system and to the experiments the systems in Australia and New Zealand have passed. Still we are faced with external changes that are general for most industrialized countries as the aging population, emerging new technologies and the globalization.

It is important to keep in mind the current structure when we discuss the future vision of health systems. Most health authorities have been less susceptible to changes and managed to preserve the overall structure. Changes have been adopted and carried out within current organisations. This has been possible because of the relentless expansion of the health care systems. New technologies have been adopted by funnelling in more resources into the system. Hence, the incentive to re-allocate resources has been weak.

Increasing needs and slowly growing resources may now challenge this culture. Resources to adopt new technologies and activities most likely are found within the current system. Thus the funding mechanisms must go hand in hand with the implementation of new organisational networks and technologies.

In this chapter we bridge our overall vision to the participants' ideas concerning the development of health care in their own areas of activity. Their complete papers will be published without outside editorial work. We hope that this would enable the reader to see the adaptability of common visions described before to the local paths of predicted change.

Changing Role Of The European Union

The harmonisation and regulation efforts by the EU also cover medical devices and technologies (see Pallikarakis paper). According to this source the European market is the second largest for medical devices with a global share of around 30-34 per cent (ibid.). There are a number of EU directives regulating this market. The first directive (90/385/EEC) concerned the active medical-technical products for implantation. A considerably more encompassing directive for medical technology products was the Commission Directive 93/42/EEC that specified the requirements and regulations for testing, certification and labelling of such products. This directive is applicable for medical-technology products such as expendable supplies, dental materials and handicap aids as well as medical-technical appliances and equipments. The effects of the harmonization process are standardized and safer products but also an improved potential for trade and thereby a faster dissemination of new medical technologies.

Harmonisation may also have other impacts. In Sweden, selling of prescription drugs is a monopoly task for publicly owned pharmacies. It is expected that the availability of medicines for self-treatment will be improved and that the products will be available in department stores or be ordered over the internet.

Regional Networking And Concentration Of Specialized Services

In some countries like Germany, the Baltic States, but also Nordic countries like Sweden and Finland, the system has a long tradition of hospital dominance. The extensive hospital structure in all European countries is now undergoing reforms, where the main focus is on efficient and high-quality open healthcare. To change the system a number of mechanisms could be used. The role of the primary healthcare doctor as a gate-keeper and coordinator of specialist care could be developed (Lukosevicius et al. Lithuania). A similar problem is present in Latvia where the independence of hospitals has lead to a fragmentation of providers with duplication of services. There is also need for a networking system between facilities (D. Labklajihas, Riga City). Also in Sweden the policy-makers have struggled for years to change the utilization from hospitals to primary health care.

The content of today's primary care is much broader than services given by family doctors. The Skåne region, in southern Sweden, is in the process of implementing a new health system, where basic care (or "*nearby healthcare"*) will meet the citizen's need. This concept is clearly broader than the traditional primary health care supply, since it also includes some broad specialist services, especially to meet the needs of the elderly.

Regarding acute and planned specialized care a development of concentration in the region is expected (A. Westrin, Sweden, "Skåne Vision"). A somewhat similar development is seen in Stockholm County Council, where the hospital sector is re-structured and mergers between the two university hospitals takes place. (B. Thellman Beck, Sweden). A special type of re-structuring occurring in both Skåne and Stockholm is the separation of elective and emergency cases in surgery. It is expected to improve the efficiency of planned operations, without interference by acute cases. However, this type of change requires larger catchment areas for acute cases and a concentration of acute care into fewer hospitals than is currently the case. The development of the regionalisation of specialised care could also be observed in countries like Estonia, where secondary and tertiary services are transferred to new central hospitals and where services at a primary care level are expanded simultaneously. The present structure has not led to synergy and the need to consolidate providers is emphasised (I. Bakler et al. Estonia).

Restructuring is not only a matter of integrating primary health care and hospital care, but also of changing the logistics within hospitals in order to focus on defined patients and diseases. Hospitals are organised along functional lines based on specialized knowledge and research. New models will more likely focus on the care continuum and analysis of the care process. It is important that information flows and that the infrastructure support this type of integration.

Several health care systems in the Eastern Europe (but also in systems like the Swedish one) have relied on the strength of the hospital sector and on relatively weak primary health services. A consequence of these structures is unnecessary utilisation of specialised care and irrational fractioning of services. An important question in order to steer utilisation away from hospitals to primary health doctors is the use of referrals or the gate-keeper function. The experience shows that this is not done by solely expanding primary health care. It is important to encourage and give incentives to both providers and patients not to overuse hospital and specialist care. Information, ingenious pricing policies, as well as gate-keeping are some of the tools that could be used to develop an efficient network and a smooth flow of patients.

Interaction Between Private And Public Providers

European countries show a homogeneity in terms of universal public funding of their health systems, whereas the provider side shows a mix of public and private providers (non-profit and for-profit). As we can see from the 5below there is large variation both in terms of the overall share of private beds, but also regarding the distribution of for-profit and not for profit hospital beds (Figure 5).

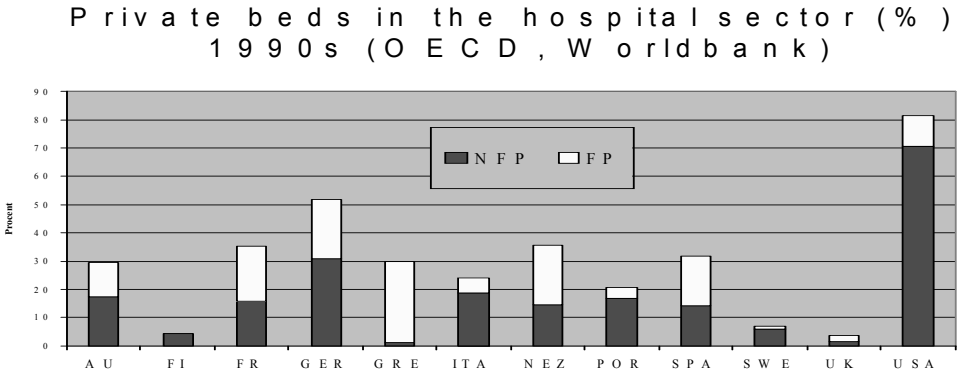

Figure 5: Private beds in the hospital sector (%), 1990s

The current development is not unidirectional: the public NHS encourages contracts with private providers while the Swedish system tries to restrict the role of private for-profit providers. Still, in a longer perspective private providers have an increased their role also in publicly financed systems. The mix of private and public providers needs to be coordinated through regulations and public procurement at least in that sub-sector, which enjoys even partial public funding.

Consumer Choice And Patient Empowerment

Several health care reforms have given patients an increased freedom of choice regarding providers. The philosophy has changed from one based on the principle '*people follow the money'* to '*money follows the patient'.* The right to choose among a given set of providers can also be exercised across the EU-member states after several verdicts from the European Court of Justice (ECJ). Better educated and informed patients will also strengthen this development. We can also see an increase in the mobility of elderly people across national boundaries.

The table below shows the forecast for Swedish citizens seeking care abroad within the EU.

Table 5: Health services within the EU for Swedish citizens, 2002 and forecast for 2003-2006, mill. EUROs (EURO 1 = SEK 9.28, average 2005)

	2002	2003	2004	2005	2006
Convention care	10.2	10.7	11.2	11.7	12.3
Tourism	6.4	6.7	6.9	7.2	7.7
Senior citizens	10.9	11.4	12.1	12.6	13.3
TOTAL	27.5	28.8	30.2	31.6	33.2

Source: Riksförsäkringsverket 2003

'Convention care' refers to services required but not satisfied (for several reasons), but sought by Swedes in other Members States. 'Tourism' indicates the need of medical services during short term stay in other Member States, while 'Senior citizens' displays the demand for care

generated during longer stays of people older than 65. Even if these figures are small fractions of the total health care budget in Sweden, we can see a clearly increasing trend of expenditures.

The freedom of movement of people, together with goods and services, is, according to the EU, among the driving forces towards a sustained development of Europe and its institutions. Freedom of movement has been made possible through mechanisms that allow European citizens to have similar rights when working, travelling or residing in another state in Europe. In the field of health care these rights are explicit for services provided for migrant workers, but limited if a citizen travels for other reasons. In recent years several decisions of the European Court of Justice confirmed the rights of a citizen to be reimbursed for health care services provided in another European Union Member State, which defies national responsibilities for health care. Hence, this development is likely to continue as consumers and citizens become aware of their rights. How this idea will be linked to the widely variable ability of Member States and their funding systems remains to be seen. At worst, the ruling of ECJ could lead to citizens engaging in uncontrolled and irresponsible shopping for health care around Europe and a complete loss of health policy balance for the payer or home country. How much such an unwanted outcome was taken into account in the ruling of ECJ and how much the verdicts were based on the short-sighted 'freedom-of-movements' only, is not known.

Development Of Care Programs And Clinical Pathways

A clinical pathway is a method for organising care so as to produce the best health outcome in the shortest time and using the fewest resources. Such pathways are designed around the main patient types, defined according to their principal diagnoses. At the start, a 20/80 or Pareto ruling is advisable, meaning that 80 percent of all patients belong to 20 main diagnostic categories. These 20 categories are then prioritised in planning the networking method.

Clinical pathways include support functions, radiology and laboratories. Well-developed pathways establish an optimal course and order of diagnostic tests, drugs and devices used to care for similar patients. Planning with written algorithms helps reach a consensus between different providers and professionals. Practice variation is controlled by strict adherence to evidence-based medicine and nursing. The system is supported by managerial accounting technology and outcomes analysis to guarantee its efficiency and effectiveness. Emerging problems are handled jointly and the solutions are brought to the awareness of all counterparts in a pre-planned way. In this culture, failures and faults are due to the system, which is under constant improvement. The opposite culture of naming, blaming and shaming has no foothold in the future networking.

Clinical pathways also help hospitals realise potential savings in personnel, physicians, nurses, and materials, especially laboratory and radiology. The full strategic potential of clinical pathways can best be exploited in combination with a cost-unit accounting system, which informs hospital managers about treatment costs, in total and in its parts. These expenses can then be benchmarked to national or international standards to identify the main sites of operational improvements.

Chapter Five - Future Regional Services

Health services are regional and will in future remain so. The regional service network will be formed to meet the changing needs of a changing society. The clear separation of highly specialised care from special care, the central role of multi-speciality primary care service centres (corresponding closely the multi-speciality group practice and the US system) with an adjunct community hospital, and the increasing importance of preventive medicine (and the simultaneous emphasis on health promotion) belong to the main areas of developments. It also includes close ties to the local social service nets, often missed in current organisations.

Health services within a given geographical region have, in most countries, been organised through different levels of care. Regional health care is often seen as hospitals and its open care units. Then primary health care, chronic care and social services are organized independently.

The future service has to be provided by several producers forming a network. Future regional health services have to be organised to meet the challenges, needs and demands described earlier. At minimum, the following needs and the responsible producers can be named.

Structure Of Future Regional Services

The need of services	**Producer**
• exceptional and infrequent need of care	Highly specialised hospitals
• severe acute care	Centralised special care hospitals
• elective care	Care centres in special care hospitals
• routine acute care	Health centres, close-by hospitals
• management of chronic care	Rehabilitation (Community) hospitals, nursing homes, residential centres, various outpatient departments, care centres
• social care	Social department working in health centre
• self care	Patients connected to care programs coordinated by health centres
• preventive measures	Health Centres, Public health institutions in collaboration with non-health institutions and the society as large
• Evaluation, R & D	Independent institutions at regional and national levels; academic departments

Highly specialized care

All highly specialised care will be provided by hospitals with a catchment areas ranging, depending to the clinical problem, and its severity and frequency, from one to three

million inhabitants. The hospital is organised in knowledge centres, which co-ordinate regional care programs in collaboration with the representatives of those regions.

It should be noted that the regions may differ much in this respect. It is therefore mandatory that all recommendations are given only after the local conditions are mutually evaluated. This is also a prerequisite for the commitment of the counterparts.

University hospitals may have several campuses with different profiles. For some very highly specialized services the catchment area for university hospitals will extend beyond the national borders. Agreements between national health systems will determine this division of provision.

Special care (Central) hospital

Acute care and elective care is provided by central hospitals. They have the responsibility of running the 24-h emergency care, general acute care and regional care programmes. There is a tendency to have 24-h services organised at a maximum of approximately one hour's transporting distance to the hospital. However, the driving distance is certainly a function of population density.

The intake of acute patients will increase towards 70%, while the share of elective patients is correspondingly smaller. This will have an impact on hospital layout and logistics.

Community care (or rehabilitation) hospital

The Community care hospital will be the foundation of future elderly care in Europe. The community care hospital is a special care hospital concentrating on the management of chronic diseases, geriatrics, rehabilitation and psychiatrics. The hospitals can admit patients with pre-set diagnoses, should acute problems rise. Most admissions are, however, planned ahead.

The Community care hospital is not a long term hospital for chronic patients. Goal-oriented rehabilitation services are provided in those instances, where its effectiveness has been proven. Most rehabilitation services are delivered on ambulatory basis.

The hospital may also have elective operations and other similar procedures, but not the 24-h acute care services.

Outpatient facilities

Outpatient programmes vary greatly; starting from local outpatient emergency services, disease management in chronic cases, mental health offices, dental health and ending up with specialty centres focusing, e.g. on follow-up of patient with heart disease and neoplastic diseases. Self-standing day surgery units may produce corresponding services. When otherwise appropriate, the teams may circulate within the region to decrease the need for patients and their relatives to commute.

Those same specialist groups may have reserved consultation days. This activity increases learning opportunities for staff and makes working in the primary care setting more attractive. It also aims to keep up close personal relations and mutual trust and appreciation along the care pathway. The described setting may also reduce the use of hospital beds considerably.

Depending on the local circumstances, an outpatient centre should serve a population of approximately 30 000 people. Such a population base is large enough to employ various medical specialists working part or full time in these centres. The structure may consist of one central and several district offices.

Furthermore, some producers, physicians as well as nurse practitioners, will specialised in certain disease-specific care programmes. They monitor disease management programs and treat low-risk day patients. System effectiveness is here based on lean management, and optimised, transparent care processes.

Services For The Elderly: Perspectives For Improved Home Care And Nursing Homes

Demographic changes and demand for health services

In 2050 one third of the European population will be 65 years of age or older. The long term needs of an ageing population will strongly affect the demand and need for services for the elderly. Thus the age factor alone will lead to a 2,5 times higher rate of heart attacks within 25 years. In 20-30 years the degenerative diseases like diabetes, stroke and heart failure will reach epidemic levels. This will not only affect the elderly but also younger people as health workers, relatives and tax-payers. Besides many other implications there is also a risk that inequity in access and utilisation of services will increase.

Institutional care in wards for chronic illness is no longer a routine solution for the elderly. The fraction of bedridden institutionalised citizens has become the key indicator for quality of regional elderly care. Every conceivable possibility must be used to return the elderly to control their own health and health care.

Self care and care at home

Increased knowledge and awareness among patients will not only lead to growing demand for services but could also be used for self care activities. However, to channel this information into prudent action it is important to combine it with evidence-based support and link it to normal health services. In future organisations patients will be connected to care programs, co-ordinated by near-by affiliated health centres.

Home care for patients is an increasingly essential part of most health care systems. While this sector has not been actively integrated into the financing and legislation of traditional health care, the development of ageing and emerging medical and information technologies will change the situation. A number of areas for home care development can be identified, which need to be integrated in regional networks:

- Post-acute home care
- Palliative home services to support people with terminal illness
- Mental illnesses treated at home
- General support to informal care-givers

Coverage for post-acute home care

Advances in medical technologies and treatments allow many procedures carried formerly out during long hospital stays to be replaced by day surgeries or brief overnight stays. Many patients still need follow-up care and post-operative rehabilitation services. Post-acute home care services could include professional services like rehabilitation and medication management.

Coverage for palliative home care services to support people with terminal illnesses

According to accumulating evidence a growing number of citizens with terminal illnesses would choose to spend their last days at home surrounded by family and friends rather than in an institution. Yet support for and access to palliative home care is rather limited in most health systems.

Improve the quality of care for mental illnesses through home mental health case management

Since the reforms of the mental health services in most countries took place in the 80s, mental health care is largely a home and community-based service. Yet the structure and support for treating mentally ill elderly people at home is grossly underdeveloped in most communities.

Overall support for informal caregivers

With more and more citizens being treated at home rather than in other care centres, the burden on informal caregivers has grown significantly. The health care system in many countries does not see the opportunity cost despite the fact that institutional elderly care may tie up more than one-tenth of the overall national resources of health care. To encourage support in the home, informal caregivers should be encouraged to take fully or even double-paid leave from their usual work, and to get specific training for home care.

Nursing homes

Home-like care is provided for a decreasing proportion of elderly people. To avoid the negative consequences of institutionalisation, all necessary nursing homes are also arranged to support, preserve and, if possible, to increase the residual autonomy of the elderly person. Therefore, the facilities must allow adjustments according to the current clinical situation of every client.

Several nursing homes, although physically separate to keep the environment as humane as possible, may use shared support services, including administration.

Social care

The integration of social care in regional structure is essential. Many patients looking for health care services can not really benefit from medical services. Social problems, like loneliness, unemployment, marginalization, neglect, and substance abuse often link with medical problems. The social situation of many patients limits the area of application of cost-effective medical practices, like day surgery. Compliance with care guidelines is also affected by the social circumstances of patient. In a large emergency service there is a frequent need of a social worker for immediate consultation.

Preventive health care

Prevention and health promotion with diet, lifestyle and exercise counselling will have a substantial role in the health of populations. External lifestyle-related issues are the principal preventable etiological factors for society's major health problems.
A regional centre is needed for coordinated community and population-based health programs and patient education, emphasizing disease and injury prevention, in partnership with private and public agencies.

The co-ordination of a regional network

An efficient regional health care network requires more than a division of levels of health services and designed responsibility areas. All parts and individual actors must be tied to each other; they must share information and facilitate efficient transfer of patients across partners in the system. Administrative functions and incentive structures must support collaboration across organisational and professional boundaries. The alignment of authority and accountability for the allocation and coordination of resources will be made from a system perspective.

This planning process is not the same as implementing a comprehensive planning system for health care. To encourage innovation and entrepreneurship it is important to involve private providers in regional health care. True long-term partnership is needed more than short-term and short-sighted rivalry. Private providers will have the opportunity and incentives to develop new products for a contestable market.

Schematic Implementation: Description Of A Region

In this section the future visions of a regional system is outlined as a case with a schematic plan for a regional health care network of a target population of one million people. The total number of employees is approximately 30000. The components in this model are presented briefly in Figure 6 and described more in detail later.

In the model, the million population region has one major city with 500 000 inhabitants and several regional sub-centres. The special care hospitals for all acute and elective care will have an upper limit of 1 to 1.75 beds for 1000 inhabitants, totalling approximately 1500 to 1700 beds. The annual number of in-hospital days will be set at some 400-600 per 1000 inhabitants and yield an average bed occupancy rate of lower than 80 %. This low occupancy rate allows for the stochastic nature of the service demand.

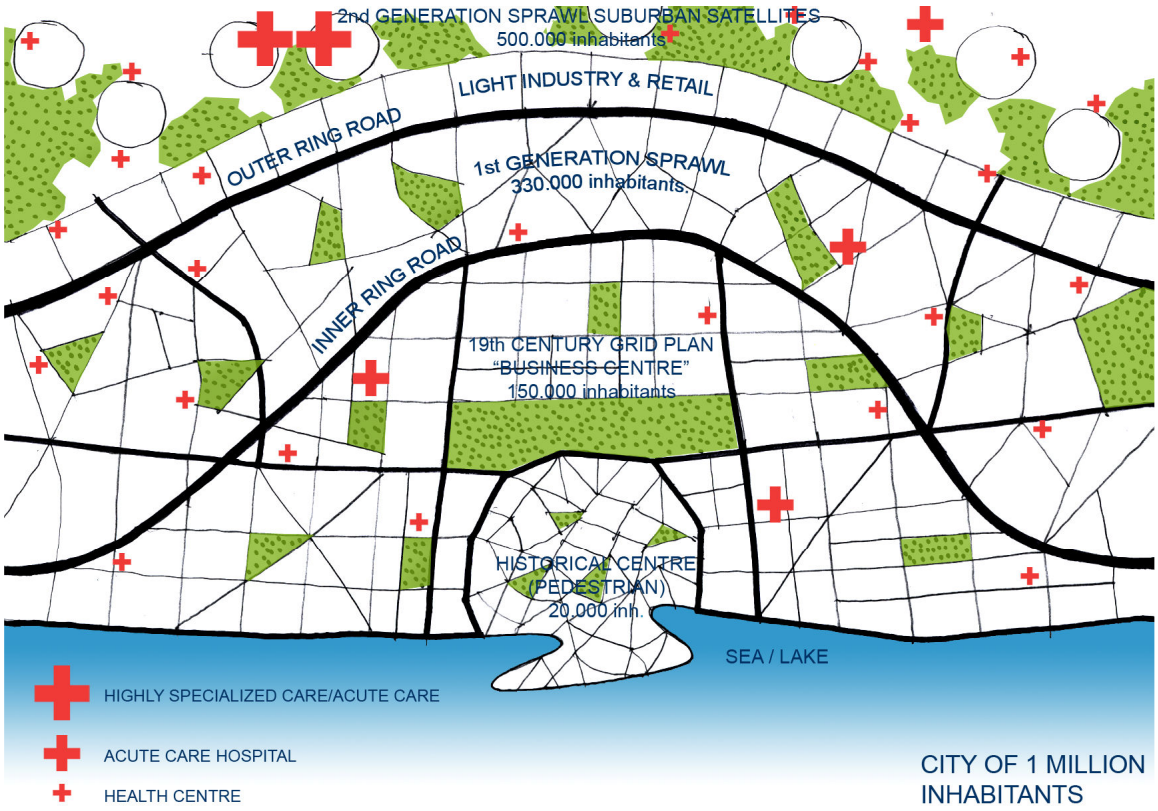

Figure 6: Regional health care service model for urban environment
Source: The Mariehamn meeting, January 2005

The centralised main hospital indicated by double red cross will have a separate acute care building and elective care, various knowledge centres and narrow medical specialities. The hospitals are organised in knowledge centres with multi-speciality competence clustered around the main medical problems.

The regional acute care hospitals - four smaller red cross - will serve as acute care centres with main medical specialities for 200 000 -300 000 inhabitants having as a minimum around 250 beds.

In addition, the Community care hospital serves for management of chronic diseases, pain management, geriatric psychiatry, geriatrics, rehabilitation. Ambulatory surgical services are optional.

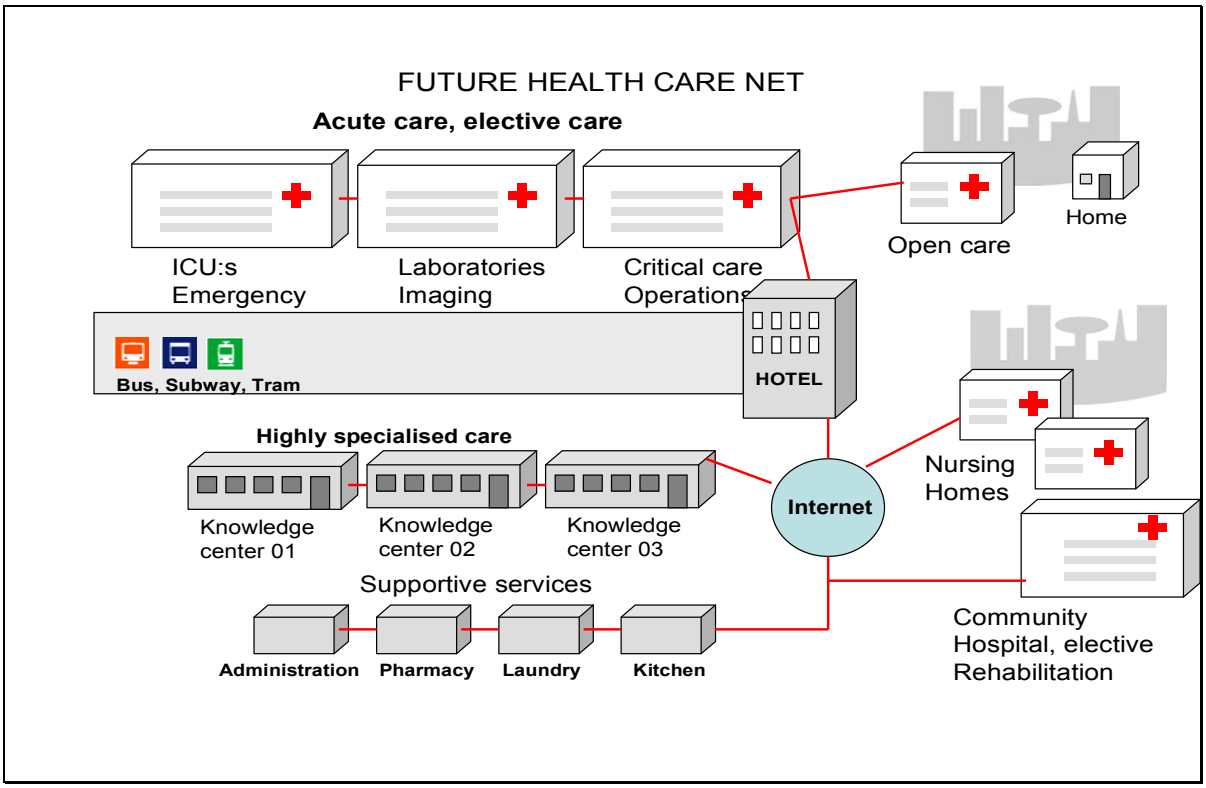

Figure 7: Future regional health care networks
Source: The Mariehamn meeting, January 2005

The future regional care net may look as seen in Figure 7. Note the strong role of internet connection inside in region. In reality the service systems for target year 2030 will build on existing services network by remodelling, not demolishing**.** The present system with hospital building will be still the skeleton of the service system in future.

Chapter Six – Conclusion: The Drivers Of Development

In the previous sections in this document we have outlined several visions that have been presented on issues shaping future health care systems. The continuous technical development of service systems, the growing importance of chronic care management and the increasing relative scarcity of resources will outline our future.

To predict how future development will influence and shape our health systems is a complex and uncertain task. Our human imagination has been said to have a limited scope of 5-8 years. This suggests that there will be no stable service structure. Increased public awareness and access to information, fuelling consumers' desire for the latest in diagnostic techniques and treatments will also be among the drivers of change. The growing proportion of elderly people in Europe is the key driver in all health care reforms. Even if development would lead to substantially improved health for the elderly, pressures on the system are predicted to increase. The need for chronic care management and the recognition of the importance of clinical pathways and carefully integrated services will be the leading issue in all regional care planning.

In most European countries the health care sector still has some lessons to be learned, most importantly driven by the scarcity of resources, resulting in the necessity of making prudent choices between alternatives. Health care expenditures have grown steadily until the 1990s. Most countries within the European Union spend around 8-9 per cent of GDP on health care. This figure has been stable for about ten years. In the future we can expect that the growth of health care resources will follow the overall economic development.

The major part of these resources comes from taxes or mandatory social insurance fees. The egalitarian approach of financing health services in Europe implies transfer of resources from the well-off people to lower income classes. Still, the more well-off groups have the ability to buy additional or supplementary private health insurance if their willingness to pay is higher than the level financed by public sources. However, experience so far shows very limited success for such risk-sharing arrangements.

Hence, the system shows an inability or a political unwillingness to expand overall health care budgets, which will set limits to national spending. Efforts to improve efficiency and priority settings will become even more important. New processes or ways to work with clinical pathways covering both public and private providers, both inpatient and outpatient clinics, and the creation of ambulatory and mobile teams, are examples of ways of coping with new demands on health care. It is expected that around two-thirds of patient flow will be treated by pre-defined care programs, adapted locally to form pathways. A comprehensive, multi-professional planning is essential. In addition, the importance of preventive health care and an emphasis on patient (self) education will increase, followed by practical applications including internet and e-health applications.

In conclusion, our systems face the task of improving overall efficiency. A future health care net seems to bring new promises to reach this goal. The still patchy European development can be strengthened considerably through joint approach. Exchange of creative ideas and positive experiences is more welcome than ever. We do hope that this, our Interreg program, would serve as a European example for such a learning process.

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