

# 2050

## A Health Odyssey

THOUGHT-PROVOKING IDEAS FOR POLICYMAKING



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Dear Reader,

What will healthcare delivery look like in 2050? Do we stand on the edge of a new revolution in healthcare treatment? How will we as patients consume healthcare in the modern age? All of these far-reaching questions and many others are addressed in this collection of thought-provoking essays by leaders in the healthcare field. Exploring sensible approaches to the fundamental challenges in healthcare in the 21st Century is the mission of Health First Europe, (HFE).

Health First Europe was established in March 2004 by a group of organisations representing patients, healthcare workers, academics, policy makers and medical industry experts, concerned about the persisting inequalities in access to healthcare in Europe at a time of demographic and technological revolution.

To date, Health First Europe has grown to include 24 member organisations all willing to devote their energy and professional support to furthering the core aims of our platform. In addition, we have 19 supporting Members of the European Parliament from across the political and geographical spectrum, and two Patrons whose support is greatly valued.

HFE has four core beliefs:

- There are weaknesses in European healthcare systems; a rethink is required in order to meet current and future health challenges;
- Patients and clinicians should have equitable access to modern, innovative and reliable medical technology;
- The development of new and flexible modes of healthcare delivery will benefit both patients and healthcare providers;
- "Health equals wealth"; health is a productive economic factor in terms of employment, innovation and economic growth.

The aim of this book is to encourage reflection and dialogue on the future of healthcare in Europe and to stimulate the debate on what can be done between now and the year 2050. The articles that you will read in our Health Odyssey provide a fresh perspective on a variety of healthcare issues from a variety of healthcare experts, but do not constitute an official HFE position *per se*. We hope that the European policy makers, and everyone who reads this book, will be encouraged to think about the direction in which one policy European health policy is going.

I invite you to share you comments, impressions and remarks with Health First Europe and with individual authors on the future of healthcare. You can do so by posting your observations on the articles on the Health First Europe website: [www.healthfirsteurope.org](http://www.healthfirsteurope.org)

Happy reading!

# Reflection on the future of healthcare



By Maria Rauch-Kallat,  
Austrian Federal Minister of Health and Women

Austria will assume the EU Presidency for the second time in the first half of 2006. Particularly for a small country, this task is both a great challenge and an opportunity to set political agendas.

Nowadays, we have to face a major demographic change in Europe. A declining birthrate can be seen alongside increasing life expectancy. The population of many countries is shrinking and therefore most national economies are confronted with problems in financing social and health insurance systems. For example, in 2001 we registered 1,72 million people who are over 60 years old in Austria and for the year 2041 we are expecting 2,85 million people in this age bracket. The total fertility rate per woman between 2000 and 2004 was only 1,4 in Austria and 1,6 in the European region. In comparison to that, the African region has a total fertility rate of 5,4. The Austrians are getting older – alongside other Europeans.

In close connection with the demographic change in Europe, the expense factor of scientific progress is also an important factor in financing the best possible healthcare. Today, medical science is able to yield top-performance with unlimited access for every Austrian. To secure high-end medicine now and in the future, we have to make arrangements in financing and legislation, but also and especially in people's ways of life.

In spite of medical prosperity and the possibility to access this, Europeans have to have a new awareness of the value of health. "Prevention is better than cure" and therefore a healthy lifestyle protects against painful operations, long-winded treatments or a strong limitation of health quality.

In fact, lifestyles are changing in our industrialised society and so are disease patterns. Nowadays, a lack of exercise, poor nutrition and obesity are the most frequent causes for illness. Accordingly, cardiovascular diseases rank at the top of mortality. Every third Austrian complains of pain in the musculoskeletal system

which is the main reason for long-term disability and invalidity pension. All that will lead to an additional drain on finances.

Thus, the promotion of good health must be more important in European health policy. Prevention against cardiovascular disease is part and parcel of most prevention programs of the European Union. The great efforts made against smoking are another example of a strong collective political initiative.

The Austrian Presidency in the first half of 2006 will focus on several priorities to continue and improve



efforts at European level. Within the framework of a varied work programme with important dossiers, two themes stand out as the main focal points in the field of health policy: type 2 diabetes and women's health. The documentation of gender-specific epidemiology is essential, but alongside Austria, only few states have a "women's health report" which identifies important fields of action for the coming years.

Due to the dramatic increase in new cases, type 2 diabetes has developed into one of the major medical and healthpolicy problems of our time. From 5 to 15% of diabetes cases are type 1 diabetics and predominantly in children and young people. The remaining 80 to 95% is accounted for by type 2 diabetes, and precisely this type of diabetes is moving away from being a disorder found in old age and is increasingly affecting people in the first half of their lives. Seen on a global scale, there is currently still a majority of female diabetes sufferers by around 7%, but the relative growth rate for men in Europe is markedly higher than that of women.

Austria has also not been spared by this epidemic-like increase of new cases. The current Austrian Diabetes Report, which has been drawn up for the first time, shows that there are presently more than 300,000 diabetics receiving medicinal and dietetic treatment, while the number of unreported cases lies between 50 and 60%. In the case of metabolic syndrome, the precursor of type 2 diabetes, the number of cases is impossible to estimate. Although diabetes mortality has been falling continually since 1991 due to improved early detection and treatment methods, there has as yet still been no significant reduction in cardiovascular diseases, the most common cause of death for diabetics. Similar to the European-wide perspective, the WHO is also

forecasting a gender-specific increase in diabetes cases for Austria. According to this, the number of female diabetics will increase between 2000 and 2025 by 28% and the number of male diabetics will even rise by 49%.

Alongside age, the risk factors for diabetes are primarily socio-economic factors, lack of exercise, poor nutrition, a high BMI (excess weight) and smoking. Clinical studies show that preventive health promotion - measures such as a change of diet and regular exercise - are the best possible ways of avoiding diabetes.

In order to underline the significance of this illness also at EU level, diabetes

are further focus points of the Austrian EU Presidency. Particularly in the case of cardiovascular disease, women have a higher mortality rate than men. More gender sensitivity is required here in order to recognise symptoms and to treat them in good time. Women are not like men, and this fact also has to be taken into consideration in medical training and treatment. The objective of the Austrian Presidency is the initiation of a European women's health report, which should document the status of all 25 EU Member States in this field.

In Austria, 600,000 to 700,000 people currently suffer from osteoporosis,



will be one of the two main health topics during the Austrian Presidency of the EU in 2006.

Another important issue is women's health which should thus also gain in significance at European level. The four disorders of endometriosis, osteoporosis, cardiovascular disease in women and smoking/lung cancer

one of the most serious and costly chronic illnesses in Europe. The annual European-wide costs resulting from fractures due to osteoporosis is estimated to be over EUR30 billion, and this figure is expected to double in the next ten years. Successful therapy is based on seven pillars, of which however only three are within the area of responsibility of doctors.



More than anything else, a conscious lifestyle with healthy and calcium-rich nutrition and plenty of exercise leads to significant improvements.

Endometriosis is a largely unexplained illness, which still requires a great deal of research work in the area of diagnosis and therapy. Between 7 and 15% of all sexually mature women (14

found above all in the field of prevention and in forms of treatment which are specific to women.

In 2002, 39.4% of the European population were smokers, and the tendency is rising, particularly for women. In Austria, there are now almost as many female as there are male smokers. In 2004, 46.5% of

account with a plan for a package of measures. Rates of depression among women are two to three times higher than those of men; at least one in five women experiences clinically defined depression in her lifetime. As early as 2020, this will be the leading cause of disabilities caused by illness.

Alongside the abatement of diseases and the difficulties in financing medical care, the whole European healthcare sector is on the cusp of a digital revolution. Telemedicine will turn the usual treatments (upside down) and in the first place we will have to learn about the handling of these new information- and communications-technologies in the field of medicine. New ways of treatment and new worldwide networks of high-end medicine will be possible in the near future. New medical knowledge will be developed and distributed faster and new databases of genetic research or virology will be accessible to everyone.

“ Alongside the abatement of diseases and the difficulties in financing medical care, the whole European healthcare sector is on the cusp of a digital revolution. ”

million women in the EU) suffer from endometriosis, and half of them report noticeable pain.

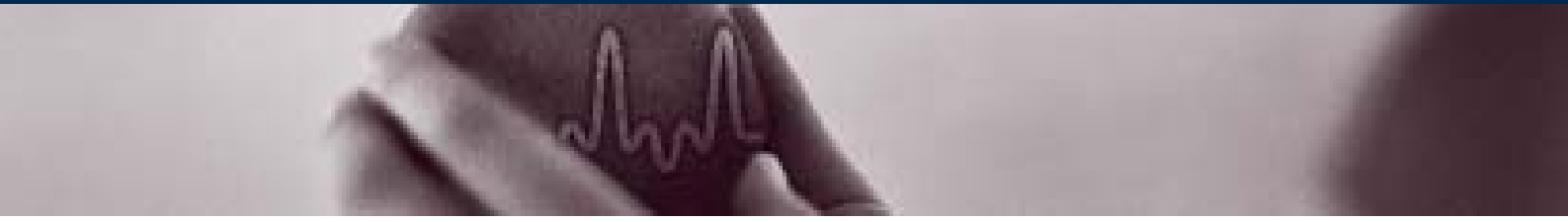
Cardiovascular disease has been a central theme in women's health since the beginning of the nineties. These four disorders are the most common cause of death for women and claim more lives than all types of cancer put together. In Austria alone, 21,296 women and 13,653 men died of cardiovascular disease in 2003. Possible solutions are to be

women and 48.1% of men smoked. 14,000 Austrians die every year as a result of smoking, which is considered to be the most important cause of lung cancer and heart attacks. Whereas the number of men suffering from lung cancer in Austria has fallen slightly in recent years, the comparative figure for women continues to rise.

Alongside physical diseases, various types of depression are becoming ever more significant for women, and the EU has already taken this into

Austria now plays a leading role in implementing e-Health technologies. The so-called e-Card is just the beginning and the key to many new possibilities of information technology. The Austrian electronic health insurance card provides uncomplicated access to the national healthcare system without the previous paper-based healthcare vouchers. This will eliminate the need to issue and process an annual volume of more than 40 million vouchers. The e-card also incorporates the European Health Insurance Card and therefore replaces existing paper forms used for proving health insurance entitlement when travelling within the European Economic Area.

The implementation of the e-Card is one of the biggest European IT projects. By November 2005, a total of eight million cards will be sent out. Furthermore 12,000 doctors will be



connected to the computing centre network – all of that largely without any difficulties.

Using such digital networks makes inefficient communication between facilities, insufficient quality assurance and defective transparency in cost accounting a thing of the past.

In the long run, the future prosperity of European healthcare depends on three key factors:

- The knowledge, high quality and scientific progress of the medical fraternity and nursing staff;

- The strength of solidly financing health insurance;
- The groundbreaking developments of telemedicine and new ways of using information technologies.

These factors stand for growth, dynamics and endless potential, and contribute to the collective good and the health of all people in Europe. We have made ambitious plans for an EU Presidency which is anything but a routine exercise. For six months, Austria will make a decisive contribution towards steering a course for a strong European Union now

composed of 25 members, and to representing it at an international level. It will be necessary to be extremely flexible and to drive forward the decision making processes at both political and legislative levels. As Austrians and Europeans, we face enormous challenges, and I am very proud – together with my colleagues in the Government and all those involved – to be able to contribute towards realising the dream of a united Europe. ■



*Maria Rauch-Kallat*

Maria Rauch-Kallat  
Austrian Federal Minister of Health  
and Women

# The future of health "sans cordon sanitaire"



By David Byrne

This article considers EU and international approaches to healthcare challenges.

*"Sympathy for the sufferings of our fellow-creatures from disease, and the important interests of the Union, demand of the national legislation a ready co-operation with the State governments in the use of such means as seem best calculated to prevent the return of this fatal calamity."*  
- U.S. Senate

## INTRODUCTION

Isolation through means of a *cordon sanitaire* represents only a short-term solution to an immediate threat to public health. The future of global public health planning and preparation is *sans cordon sanitaire*, as global health cooperation is the true key to combating today's communicable and non-communicable diseases.

Globalised public health in an interdependent world requires a global policy response and a global governance framework involving a multiplicity of actors – international organisations, private and corporate actors, and civil society. This article will suggest possible priorities that governments, international bodies and the ordinary citizen should take into consideration in the future fight against global communicable and non-communicable diseases.

## 1) GLOBAL COMMUNICABLE DISEASES

### *Plagued by Yellow Fever*

In the summer of 1798 an epidemic of yellow fever swept through New York. A *cordon sanitaire* was erected around the city. The governor of Pennsylvania proclaimed the need to suspend dealings and communication between New York and Philadelphia. Later that year, U.S. President John Adams invited the legislature to examine the expediency of establishing

suitable federal regulations to support the health laws of the respective States<sup>1</sup>. The response of the U.S. Senate was as follows:

*"Sympathy for the sufferings of our fellow-creatures from disease, and the important interests of the Union, demand of the national legislation a ready cooperation with the State governments in the use of such means as seem best calculated to prevent the return of this fatal calamity."*

As early as 1798 then, the U.S. Senate acknowledged that cooperation was

*sanitaire*) proposed that all ships bound for Europe be quarantined at Suez, stating that "questions of international hygiene reach beyond the borders established by politics". Quarantine measures are therefore inevitable to protect public health and are envisaged in the International Health Regulations as a legitimate response to the sudden outbreak of disease.

### **Germ, Globalisation and Global Health Governance**

In today's interconnected world, bacteria and viruses travel almost as

*"Globalised public health in an interdependent world requires a global policy response and a global governance framework involving a multiplicity of actors."*

the key to solving the scourge of communicable diseases.

Of course, there remains an important role for *cordon sanitaire* in the sense of quarantine, rather than of isolation. Indeed, as the plague began to spread to Europe via Egypt in the 1860's, Dr. Adrien Proust (father of the famous novelist and a student of Dr. Fauvel who invented the concept of *cordon*

fast as e-mail and financial flows. Dangers to public health anywhere can quickly develop into dangers to health everywhere.

The recent transnational spread of SARS was not only a wake-up call; it was also a challenge to the existing legal and regulatory approaches to global health governance. The more the world economic order globalises,

<sup>1</sup> Message of December 8th, 1798, cited in U.S. Supreme Court, *Smith v. Turner*, 48 U.S. 283 (1849).

<sup>2</sup> Quoted in U.S. Supreme Court, *Smith v. Turner*, 48 U.S. 283 (1849).

the more we must address globalisation of the rule of law. Ensuring a robust international legal framework to prevent and protect against global public health threats is precisely what the World Health Organization (WHO) has established through the recent revisions of the International Health Regulations (IHR).

The revised regulations were adopted by all 192 Member States at the World Health Assembly in May 2005 and are expected to enter into force on 15th June 2007. The key provisions of the revised regulations demand better surveillance and increased transparency, leading to a more rapid response mechanism – the three fundamental tools in handling the international spread of communicable disease. The regulations require the WHO to engage with a Member State where there is evidence of an outbreak of a public health emergency of international concern (PHEIC). The WHO may seek verification and offer collaboration where necessary, and is empowered to make public any refusal to cooperate, thereby alerting other States to take any relevant protective measures.

At a European level, the European Centre for Disease Prevention and Control coordinates surveillance activities across the Union to ensure early identification of potential threats to public health.

Other global health accords are also beginning to emerge, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria. This fund is an example of cooperation between governments, civil society, the private sector and afflicted communities to raise global finance to fight three of the world's most devastating diseases.

## 2) NON-COMMUNICABLE DISEASES

The public health sector is also facing a number of growing and rapidly changing pressures in the area of combating non-communicable diseases. The challenges include globalisation and changes in disease patterns and demography, as well as rising public and political expectations on one side, and limited resources and the need for cost containment on the other. These challenges must be viewed as opportunities – for improving access, quality, and cost-efficiency of care. In particular, advances and innovations in science and technology offer opportunities for early and improved medical interventions.

It is essential for public health practitioners to be prepared for a wider spectrum of diseases and health concerns; a broader age-range of

focus of healthcare will move increasingly out of the acute-care hospital, and closer to the patient. It will shift away from intervening in the acute phase of the disease, and towards early screening, detection and treatment, as well as towards preventing the disease in the first place.

### ***A Chronic Challenge: Combating Chronic Conditions***

Europe increasingly suffers from lifestyle-related diseases triggered by an unbalanced diet, physical inactivity, smoking or alcohol abuse. Because people are living longer, they have the opportunity for extended exposure to risks that promote the development of chronic conditions. The tragedy (or indeed the opportunity) is that the majority of these diseases can be eliminated through preventative action, such as promoting positive health determinants.

“The focus of healthcare will move increasingly out of the acute-care hospital, and closer to the patient. It will shift away from intervening in the acute phase of the disease, and towards early screening, detection and treatment, as well as towards preventing the disease in the first place.”

patients, from the very young to the very old; and for a more varied demand and expectation of healthcare services. Treatable chronic diseases, such as diabetes, have highlighted how the hospital represents only one element in a wider healthcare delivery system. The increasingly important team concept in healthcare delivery and research will mean a blurring of boundaries between professional and departmental disciplines. The

Addressing health determinants is an important focus of the current European Commission Health Programme. Tobacco provides a particularly acute example. Smoking-related illnesses such as lung cancer, cardiovascular disease and emphysema represent the single largest cause of avoidable death in the European Union, accounting for over half a million deaths each year and over a million deaths in Europe as a whole<sup>3</sup>. However,

a number of EU Member States have recently introduced smoking bans in public places. The WHO leads the way on a global scale with the Framework Convention on Tobacco Control, which entered into force in February 2005.

Similar action also needs to be taken in other areas, for example, against skin cancer arising from ultraviolet radiation (UV). The European Commission proposed a 'cover up' policy in the summer of 2005 but was ridiculed by the Mayor of Munich as representing "EU law-making at its most pedantic"<sup>4</sup>. Such a dismissive approach towards UV protection within the European Union is bewildering considering that between two and three million non-melanoma skin cancers and approximately 132,000 malignant melanomas occur globally each year<sup>5</sup>.

Diabetes is another example of a preventable condition. An estimated 30 million people worldwide suffered

type 2 diabetes and several other chronic diseases.

### 3) PRIORITIES TO ACHIEVE A FUTURE HEALTH "SANS CORDON SANITAIRE"

#### **Global Cooperation**

Cooperation on all levels, from governmental to individual, is the main tool in contributing towards the reduction of both communicable and non-communicable diseases. Achieving good health for all is a shared responsibility.

#### **Promoting Positive Health Determinants**

Prevention is better than cure. A recent illustration is the US\$4 billion committed by the UK, France, Italy, Spain and Sweden to support the work of the Global Alliance for Vaccines and Immunisation (GAVI) over the next decade<sup>8</sup>. But good health needs to be defined in much broader terms than simply the prevention of illness. It includes

his or her own good health through personal choices.

Of course, choices are based on what people know. Citizens need reliable and user-friendly health information about how to stay in good health. When they fall ill, they require authoritative information about their condition and the various treatment options available. In the European Union, the EU Webpage label has helped to assure the quality of health information and the new EU Health Portal should help to contribute to a better understanding of EU health policies. At global level, the Health Metrics Network (HMN) of the WHO represents a global partnership of developing countries, multilateral and bilateral agencies and technical experts working to establish better health information.

#### **Prioritising Patient Care**

We are living through a period of profound change in the way in which health services are organised, delivered and experienced. Industrial and technological innovations have both raised healthcare expectations and broadened the scope and nature of healthcare supply.

“Good health needs to be defined in much broader terms than simply the prevention of illness”

from diabetes in 1985. A decade later, the figure stood at 135 million<sup>6</sup>. The fight against diabetes has been chosen as a priority topic by the Austrian EU Presidency.

Obesity is another global epidemic, and is usually associated with poor nutrition and a sedentary lifestyle. Recent figures from the WHO estimate that there will be 1.5 billion people overweight worldwide by 2015<sup>7</sup>. An EU Platform on Nutrition has recently been created to encourage stakeholders to take concrete actions to promote healthy eating, as a raised body mass index is a major contributory factor in heart disease, stroke,

ensuring a protective environment (with relevant legislation and services) and a health promotive mindset, empowering individuals and families to make decisions in their best health interests. However, while policymakers can help raise awareness, create health-enabling conditions and provide good healthcare, each and every citizen has an important role to play in shaping

The introduction of new technologies represents a radical catalyst for change, with important implications for healthcare cost, quality and access. The e-Health Action Plan adopted by the European Commission in 2004 shows how these new technologies can be used to extend better quality healthcare Europe-wide, allowing healthcare to become increasingly

<sup>3</sup> [http://europa.eu.int/comm/health/ph\\_determinants/life\\_style/Tobacco/tobacco\\_en.htm](http://europa.eu.int/comm/health/ph_determinants/life_style/Tobacco/tobacco_en.htm)

<sup>4</sup> <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2005/08/03/wdirnd103.xml&Sheet=/news/2005/08/03/ixworld.html>

<sup>5</sup> <http://www.who.int/mediacentre/factsheets/fs261/en/print.html>

<sup>6</sup> <http://www.who.int/mediacentre/factsheets/fs236/en/index.html>

<sup>7</sup> <http://www.who.int/mediacentre/news/releases/2005/pr44/en/index.html>

<sup>8</sup> [www.vaccinealliance.org](http://www.vaccinealliance.org)

decentralised and more citizen-oriented. We are also witnessing a revolution in medical diagnostics, shaping a new age of healthcare in which disease is detected earlier, diagnosed more precisely and treated less invasively.

Of course, public demand – supported by the media – will always orientate towards the latest treatment, which is not necessarily the best one. New health technologies and drugs must always be properly assessed for their efficacy, security and efficiency.

The European High Level Group on Health Systems and Medical Care is a Community body dedicated to developing European cooperation in the area of health services and medical care. On a global scale, the WHO has established a World Alliance for Patient Safety.

#### ***Proactive Health at the Centre of the Policy Agenda***

There is an increasing awareness among policymakers concerning the economic and social costs which result from an unhealthy society, and that longer, healthier, more productive lives deliver concrete economic benefits.

Within the EU, the debate about health and economic development is currently being shaped by discussions surrounding the Lisbon Agenda on growth and competitiveness. Since the 2005 Spring European Council, 'Healthy Life Years' has become a

“There is an increasing awareness among policymakers concerning the economic and social costs which result from an unhealthy society, and that longer, healthier, more productive lives deliver concrete economic benefits.”

new structural indicator for the Lisbon Strategy. In addition, a report on 'The Contribution of Health to the Economy in the European Union' has recently been published by the DG of Health and Consumer Protection, showing that good health is good news for competitiveness and growth.

#### ***Conclusion***

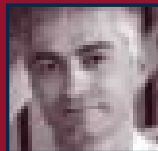
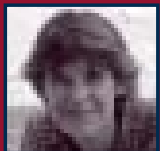
The future of global public health is a future not characterised by isolation, but by global cooperation, global governance and global partnership. The benefits of this cooperation in the future will lead to an overall more healthy society, characterised by enhanced economic output and reduced strain on public healthcare systems. The perception of society will develop into a more cooperative, integrative, prioritised and proactive view of public health. ■



### About the Author

David Byrne is a former EU Commissioner for Public Health and Consumer Protection (1999-2004), and a former Special Envoy to the WHO on the revision of the International Health Regulations (2004-5). He is senior counsel in the Brussels office of Wilmer Cutler Pickering Hale and Dorr LLP advising on European and international law. In summer 2005, he became a Health First Europe patron.

# Dreaming of a European Platform "engineering for health" - a vision for the future of EU healthcare



By Dr. Maria Siebes, Prof. Dr. Jos Spaan,  
Prof. Dr. Jos Vander Sloten

This article considers the importance and place of biomedical engineering (Engineering for Health) in healthcare now and in the future.

## THE IMPORTANCE OF DREAMS

Developments in healthcare are the result of the integrated action of many players. Doctors, nurses and paramedics are at the forefront of delivering healthcare to the patient. The medical device and pharmaceutical industries are in the middle, providing the means to deliver. Research is at the foundation for creating new possibilities; it is the cradle of innovation. Research, however, is based on dreams of individuals and dreams are hard to sell. It is easier to explain how something already present can be improved or how something already known is lacking in a particular

represent, who dream of better understanding the engineering of living systems, and have provocative ideas for better diagnosis and treatment and for new modalities of delivering healthcare, will benefit from a rethink of European healthcare policies. This rethink should include the strategy of providing the means to realise those dreams and ambitions to the benefit of better health and quality of life, and better healthcare delivery.

Interactions between engineering and medicine to improve human health can be traced back for centuries. Resulting achievements in medical

possible by biomedical engineering activities. Biomedical engineering (or "Engineering for Health") is one of the fastest growing fields of technology and it is coarsely defined as the use of principles and techniques of engineering to solve problems in biology and medicine. It encompasses the advancement of fundamental concepts in engineering, biology and medicine to develop innovative approaches and new devices, materials, implants, algorithms, processes and systems for:

- prevention, diagnosis, and treatment of disease;
- patient care and rehabilitation;
- assessment and evaluation of technology;
- improving medical practice and healthcare delivery.

“Without the dreams of individual scientists and engineers, it would be difficult to move beyond the horizons that are currently visible.”

circumstance. But without the dreams of individual scientists and engineers, it would be difficult to move beyond the horizons that are currently visible. European Alliance for Medical and Biological Engineering and Science (EAMBES) supports Health First Europe in the quest for equal access to improved care for all in Europe and stresses that engineering and research are essential to providing this. We hope that the many scientists that we

technology range from early devices such as crutches, platform shoes, wooden teeth and limb prostheses, to more modern marvels including pacemakers, the heart-lung machine, dialysis machines, diagnostic equipment and imaging technologies of every kind, and artificial organs, implants and advanced prosthetics. In the past 50 years, most quantum leaps in medicine have been due to technological advancements made

Individuals able and with opportunity to convert their dreams into well-defined principles remain at the base of technological innovation. Modern healthcare would be unthinkable without the numerous engineering achievements that are based on these dreams<sup>1</sup>.

## THE FACTS: SOCIO-ECONOMIC IMPACT

The EU currently holds the highest 'human development index' worldwide. This index combines three basic indicators of human well-being: leading a long life in good health, being well-

educated, and having access to the resources necessary to enjoy a decent standard of living. On the other hand, Europe has the fastest growing percentage of elderly in the world. The proportion of elderly ( $\geq 65$ ) in Europe's population will have doubled to reach 28% in 2050, with, for the first time, more elderly than young (0-15) people in the EU by 2010, reaching 40% in some Member States by 2020<sup>2</sup>. Healthcare expenditures are projected to increase by 1% to 3% of GDP over the period 2010-2050.

In Europe's aspiration (the Lisbon Agenda) to become the most competitive, knowledge-based economy in the world by 2010, the continuity of healthcare represents a major challenge for the EU, given the rise of an ageing population and considering the growing imbalance between the EU, and Japan and the US in this sector. Given the importance of the health and well-being of European citizens especially in the enlarged EU of 25 countries and the wealth generation potential of the medical device and pharmaceuticals industry in Europe, basic research, innovation and development in biomedical engineering and technology are of increasing socio-economic importance in today's knowledge-based EU society.

The health sector is driven by scientific and technological progress, and health is a productive economic factor in terms of employment, innovation, and sustainable development and growth. The past decades have seen tremendous improvements in the provision of healthcare and as a result, people are living longer and healthier lives. This success is based on a combination of factors: better informed patients, skilled clinicians, scientific discoveries, and technological innovation. Through modernising modalities for prevention, diagnosis and treatments, 'Engineering

for Health' creates greater efficiency and savings in the health system. Already, the use of diagnostic and therapeutic modalities of medical technology brings about improved patient outcomes. Enormous benefits have been achieved with respect to quality of life and quicker return to health across a range of chronic conditions. In cardiac care, prominent examples include the use of coronary artery stents, implantable defibrillators and pacemakers, and intelligent ambulatory heart monitoring systems. Advances in orthopaedics, minimally invasive surgery, and biomaterials have resulted in safer operations, faster recoveries and improved end results. These and other advancements have significantly reduced mortality rates, improved patient quality of life and freed up healthcare resources by reducing both frequency and length of hospitalisations.

Although an overall cost-effectiveness analysis is hampered due to a lack of harmonisation and coordination in the use of evidence-based medicine and health technology assessment of Member States and the lack of a coherent European Database on Medical Devices (EUDAMED), studies on specific healthcare areas have concluded that enormous net cost savings can be achieved<sup>3,4</sup>. Areas where engineering for health R&D contributes significantly to enhanced competitiveness in research and innovation include tissue and organ engineering, biological and physiological systems analysis, computer-integrated surgery systems, human-environmental interfaces, diagnostic technologies, and all

aspects of telecare and independent living devices in healthcare. 'Engineering for Health' also plays a significant role in healthcare technology assessment, thereby supporting the implementation of innovative technology in the interests of European citizens. These are vital elements with a huge potential for positive economic and employment benefits in an economy facing a predominant demographic shift towards an ageing society.

#### THE VISION: ROLE OF ENGINEERING FOR HEALTH IN THE FUTURE OF EU HEALTHCARE

"Long-range planning does not deal with future decisions, but with the future of present decisions." (Peter F. Drucker, management consultant)  
The objective for the future must be to contribute to Europe's exploitation of the unprecedented opportunities for generating new knowledge and to translate it into applications that enhance human health. Both fundamental and applied research, with an emphasis on integrated, multidisciplinary, and coordinated efforts will help to increase the competitiveness of the European healthcare system. The European "eHealth Action Plan" aims at delivering better quality healthcare for European citizens while reducing costs<sup>5</sup>, with one of its major targets to create a borderless European health information space (by the end of the decade). Engineering for Health is intimately engaged in developing the required technological backbone for this ambitious knowledge-based approach to healthcare.

<sup>1</sup> AIMBE 2005 Hall of Fame, American Institute for Medical and Biological Engineering, <http://www.aimbe.org>

<sup>2</sup> Third European Report on Science and Technology Indicators 2003 "Towards a Knowledge-based Economy." European Commission DG for Research, EUR 20025 EN

<sup>3</sup> Making the economic case for medical technology, The Medical Technology Group, UK, 2003

<sup>4</sup> The value of investment in health care: Better care, better lives, Advanced Medical Technology Association (AdvaMed), USA, 2004

Technological advancements realised through 'Engineering for Health' research and innovation will positively and widely affect the quality of life of EU citizens not only in relation to disease, but will extend to tangible outcomes regarding the efficacy, safety, ergonomics and comfort in all aspects of empowering, re-enabling, or assisting the human body in normal activities (i.e. children, disabled, and elderly) as well as in exceptional activities (i.e. work, sports, security, and the exploration of hostile environments).

At the basis of technological progress is fundamental research uninhibited by priority directives. We strongly feel that Europe needs a platform, 'Engineering for Health', that is not fragmented into particular categories of science, technology or disease, but provides an opportunity where a proposed project is primarily judged for its possible contribution to the improvement of health or quality of life. Better representation and recognition of this field is so vital for European healthcare as dreams are so difficult to categorise. Consider, for example,

20 to 30%. This staggering number of imprevented incidents highlights the need for novel strategies to further improve cardiovascular outcomes. For example, how sure are we that the forward leap is coming from the strategies put forward in a project submitted under predefined categories such as 'Cardiovascular disease', 'Nanotechnology' or 'E-Health'? Obviously, these are important targets for research but it may very well be that the real discovery comes from a proposal not recognised by the mechanisms put into place to promote these specific areas. The solution may follow the example of the discovery of penicillin, which was a mere accident, or that of the heart-lung machine that was developed to perform fundamental studies on cardiac function in an isolated heart preparation but later saved so many lives because it made open heart surgery possible.

Of course, there needs to be a balance between dreams and reality. To advance medical technology, we must have the inspiration and creativity of individual scientists while barriers to

and ultimately arrive at balanced, but flexible long-range planning and priority settings. This important task will be facilitated by the establishment of a 'European Institute of Health' and within it, an 'Institute for Medical and Biological Engineering Research', as agencies that foster continued advancement in medical and biological engineering.

#### WHAT DOES THE FUTURE HOLD 50 YEARS FROM NOW?

Predicting what the future will bring in this rapidly evolving field is rather difficult. Individual achievements of biomedical engineering have changed with the continued development of the field. Cardiovascular research was initially based on mechanical aspects involved, e.g., in the development of an artificial mechanical heart and is now focusing on studying the mechanics and molecular dynamics of signal transduction in blood vessel walls. New discoveries and important new applications for medicine based on 'Engineering for Health' have increased exponentially<sup>6</sup>.

Substantial steps ahead, particularly in areas such as regenerative medicine, nanomedicine, minimally invasive sensors and surgical technologies, tissue engineering, medical imaging, and telemedicine will revolutionise diagnosis, treatment and rehabilitation; engineered tissues will challenge inanimate organ replacement. Natural organs may be regrown after injury or disease. Molecular nanotechnology may provide microscopic means for targeted delivery of personalised medications. An all-inclusive lifelong health record may be readily accessible, on a tiny chip implanted under the patient's skin. Gene

“The objective for the future must be to contribute to Europe's exploitation of the unprecedented opportunities for generating new knowledge and to translate it into applications that enhance human health.”

cardiovascular disease, which is the major cause of mortality worldwide. Despite major efforts to reduce cardiovascular morbidity and mortality, currently available strategies aimed at lowering individual risk factors have only succeeded in reducing the cardiovascular event rate by a modest

interdisciplinary engineering innovations that have the potential to enhance quality of life need to be reduced. But we must also consider critical needs

<sup>5</sup> e-Health - making healthcare better for European citizens: An action plan for a European e-Health Area, COM (2004) 356 final

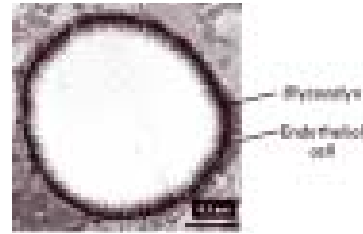
<sup>6</sup> Nebeker F. Golden accomplishments in biomedical engineering. IEEE Eng Med Biol Mag. 21(3):17-47, 2002

transfer may alleviate or correct problems resulting from genetic defects. Treatment at a distance, monitoring and healthcare provision at home may become common.

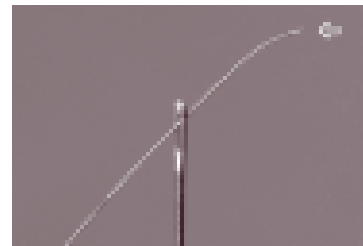
Public perception and acceptance by medical professionals are important aspects in the success of these technological advancements<sup>7</sup>, and continued efforts are necessary to educate public policymakers, the media and the general public about the valuable role of medical and biological engineering in these endeavours. For the sceptics, when it comes to the importance of scientific revolutions, let us cite a quotation from an 1834 editorial in *The Times* (London) about the introduction of the stethoscope: *"It will never come into general use and its value is extremely doubtful, because its beneficial application requires much time and gives a good bit of trouble to both the patient and practitioner and because its human character are foreign and opposed to all our habits and associations."*

'Engineering for Health' has evolved into a key area supporting the long-term strategic objectives of the EU. The European Commission has recently put forward the concept of a "knowledge triangle" of research, education and innovation to help

Europe realise its goal to become a genuinely competitive, knowledge-based economy. Through its activities and opportunities, 'Engineering for Health' represents a major thrust in policy-oriented research and development and provides European added-value in important areas identified as key EU policy targets. ■



Electron microscopic image of a myocardial capillary in the left ventricle of a rat (Alcian blue 8GX stain). Vascular endothelial cells are shielded from direct exposure to flowing blood by a highly hydrated mesh of membrane-associated sugar like molecules, the glycocalyx. It was recently hypothesized that this layer forms the first line of defence against vascular disease (see: *Circulation*. 2000;101:1500-2, *Circ Res*. 2003;92:592-594, and *Curr Opin Lipidol*. 2005 Oct;16(5):507-11)



Guide wire equipped with miniaturized sensors at the tip (arrow) to measure blood pressure and flow velocity in diseased coronary arteries of patients (Volcano Therapeutics, CA). The wire tip has a diameter of 0.3 mm. These novel tools are used in interventional cardiology to assess the severity of coronary artery disease in the catheterization laboratory and to evaluate the outcome of treatment with balloon angioplasty and stent placement. (see: *Circulation* 2004;109:756-62, *Circulation* 2005;111:76-82)

*"It will never come into general use and its value is extremely doubtful, because its beneficial application requires much time and gives a good bit of trouble to both the patient and practitioner and because its human character are foreign and opposed to all our habits and associations."*  
- *The Times*

<sup>7</sup> Medical and Biological Engineering in the Future of Health Care. Ed. J. D. Andrade, University of Utah Press, Salt Lake City, Utah, 1994

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# The future of healthcare is patient-centred



By Jo Harkness

This article considers patient-centred healthcare and why is it so important.

*'A collaborative effort consisting of patients, patients' families, friends, the doctors and other health professionals... achieved through a comprehensive system of patient education where patients and healthcare professionals collaborate as a team, share knowledge and work toward the common goals of optimum healing and recovery.'* (Grin, 1994).

We live in a time when chronic conditions account for over half of the global disease burden (WHO, 2004), placing an ever-increasing burden on health systems originally designed to address acute medical conditions. In order to cope with this, health systems need to develop so that they are able to address the ongoing needs of these people.

This requires a new approach because chronic conditions, such as diabetes, heart disease, asthma and cancer, require management on an ongoing basis, often for many years or decades. Health systems therefore require the personal involvement and

*“The patient is the key person in healthcare and their needs and preferences... are at the centre of all aspects of healthcare.”*

commitment of individual patients to adhere to their treatment and make behavioural changes, if they are to effectively manage their healthcare. Aspects of a patient-centred approach can be seen in the increase in self-management and patient education initiatives, resulting in a move to more collaborative care. The benefits of this 'patient-centred' approach are that they promote greater patient responsibility and optimal usage which ultimately leads to improved

health outcomes, quality of life and cost-efficiency.

## WHAT IS PATIENT-CENTRED HEALTHCARE?

So, what is patient-centred healthcare? Patient-centred healthcare is a term that is now commonly used but rarely defined by those using it. As Stewart (2001) states, it is often understood by what it is not: 'technology centred, doctor centred, hospital centred, disease centred'.

The traditional biomedical management model of healthcare involved 'paternalistic' treatment where the health professional decided the ap-

propriate course of treatment, often without significant patient involvement in the decision. This situation has been changing as, over the years, many people have become more interested in health issues and in taking more responsibility for their personal healthcare. The significance of patient-centred healthcare is that it moves the healthcare focus from the disease to the patient. It can, therefore, be a useful concept to ensure that we remember that as Stephen McMahon, IAPO Board Member and

Chairman, Irish Patients Association asserts, "the patient is the key person in healthcare and... their needs and preferences are at the centre of all aspects of healthcare". This focus should not detract from equality in all relationships in healthcare.

Interestingly, there is no universally accepted definition of patient-centred healthcare but there are a number of academic and patient driven definitions which include:

*'A collaborative effort consisting of patients, patients' families, friends, the doctors and other health professionals... achieved through a comprehensive system of patient education where patients and healthcare professionals collaborate as a team, share knowledge and work toward the common goals of optimum healing and recovery.'* (Grin, 1994).

*'Healthcare that is closely congruent with and responsive to patients' wants, needs, and preferences.'* (Laine & Davidoff, 1996).

*'Patient-centred care is quality healthcare achieved through a partnership between informed and respected patients and their families, and a co-ordinated healthcare team.'* (National Health Council, 2004).

(see IAPO, 2005 for further definitions and principles)

Perhaps the essence of patient-centred healthcare is that the healthcare system is designed and delivered to address the needs and preferences of patients. The optimal outcome of healthcare is a better quality of health and/or of life for the patient (as defined by the patient).

#### PRINCIPLES OF PATIENT-CENTRED HEALTHCARE

Extrapolating from the definitions, key principles of patient-centred healthcare can be identified which resonate with patients around the world, regardless of the healthcare system, resources available or culture:

- **Respect and support** for the individual patient, their wants, preferences, values, needs and rights.
- **Access** to the healthcare services warranted by their condition. This includes access to appropriate, quality and safe treatment with the ability to make an informed choice.
- **Information** that is appropriate, relevant and timely and information exchange between patients and others involved in healthcare to enable patients to make informed decisions and take effective action to improve or manage their health. Information should be presented in a format appropriate to the needs of individual patients, according to health literacy principles considering their condition, language, age, understanding, abilities, and culture.
- **Empowerment/motivation** of patients to take responsibility for their healthcare and be as independent as possible and for patients' organisations to be recognised, involved and encouraged to take leadership roles.
- **Involvement** of patients in healthcare at their level of choice and the involvement of patients and patient representatives in a meaningful way in all decision making processes

which will have an impact on patients' lives.

#### BENEFITS OF PATIENT-CENTRED HEALTHCARE

There is growing evidence that designing health systems with the patient at the centre is an appropriate and cost-effective way to address the needs of people with chronic conditions. A number of research studies have concluded that there is a positive link between the practice of patient-centred healthcare in clinical settings and outcomes (including Bauman et al (2003), Little et al (2001), Stewart et al (1995) and Henbest et al (1992)). Collectively, these studies indicate that the patient-centred approach can lead to a variety of positive outcomes including patient satisfaction, emotional health, symptom resolution, function, physiologic measures (i.e. blood pressure and blood sugar level), pain control, engagement and task orientation, reduction in anxiety, quality of life, doctor satisfaction and an increase in efficiency resulting in fewer diagnostic tests and unnecessary referrals.

Systematic reviews of self-management programmes have shown that self-management training has benefits for patients. In addition to improved health outcomes and quality of life, these approaches can reduce hospital attendances and admission, and time off work or school (e.g. Gibson, 2000, Wolpert, 2001) leading to significant healthcare savings and overall national economic productiveness. A major concern in healthcare surrounds the consistently low levels of patient adherence to treatment which can be less than 50% in some instances. Once again, elements of a patient-centred approach such as effective communication, patient-tailored interventions, patient support and a holistic approach have been shown to be

essential to encourage patients to adhere to their treatments (WHO, 2003).

The studies also show that patients often want a patient-centred approach. There are, of course, times when patients don't want to actively participate in their healthcare and a balance needs to be reached between encouraging engagement in care and respecting personal preferences. The results are encouraging but there is still much research to be done to develop a significant evidence base with comparisons and conclusions complicated by the different methodologies and varying definitions of patient-centred healthcare often used.

#### DEFINING HEALTHCARE COSTS AND BENEFITS

There is a need for more research to assess the impacts of patient-centred healthcare and more generally to provide a clearer overall picture of the costs and benefits of a healthy nation by measuring social and economic outcomes in addition to health outcomes. Health status is important and can be assessed through measurement of physiological measures such as blood pressure and clinical assessments such as wound healing. Healthcare behaviour relating to a patient's behaviour and attitude to their treatment should also be assessed. This is because changes in behaviour such as adherence to therapies and self-management of conditions through diet, lifestyle and/or therapies directly impacts on other outcomes such as health status and well-being.

It is accepted that health is not just about the treatment of a condition but about social, physical and mental well-being. But social outcomes are not always considered and patient-centred healthcare aims to bring the focus away from the disease and back to the person. It recognises that a

*'Healthcare that is closely congruent with and responsive to patients' wants, needs, and preferences.'* (Laine & Davidoff, 1996).

*'Patient-centred care is quality healthcare achieved through a partnership between informed and respected patients and their families, and a coordinated healthcare team.'* (National Health Council, 2004).

person's quality of life does not solely depend on the impact of their disease on their health but also encompasses

ill-health is more cost-effective than treating ill-health.

The EU is in a good position to play a key role in changing the culture of healthcare towards patient-centredness, so that patients can access treatments that are right for them. The EU is well-placed to facilitate the exchange of good practice, disseminate information, promote collaboration activities and research and encourage European countries to value healthcare and recognise the link between good health and economic gain.

“Health is not just about the treatment of a condition but about social, physical and mental well-being.”

how the disease impacts on their participation in society, and their physical and mental well-being. Assessments of quality of life can only be made by the patient and therefore patients must have the information and decision-making skills to have a choice – to be able to determine what would be appropriate treatments and successful outcomes to treatment for them. Patient satisfaction with healthcare as determined by patients, their families and/or carers can indicate their satisfaction with care which will have an impact on their health behaviour and overall quality of life.

Accurate representations of the economic, social and health costs and benefits of treatments will help us to determine the most effective and appropriate treatment. In the case of medical technologies, the economic benefits are beginning to be calculated

#### TOWARDS A PATIENT-CENTRED FUTURE

Designing healthcare systems around patients, addressing their needs such as providing access to appropriate treatment, relevant information and

“Designing healthcare systems around patients will empower people to take responsibility for managing their health, leading to better patient outcomes, health outcomes and economic outcomes which will help to relieve the major burden on health services.”

In measuring economic implications, there must be full consideration of the cost of treatment but also comparisons of the cost of not treating a patient, or of using a different treatment and of the implications of treatment such as incidence of hospital readmission and repeat operations. By including these aspects, we will have a better impression of the overall cost of these treatments. In addition to the cost of healthcare, the cost to national economies of ill health and the benefits of a healthier population are not always fully considered when national governments consider their spending on health. There are many obvious benefits of a healthier nation, for example, more people will be at work, resulting in less sick pay and an increase in national productivity improving the economy and secondly, preventing

(Medical Technology Group, 2004) and patients in the EU are finding a voice to talk about the health and social benefits for them. Benefits of medical technologies as stated by patients themselves are that they can improve health and quality of life as they are increasingly less invasive and easy to use, helping people to manage their conditions and lead longer, more independent and healthier lives. These positive patient benefits are reflected in cost-efficiencies with reductions in hospital readmissions and in increased national productivity.

support, will empower people to take responsibility for managing their health, leading to better patient outcomes, health outcomes and economic outcomes which will help to relieve the major burden on health services.

There are many different starting points for patient-centred healthcare and patient involvement depending on national wealth, culture and attitudes. What is important is that throughout the EU and the world, people understand about patient-centred healthcare and patients and patients' organisations work in

partnership with healthcare professionals, providers and policy makers, helping to shape their health systems for the future. ■

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# Looking to the future - the added value of eHealth



By David Lloyd-Williams

This article considers the role of eHealth in the future of healthcare.

## INTRODUCTION

eHealth refers to the use of modern information and communication technologies (ICT) to meet the needs of citizens, patients, healthcare professionals, healthcare providers as well as policymakers. It is a shorthand label for the wide range of uses to which information technologies are put in the healthcare setting, encompassing health-related labels such as Health Informatics, Health Telematics, Telemedicine and Telehealth. eHealth is not a set of products, tools or applications but a range of responses to a set of requirements in the context of improving and transforming healthcare services.

The traditional measure of value in health for ICT has been cost reduction and cost savings; in the current context of a seemingly inevitable rise in demand and GDP percentage for healthcare, this remains a strong factor for policymakers. However, as eHealth has matured, it has become clear that this is only one side to the added value proposition.

The three key criteria of the EC Action Plan are Access, Quality of Care and Cost Containment and these, along with the overriding need for increased equity, are the starting points for new ways of looking at added value for all levels of healthcare policy from the

citizen through to the European Social Model.

There are three broad streams:

- patient and professional mobility;
- citizen-centred health systems;
- improved quality and efficiency of healthcare availability.

This implies change, improvement and transformation of current and traditional processes of delivery, taking advantage of advances in medicine, drugs and treatments, logistics, research and information technology. This makes the isolation of added value much more than just cost savings since these changes are often not a matter of choice but an imperative. The effect and value will be reflected in areas of healthcare other than the original process location.

Looking to the future in health is an inexact science; change takes a long time to percolate through to widespread delivery. The approach is to consider three timeframes:

- **current conceptual change** looking at realisation and deployment;
- **transformation** that is necessary or clearly desirable based on current thinking (including radical and innovative ideas);
- **informed speculation** (including global and macro-social and economic thinking).

The time frames used are arbitrary - 2010; 2030, 2050 and precision declines

rapidly. The aim here is to consider views of the future which can form inputs to the baseline thinking for policymakers at all levels.

## SCENARIO ONE – CURRENT CONCEPTUAL THINKING TO 2010

There are two main strands:

**Costs:** governments have to find ways to contain the remorseless rise in the cost of providing care in the developed world; governments in the developed world have to find affordable ways to provide a reasonable level of care.

**Viability:** most governments face the huge challenge of existing healthcare processes and models which over the next decade will be unable to cope with increasing demographic change, current demand crises and growth in expectations.

Two main focus points emerge:

### A) No CHOICE

Some of the main process areas under active consideration include those where there is no option other than radical change:

- care for chronic conditions;
- disease management;
- integration of care including social care;
- surveillance and public health across Europe;

- adaptation to demographic changes and increasing demands;
- patient safety (including medication errors);
- patient empowerment and involvement;
- knowledge support for clinical professionals and for other health and social care professionals, carers, patients, citizens and others;
- good practice care profile norms.

As an example, at a recent conference the diabetes scenario in France was described: There are 3 million diabetic sufferers in France (of whom 500,000 are severe cases). Using conservative practice guidelines this generates the need for 5.5 million clinical hours per year. There are 1 million hours resource available and the prognosis is that the number of diabetics will double within ten years. The current process model is untenable and transformation is the only option. This could mean harnessing other resources including “expert patients”, mass access and education tools to improve knowledge, self management and the sharing of information experiences. This is an “epidemic” where self management holds the key to the reduction of the high costs associated with later complications. The scenario is not unique to France but is there also for Europe as a whole.

The patient safety scenario is along similar lines: the numbers of deaths and readmissions through medical misadventure are becoming public knowledge. The transformation of the culture of blame will have to be based on eHealth responses. Similar “no option” scenarios exist for other process areas.

## B) INVESTMENT

This scenario derives from a series of underlying facilities that are fundamental to achieving the three key criteria where there is a second and often more levels of value to be derived:

For equity of access, it must be possible to share information which is secure, understandable, and available to everyone who is entitled to see it, irrespective of their location, educational capabilities or socio-economic situation.

This requires secure access infrastructure, common terminology, and multi-lingual capability at each level. eHealth has a major added value contribution; the value is additive as succeeding levels are reached. The rationalisation for the National Programme for Information Technology in England is based on the overriding need to have a national information infrastructure in place to enable the sharing of health information and electronic healthcare records.

For quality of care, information about care processes are required to be captured, stored, secured, shared, monitored and compared – here the processes to be incorporated within the value chain are more complex and diverse.

For cost containment, these things have to be done within an overall context, and the costs assessed not just for the primary application, but as part of an overall programme which fits into and is supported by the levels above. Some existing barriers will have to be tackled, for example, sharing of patient data is still illegal in some EU countries, there is no European pharmacopoeia, and interoperability of health systems

and electronic health records remains a serious challenge.

The most fundamental challenge is the incremental process of implementing electronic record systems at local levels which can form the basis for a longitudinal electronic health record. Technology is not the limiting factor – most of what is needed exists already in some (often imperfect) form; what is missing can be generated by industry in what is one of the largest global markets. The mobile phone, the clockwork laptop are today's exemplars and others will emerge.

Added value for eHealth has to be based on requirements to change, improve and transform health processes to provide better or new services consistent with the local, regional, Member State and European action plans. These have to be described in terms of health processes. The metrics will vary from case to case. This could be simple reductions as per the Call Centre example (cost per individual care); the capability to increase the delivery of a required service as per the diabetes example; a particular capability to deliver a service using eHealth solutions as per the English NPfIT; the support of enhanced facilities via eHealth as per access to clinical knowledge systems or remote diagnosis. There will be many other cases but the common factor is that added value is holistic and spread across a number of institutions or care delivery services.

The two principles of subsidiarity and market forces rather than just the Social Model aspirations should be the drivers for an internal market – these will provide the best combination of full access to safe, high quality and efficient health services within the Union.

The role and value of eHealth is in supporting and enabling this combination at all levels and the key criteria for success for eHealth lies within the “So What” test – does it benefit the patient and citizen in terms of better, safer, more accessible, higher quality healthcare services?

For policymakers there are two key issues – how will they deal with the “chronic care epidemic” and how will they enable ubiquitous access and self-management.

Towards the end of this period, eHealth becomes a redundant label - eHealth becomes part of the process, like the telephone.

**SCENARIO TWO - TRANSFORMATION:  
LOOKING FORWARD TO 2030**

The label eHealth has become redundant, though it is still in the process of becoming the norm support mechanism – deployment has taken longer than expected and other factors have conspired to extend the realisation.

The picture of health has changed – it is beginning to become an informed bottom up process – the paternalism has gone or morphed into high value service offerings. The trends over this period can be summarised as follows:

- integration of health information across all segments including social care, prevention, education and self management;
- the realisation of patient-centred (or rather citizen centred care);
- removal of distance, location, social, educational and economic status as barriers to access;
- concentration on the effective and convenient management of chronic conditions;
- personalised care, intelligent data sourcing and syntomic profiling;

- increasing specialisation of acute care;
- emergence of the “care manager” and “intelligent carer” function;
- ubiquitous access and feedback environments;
- development of commodity and consumer markets within healthcare;
- “just in time” and personalised business models;
- widespread use of care advice, monitoring and treatment compliance networks balancing a shrinking healthcare professional population;
- addition of convenience as a key quality criteria to access, quality and cost effectiveness;
- change in the supply business model to a demand-based, prevention-oriented, self-management directed model;
- development of synergistic top down models in terms of public health, emergencies, pandemics, quality control and comparative assessment.

Ideas for policymaking:

- clear definition of the consequent effects of policy at various levels – European policy will only be effective if it contributes to better care on the ground locally;
- policymakers will need to interact with all the stakeholders to ensure consistency and avoid conflict and duplication;
- if citizens are to become more responsible and active then policy must make this easier, more cost / tax effective, less regulation impaired;
- policymakers will need to understand trends, supply and demand changes, innovation and take these into account;
- the current business model for healthcare is flawed in many ways; often policy makes this worse, is a force for conservatism and tradition and as such often counterproductive;
- priority will be simple effective self-management matched by increasing

- clinical excellence in dealing with the failures, the emergencies and the unpredictable;
- the most cost-effective investment (on a global basis) remains the education of the young mother group and access to necessary treatment and prevention mechanisms in the first five years of life not just in the developed nations but everywhere (linked to poverty abolition);
- for the developed world, policies which improve quality of life rather than longevity will become the focus; for the rest of the world the first five years of life are crucial, thereafter maintenance of quality of life supersedes the need for “failure “care. Care rather than Cure has to be the watchword;
- removing obvious barriers: regulations, terminology, pharmacopoeia, access to good practice, patient safety cultures, infrastructure, EPR's & EHRs, CPOE, ETP, etc;
- vehicles for integrating multi-level policies for deployment;
- sharing and consensus of health issues - how policy can help?
- practical incentives to involve all stakeholders – working together for health.

**SCENARIO 3 -  
LOOKING FORWARD TO 2050**

This is now in the realms of futurism – projections this far forward will be fundamentally influenced by non-health developments – societal development, global economic change, the impacts of global warming, other world events and many other factors. Within this period, most of what we can see ahead, both desirable and undesirable, will be possible – the developed world will have at least partially succumbed to the onset of ambient intelligence though this will have taken hold with different emphases. Every one will have access to eHealth. The key issues for health may no longer be in healthcare

but in the availability of information, clean water, food, subsistence within stable societies; and the prevalence or otherwise of corruption, inequality, economic exploitation.

Within the context of what we currently view as healthcare, the trends can be perceived as:

- self-management and self-managed prevention become key components based on personalised profiles;
- chronic conditions will be an accepted part of everyday life for a significant part of the population, considered not as disease but more like stress, pollution and commuting;
- acute clinical care becomes specialised, feeding self-management as its priority with acute treatment linked to self-management failure, to unpredictable episodes at personal, group and community level;
- genomics, syntomic profiling and other omic advances will also feed self-management;
- information is everywhere but much of it will regress to data and only some will move on to knowledge;
- pharmaceuticals will separate into personalised commodity distribution networks, production and research;
- healthcare will become health; part of everyday life like work.

This is no utopia. Other challenges, man-made, natural and externally generated, will present this world with a similar level of crises, hatred, exploitation, disasters, and political incompetence. Despite all our best

efforts to eradicate disease, to simplify healthcare, to provide a safe, happy environment for our children's children, nature and man's pattern breaking nature, the momentum of complexity and the normal doses of chaos will continue.

#### CONCLUSIONS

The more we look to the future, the more clearly hindsight shows the opportunities we have wasted. We have spent thirty years developing what we now call EPR systems and

healthcare delivery. The emphasis, the responsibility for policymakers is now to find ways of getting everyone involved to work together to make it happen, for everyone everywhere.

The message for policymakers is clear. The stakeholders need help and encouragement to work together to make eHealth happen to generate the added value to be secured from transformation of health processes to deliver safe, accessible high quality healthcare for all. ■

“The more we look to the future, the more clearly hindsight shows the opportunities we have wasted.”

still not everyone has one. We have spent twenty years talking about standards in healthcare IT and we are still talking. We have spent ten years talking about telemedicine and got virtually nowhere. We have spent five years talking about eHealth and still most people do not know what it is, how it will help them and what the benefits are.

In 2005, eHealth tells us some of the things that can be done now to help transform healthcare but also that some difficult decisions have to be made and then acted upon in concert by the stakeholders. There is no added value in talking about eHealth – but only in harnessing it to help improve

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# Revolutionising patient care - medical technology of the future - the potential, the challenges



By Dr. Drago Cerchiari

This article considers the role of medical technology in healthcare today and in the future.

Some exciting medical innovations are in the pipeline today that will contribute to better diagnosis and treatment, from sophisticated home-care solutions to organ or nerve regeneration and targeted nano scale eradication of tumours. In many fields of new and emerging technology, Europe is in a leading position. But bringing that medical innovation to the patient can sometimes turn out to be something close to an obstacle race. In this article, Eucomed chairman and CEO of the Sorin Group, Dr. Drago Cerchiari, explores the huge potential of the medical technology sector and some of the challenges it faces in the European Union.

Just imagine... A heart valve placed into the human heart without opening the chest... or a damaged cervical disk replaced with an artificial implant through minimally invasive surgery... or one simple mouse click and the physician is able to access from his own office a whole range of parameters from a patient miles away...

In 2050, the delivery of health information or medical services through the use of information technology could be the norm. Elderly people and patients with chronic, lifelong medical conditions could benefit most from this type of technology

enabling them to remain in the comfort of their homes, even in the remotest areas, with the people they love. Such new modes of healthcare delivery and homecare technology more generally, have a huge potential for development, not least because they will contribute to optimising the investment in healthcare dramatically, while improving the quality of life and preserving the patient's freedom. This is just one field where the medical technology sector is set to make some spectacular progress between today and 2050. Human tissue engineering is another.

The Scientific Committee on Medicinal Products and Medical Devices of the European Commission's DG SANCO, in its opinion of October 2001, defined tissue engineering as "the regeneration of biological tissue through the use of cells, with the aid of supporting structures and/or biomolecules". Tissue-engineered skin substitutes are already widely used for treating severe life-threatening burns and chronic wounds, for example. New products are under development to treat a variety of increasingly widespread age-related conditions such as arthritis, osteoporosis and heart disease. In 2050, tissue-engineered heart valves could offer new benefits to the patients such as the ability to

"grow" with the patient (treatment of children). Tissue engineered blood vessels could be used to replace damaged or blocked natural blood vessels. Research is being conducted in the field of heart muscle tissue regeneration, as well as regeneration of tissues of the nervous system to treat neurodegenerative diseases such as Alzheimer's or Parkinson's disease. In 2050, it could be possible to regenerate entire organs. A damaged liver or kidney could be replaced with a bioengineered version, originating from tissues and cells extracted from the patient. It may even become possible to regenerate whole limbs one day.

At the same time, progress in understanding the nano scale properties of matter will also lead to new therapies and diagnostic tools. A nanometer is a thousandth of a millionth of a meter. This is about as far down in size as it is feasible to go; a nanometer is equivalent in size to about three to five atoms. Science at the nano scale is not new nor is it one specific scientific discipline. What is relatively new, however, is our ability to precisely manipulate matter at the nanoscale which enables the creation of new types of materials and the miniaturisation of mechanisms and machines. Nanomedical developments range

from nanoparticles for molecular diagnostics, imaging and therapy, to integrated medical nanosystems, which may perform complex repair actions at the cellular level inside the body. One example of this novel type of therapy is T-lymphocytes that are “engineered” to carry, for example, nano scale metallic particles to the site of a tumour where they can be activated magnetically or by using light, thereby destroying the tumour. In 2050, such treatments could herald a new generation in treating cancers or other diseases in locations that are hard to reach by conventional means.

2050 could also herald an age of true patient empowerment. Well-informed, highly knowledgeable about advances in healthcare technology, and mobile, patients will increasingly participate in decisions concerning their health, make choices between treatments and technologies, and travel to seek care abroad.

#### **BARRIERS TO PATIENT ACCESS TO MEDICAL INNOVATION**

Human cell and tissue engineering, telemedicine, robotics, miniaturisation and nanotechnology... these are just a few of the fields of intense innovation in Europe. New medical technologies will increasingly combine different disciplines such as engineering, materials science, biological science, and information and communication technology. They will bring increasingly

increasingly personalised, with medical technology tailored to the specific needs of each individual.

However, this tendency towards technological convergence is blurring the traditional demarcation between regulatory frameworks. The pace of scientific progress is much faster than the evolution of the regulatory environment, and it is becoming increasingly difficult for the regulator to keep up.

Today, some novel technologies may clearly fit under the scope of existing directives such as the medical devices directive (93/42/EC), the active implantable medical devices directive (90/385/EC), the in vitro diagnostic medical devices directive (98/79/EC) or the pharmaceuticals directive (2004/27/EC). However, these directives were not necessarily conceived with new developments in mind. For example, the nanotechnology-based cancer treatment described above clearly does not have a metabolic, immunological or pharmacological action, which is the definition of a medicinal treatment (Directive 2004/27/EC). The mode of action is more device-like and would fall rather under the scope

a new regulatory framework for these products.

If new regulation is required, the challenge is to ensure that patient

“The pace of scientific progress is much faster than the evolution of the regulatory environment, and it is becoming increasingly difficult for the regulator to keep up.”

safety is safeguarded whilst at the same time supporting and encouraging innovation and facilitating rapid and equitable patient and clinician access to that innovation. The complexity and variety of new medical technologies is such that the expertise required to assess them adequately could become increasingly hard to find, hence the need for an EU-wide network of highly skilled and complementary Health Technology Assessment bodies, for example.

Next to the need for a harmonised, appropriate and balanced regulatory environment, a second key element is funding of healthcare systems and reimbursement of new technology. Falling populations, continuing low birth rates and continuing increases in longevity will bring major societal changes in the European Union. Already between 2005 and 2010, the population aged between 65 and 79 will rise by 3.4% (+1.9 million) and from 2010 to 2030 by 37.4% (a staggering +22.3 million). In the same period the population aged over 80 will grow by 17.1% (+3.2 million) and by 2030 it will grow by a staggering 57.1% (+12.6 million)! Healthcare budgets are in dire straits. For example, in 2003, Germany had a healthcare deficit of €3.5 billion; France of €11.5 billion and Italy of €5.4 billion – up from €3.2 billion in 2002.

Ensuring appropriate reimbursement levels is essential to enable patients to benefit from the most advanced

“Treatment will become increasingly personalised, with medical technology tailored to the specific needs of each individual.”

high levels of benefit to the patient such as greatly improved treatment and prognosis; faster recovery times and reduced hospital stays; and a faster return to an active and contributory life. Treatment will become

of the medical devices directive 93/42/EC. Neither the medical devices’ nor the pharmaceuticals’ regulatory regimes are suitable for human tissue engineered products; this is why the European Commission is working on

therapies and technologies. Whether or not a medical technology will be to patients. There is no doubt that between now and 2050, EU Member

“The challenge is to ensure that patient safety is safeguarded whilst at the same time supporting and encouraging innovation and facilitating rapid and equitable patient and clinician access to that innovation.”

reimbursed by public or private health-care providers is an issue and a dilemma for medical technology innovators. There may be many years between the initial concept of a novel product and actually bringing it to market during which time the innovator has no income from that product. If there are uncertainties as to whether there will be eventual reimbursement, then this will certainly be an additional factor for the manufacturer to consider and could, at worst, be a disincentive to investment in R&D.

There is a mosaic of reimbursement schemes within the European Union, with each Member State having its own rules in this area. And with EU governments under growing pressure to control healthcare spending, reimbursement levels are being reduced in some cases and in others, certain types of new medical technology are simply not being reimbursed at all. Financing hospital care on the basis of Diagnostic-Related Groups (DRGs) schemes is increasingly appealing to healthcare decisionmakers, as it is seen to provide incentives to hospitals to treat patients in the most cost-containing way. On the other hand, DRGs are not without risks for the quality of the provided care and by no means free from a potential to be manipulated and abused. In particular, DRG systems do not always have the necessary flexibility to make medical technology innovation rapidly available

States will need to adopt significant reforms of their social security systems in order to ensure both their financial and social sustainability. Health Technology Assessment for example can be a useful tool to make better choices in healthcare. A more effective use of resources and rebalancing between public and private sources of financing through the adoption of co-payment schemes, could be beneficial too. In their study on “Medical Devices – Competitiveness and Impact on Public Health Expenditure” (published by the European Commission in July 2005), Pammolli et al propose a triple diversification of expenditure: a rebalancing of the components of public social expenditure (in many EU Member States public expenditure is, and projected to be, too concentrated on pensions); a rebalancing between public and private sources of financing through the adoption of co-payment schemes; and a rebalancing within the composition of private social

expenditure, in order to strengthen the institutional pillars of pensions and healthcare funds. Another factor that should be addressed is the so-called “silo-budgeting”: the elimination

of boundaries between social services and healthcare services, and between hospital services and homecare services, could contribute to achieving more efficiency in the allocation of resources.

**HEALTH EQUALS WEALTH: MEDICAL INNOVATION IS AN INVESTMENT, NOT A COST**

But one important piece of the puzzle is often forgotten: investing in people's health today will ultimately reduce the burden on society of disease and disability. The development of innovative medical technology in the coming decades can greatly contribute to better health, by helping to achieve faster and more accurate diagnosis, better treatment and faster recovery. Increasingly, minimally invasive surgical techniques are helping to reduce hospital stays and hospital readmissions dramatically, while improving outcomes and quality of life. For example, in many cases, coronary heart disease can be treated today without the extensive surgery required by coronary artery bypass grafting (CABG). One technique is angioplasty with a stent; the surgeon uses a balloon catheter to open the obstruction in a coronary artery, then inserts a small metal scaffold (stent) to keep the artery open. The procedure lasts about 90 minutes. The patient is typically out of the hospital in one day and convalescence lasts one week. There is

“One important piece of the puzzle is often forgotten: investing in people's health today will ultimately reduce the burden on society of disease and disability.”

only a tiny scar. CABG is a considerably more expensive and invasive procedure: the patient's chest is opened and a heart-lung machine takes over the heart function while

the surgeon reroutes the blood around the blockages by attaching vessels extracted from the patients' chest or leg. CABG requires 2 to 4 hours surgery, a hospital stay of at least 5 to 6 days, and as long as 6 to 12 weeks convalescence.

Non healthcare costs must also be taken into consideration. Production losses due to illness, death, and the informal care of people with the disease contribute greatly to the overall financial burden of disease. For example, it is estimated that in 2003, production losses due to cardiovascular disease associated mortality and morbidity cost the EU over €35 billion, €24.4 billion of which was due to death and €10.8 billion to illness amongst those of working age. The cost of informal care for people with CVD in 2003 was over €29 billion.

The ageing of the population will naturally increase the prevalence of chronic conditions, which are particularly expensive to cope with. The International Diabetes Federation estimates that diabetes accounts for between 5% and 10% of a nation's health budget. Today there are 194 million people with diabetes worldwide. If nothing is done to slow the epidemic, the number will exceed 333 million by 2025. Diabetes patients suffer from an increased risk of cardiovascular disease, kidney failure, blindness and amputation. Combined with the promotion of healthy lifestyles, the use of innovative medical technology,

such as blood glucose self-tests, can considerably reduce the impact of this illness. The study by Pammolli et al referred to above includes some striking data relating to diabetes care. For example, it refers to a trial conducted from 1983 to 1993, which shows that keeping blood glucose levels as close to normal as possible slows the onset and progression of eye, kidney and nerve disease caused by diabetes. The trial revealed that intensive control of glucose levels can lead to a reduction of 76% in new eye disease risk; 54% in early kidney disease; and 60% in nerve damage risk. Another trial completed over a period of 20 years revealed that heart disease risk could be reduced by 56%, and stroke risk, by 44%. The authors conclude among others that "When measured in the long-term and considering patients' quality of life as a relevant effectiveness measure, the introduction of different innovations in medicine and in vitro diagnostic can prove to be associated with lower costs". In 2050, a cure for diabetes is likely to be available. R&D efforts are already producing some promising results in the field of transplantation of pancreatic islet cells (from the patient or a donor).

If the fantastic progress in medicine achieved to date is to continue, the European Union must improve the environment for and support to innovation. Eucomed, the European Medical Technology Industry Association, has

made ten key recommendations to boost medical technology innovation in Europe. These include establishing an autonomous network of Medical Technology Innovation Centres in Member States, coordinated centrally, whose role would be to "bridge the gap" between the innovator and the patient. Making Europe more attractive to the best researchers and innovators is essential. EU Framework Programmes should better support Small to Medium Medical Enterprises and medical technology innovation. Two other key recommendations are to create an EU Community Patent and establish a system of financing and improvement of capital conditions for medical technology innovation, especially for SMEs.

*"Health equals wealth."*

As stated by Health First Europe patron and former EU Health Commissioner, David Byrne: health equals wealth! Not only can innovation in medicine contribute to making healthcare systems more efficient. Medical technology innovation contributes to better health and well-being which, in turn, brings wealth and productivity, employment, exports and improved European attractiveness in an increasingly competitive and globalised market. Improving patient access to medical technology innovation should therefore also be a strategic priority to achieve the goals set out in the Lisbon Agenda. ■

## About the Author

Dr. Drago Cerchiari, Chief Executive Officer of the Sorin Group, is the Chairman of the Board of Directors of Eucomed, the voice of the medical technology industry in Europe.

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# EU challenges to safeguard quality of care and patient safety.



By Paul De Raeve and Annette Kennedy

This article considers current and future challenges faced by European healthcare systems and the role of nurses in tackling these.

## INTRODUCTION

Europeans wish for a Europe that is secure and stable with a strong social dimension. They want sound economic performance, healthy living and working conditions and a Europe which ensures that basic goods and services in healthcare are available to all members of society, at a fair price. These values relate to the Lisbon goals which are an attempt to respond to the challenges of globalisation<sup>1</sup>. Europe is part of globalisation<sup>2</sup> and in strengthening the European health policy agenda, patient safety and quality of care need to be embedded within a philosophy of 'European Standards of Care' and 'Health Services Review'.

## IMPACT OF THE EUROPEAN UNION HEALTH POLICY ON MEMBER STATES

Health is increasingly a global matter, and it is not surprising that the European Community is developing a Europe-wide health policy. At European level, the nature of health policy is showing clear signs of going beyond creating a single free market of goods, persons and services<sup>3</sup>. Although healthcare is the responsibility of EU Member States, globalisation is driving health system reform throughout the enlarged Europe. Through its Directorates, particularly DG Sanco, DG Employment, DG Education and DG Internal Market<sup>4</sup>, the Commission has created a body of legislation which impacts on the health systems of Member States. Some policies, such

as the free movement of patients or the patenting of pharmaceuticals, have been driven by the priorities of the internal market. This agenda has also been influenced by the Directive on Mutual Recognition of Professional Qualifications, the proposed framework Services Directive and the Working Time Directive. Other areas, such as the European Centre for Disease Prevention and Control, and action on healthy lifestyles, are attempts to establish a European public health policy. Furthermore, the European Court of Justice has also issued a series of significant judgments on health policy<sup>5</sup> which have had a far reaching impact on Member States. Together, these initiatives have had an important effect on the policies, structures and processes of national health systems<sup>6</sup>.

Within the European Member States, reform of healthcare systems has, for the last two decades, been high on the political agenda. Governments are rethinking the sustainability of health systems amid concerns about cost containment. Reforms have focused on reviewing the financial basis of the system in order to control costs, achieve greater efficiency, and

maintain or improve equity. Many new Member States and even future EU Member States have clearly chosen for a public-private mix. In many new EU Member States private clinics have built a bridge to the public hospital. Nurses have much higher salaries in these private clinics (so are no longer living below the poverty line) and are supported with continuous professional developments, in the most sophisticated and technological ways, which aren't even available in the EU 15. The nurses average salary has risen from 250 Euro to 750 Euro a month. Physicians and nurses are working in partnership to get the best outcome for patients and health ministers when presenting the new health system reforms based on these models. Although politicians and policymakers have been tackling the challenges of higher expectations from patients, and the changing demographic and epidemiological profiles of their populations, Europe keeps on struggling to find its identity in the European Social model. Susan Gorden, an American journalist, is very clear in her position: "Do not take the American model". We have the evidence it is not working, especially in relation to quality of care, sustainability and

<sup>1</sup> Presidency Conclusions (2000) Lisbon European Council

<sup>2</sup> Giddens, A. (1999) Globalisation The Reith Lectures No.1, BBC London

<sup>3</sup> Byrne, D. (2004) Enabling Good Health for All. A reflection process for a new EU Health Strategy. European Commission

<sup>4</sup> European Commission (2001) The Internal Market and Health Services. Report of the High Level Committee on Health

<sup>5</sup> The cases of Kohll & Decker, & Smits and Peerbooms

<sup>6</sup> European Commission (2003) High Level Reflection Process

equity.” Although the 25 (28) Member States want to keep their individual social model and realise that this is not providing any sustainability at national, nor European level, we need to come up with a better solution.

#### CHALLENGES FOR THE NURSING PROFESSION

As free movement of persons is one of the fundamental freedoms guaranteed by the European Treaty, we need to make sure that EU standards in care, standards in education and standards in health outcomes are met at EU level, to comply with global challenges. Current European trends in health system reform, with their overarching concern for cost containment, have had a downside for nursing in many European countries. This is reflected in cuts in nursing budgets, the loss of a nursing voice in governmental decisionmaking processes, increases in nursing workloads, and serious concerns about patient safety and the quality<sup>7</sup> of care. A shortage of nurses worldwide has led to substitution of nurses with minimally trained unlicensed assistants providing direct patient care<sup>8</sup>. Nurses are highly qualified and competent and their roles should expand in line with changes in the delivery of care and the European Working Time Directive.

Furthermore, nurses are caught up in the problems of the socio-economic situation of their country, hampered by old prejudices and customs and are still very much under the authority of physicians<sup>9</sup>. Therefore, we believe that our future European Social model can only be safeguarded if we look at the health system outcomes, the clinical, social, political and financial outcomes.

In order to obtain healthcare system reforms based on criteria such as harmonisation, competition, accountability, effectiveness and solidarity, different stakeholders need to develop strategies for the construction of valid partnership relations. Exploring these partnerships requires the identification of effective leaders who are skilled in developing and implementing policies

to efficiency in work, quality in service and working conditions, (are needed) as well as continuing training modules. Prescribing medicines in nursing is a very good example within the context of health system reforms and a few Member States have evidence that their system is working well, but it is very difficult to ‘sell’ at European level. Member States, professional

“In order to obtain healthcare system reforms based on criteria such as harmonisation, competition, accountability, effectiveness and solidarity, different stakeholders need to develop strategies for the construction of valid partnership relations.”

in different areas of the health system. History tells us that existing models are not successful. It is important to develop effective strategies where all partners have equal opportunities and equal authority. These partnerships need to focus on outcomes, in a way that will lead to improving the health gain of patients/clients. The equation of partnership relates to the capacity of the stakeholders, the opportunities they have and their willingness to drive the policy agenda.

Capacity relates to the degree to which a nurse or doctor possesses task-relevant skills, abilities, knowledge and experience. Unless they know what is supposed to be done and how to do it, high levels of outcomes are impossible. Clear occupational profiles, job descriptions and changes in new occupational profiles in relation

organisations should constructively share their positive outcomes to be constructive in the acknowledgement of the existing challenges in partnership.

Having the opportunity to perform is an important ingredient for strategic change and reform. Nurses may lack this opportunity not because of poor equipment or outdated technology, but because of poor decisions and outdated attitudes within leadership, which is the key to successful outcomes. In relation to other healthcare professions, 80% of nursing care relates to patient care. Unfortunately, only 45% goes directly to the patient due to administrative and ‘outsourcing’ activities by other health professionals. Therefore, it is essential to include nurses and nursing in decisionmaking in order to get the full picture on care

<sup>7</sup> EU Luxembourg Presidency (2005) Conclusions and recommendations on “Patient Safety – Making it happen” Conference Luxembourg Presidency

<sup>8</sup> Buchan, J. & O’May, F. (1999) Globalisation and Health care Labour Markets: a Case Study from the United Kingdom. *Human Resources for Health Development Journal*, 3 (3), 199-209

<sup>9</sup> De Raeve P. (2004) The Free Movement of Nurses: A win-win situation if based on ethical recruitment guidelines. *EuroHealth*



and to be able to facilitate a paradigm shift.

Finally, the willingness to change relates to the degree to which an individual both desires and is motivated to exert effort towards attaining particular levels of outcomes. This concerns the personal choice of the individual, but the motivation is influenced by factors such as low pay, stress, workload, poor image and working conditions. In building these partnerships, different stakeholders expect a lot from the nurses, and most of it is taken for granted. Only strong partnership, with equal rights and obligations, will guarantee a high quality and safe healthcare system in Europe.

#### PEER REVIEW AS A VEHICLE TO FACILITATE CHANGE

The main driver of a high quality and safe healthcare system must be based on better health for everyone<sup>10</sup>. The aims to guarantee this high quality and safe healthcare system in Europe is threefold:

- To deliver a consistent standard of healthcare to individuals in all of the EU;
- To develop a European Accreditation Mechanism based on national developments which comply with well-established global frameworks;

- To implement a holistic and transparent system of accreditation which is easily recognised across borders.

The increasing mobility of nursing and the healthcare workforce and the willingness of individuals to seek healthcare and health services beyond their national borders have provided an impetus to health service providers to secure national and international accreditation for their services. This has led to an increasing number of players becoming involved in the regulation and credentialing processes. A multiplicity of terms is applied to Quality and Safety, such as standards of care, peer review, benchmarking, regulation, licensure, accreditation, credentialing, etc. The emphasis, irrespective of terminology, should be on evidence-based practice and assessment of outcomes in relation to established standards. Therefore, there is an urgent need to explore the current context of professional preparedness in Europe. This, to deliver a consistent standard of healthcare to individuals in all countries within the EU in terms of education, competence, codes of practice and clinical outcomes. There is a need to develop a European accreditation mechanism, based on National developments,

which comply with well-established global frameworks whereby there is evidence of validation of standards and transparency of the processes. Many countries worldwide are in the process of developing bilateral, international and regional mutual recognition agreements whereby professionals, their qualifications and credentials are recognised across borders. There is increased interest in streamlining the accreditation standards, processes and mechanisms to facilitate ease of movement of competent professionals holding transferable credentials. However this raises many issues which need to be resolved, not least the issues of cultural and language competence and the role and responsibility of key stakeholders and having a shared understanding of the term accreditation. Accreditation is a means of assuring quality and protecting the public by confirming that individuals, programmes, institutions or products meet agreed standards. Accreditation is more and more commonly used in the EU whereas credentialing is used in the East, Canada, America, Australia and Africa.

Whatever the term we choose, doing the right things, to the right citizens, in the right way, at the right time, using the right resources, in the right place every time and delivering the right services even better the next time, equals quality.

And we do not have to reinvent the wheel! Colleagues in other fields have given evidence of successful reforms and concrete outcomes by establishing an accreditation system within their organisation. In 2003, the International Planned Parenthood Federation (IPPF) began accrediting whereby all of its members (over 150) are reviewed to ensure complete

<sup>10</sup> Kennedy, A. (2005) How can we meet the aims of a high quality and safe health system in Europe? Health Services workshop, Open Forum, European Health Policy Forum

compliance with IPPF membership standards. Successfully addressing issues of quality, effectiveness and accountability are key to the future viability of IPPF and its members. At the national level, the accreditation process has helped individual associations to identify the areas where it needs to improve in order to better serve its clients.

At both national and international level, the accreditation process can be seen as a tool to ensure that international best practice is met in quality service provision as well as in the management and governance of associations. Other organisations, such as the European Union of Medical Specialists have a well-established system of reciprocal exchange of Continuing Medical Education credits between the participating countries. Peer review, visitation of practices, outcome measurements, portfolio overview and translation into credits are key components of successful outcomes<sup>11</sup>. Although the Directive of Mutual Recognition of Professional Qualifications didn't take the amendments on a European Accreditation System into account, due to the subsidiarity principle, the Federation of Veterinarians of Europe (FVE) and the European Association of Establishments for Veterinary Education (EAEVE) have jointly established a Europe-wide system of evaluation of veterinary schools at European level<sup>12</sup>. Getting

and maintaining accreditation is a rigorous process that ensures certain standards are met and provides means of benchmarking different schools, nationally and internationally. This is likely to be a stepping stone towards a globally recognised veterinary degree. Europe needs to make up its mind, especially when we want to become the most competitive continent according to the Lisbon targets.

#### CONCLUSION

As Europe manages its integration into the global economy and strives to become the world's most competitive and dynamic knowledge-based society by the year 2010, healthcare stakeholders need to develop policy and practice strategies. Health professionals can no longer shirk their responsibilities for developing mechanisms to safeguard patient safety and quality of care. Exploring the mechanisms of health services review at regional, national, European and international level will provide Europe with safe standards of care, in comparison to the rest of the world. Therefore all EU countries should have a nationwide mechanism for the continuous monitoring and development of the quality of its healthcare

system outcomes. This mechanism should be consistent with a European framework of agreed standards in areas such as education and competencies of professionals, codes of practice, clinical outcomes and equity of access. Achieving this goal will necessitate a new way of leadership within the European health system reform. ■

<sup>11</sup> Maillet, B (2004) CME Around the World: The European Perspective. Presentation Health Professionals Meeting [www.uems.net](http://www.uems.net)

<sup>12</sup> De Briyne, N. (2004) Joint EAEVE/FVE Evaluation system of Veterinary Schools. Presentation Health Professionals Meeting <http://www.fve.org>

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# Access to patient health records - considerations for the future



By Dr. Milan Cabrnich

This article considers issues surrounding facilitating effective access to patient information and privacy in the age of the Internet.

## **AVAILABILITY, QUALITY AND FINANCIAL STABILITY**

In healthcare, we talk about availability of care for all, about financial stability of systems and about the quality of healthcare. Quality, availability and financial stability were set as the main goals for the development and reform of healthcare systems in a European Commission report titled, "Modernising social protection for the development of high-quality, accessible and sustainable healthcare and long-term care"<sup>1</sup>, and were approved by the European Parliament<sup>2</sup> in April 2005. The three interlaced parameters cannot be separated. If we were to concentrate only on quality, the costs would increase and the availability of healthcare would decrease. Likewise, if we were to concentrate on financial stability, there is the danger of decreasing not only availability but also the quality of the available care.

## **QUALITY = QUALIFICATIONS, EQUIPMENT AND INFORMATION**

In order to have quality healthcare, it is important to have qualified medical personnel, who provide the medical care, quality medical equipment, through which the care is provided, and information, which the distributor of healthcare has at his disposition when making a decision. The quali-

cations of medical personnel stem from their education and experience. It is necessary to bear in mind that the medical care is not only given by the doctor. The quality of care depends on the quality of the whole team of doctors, medical nurses and other cooperating personnel, including technicians and other specialists who work with machines and complex technology.

## **GENERAL INFORMATION**

Let us return to information. A whole range of information, (both general and individual) is useful and necessary to provide quality healthcare. General information is the summation of everything known about humans. It includes all information from the area of medicine and related sciences, is the subject of studies, is contained in books and journals and access to it is made easier through modern technology. The use of the Internet as a source of general information is already commonplace providing both medical care and preventive care. Indeed, the Internet is a very good setting for the sharing and exchange of general information regarding healthcare. The

information is of course meant for different users. Information regarding preventive care is meant for the general public and is a part of the support for health promotion and health education. This includes information about healthy lifestyles, disease prevention and treatment as well as a lot of other information. The volume of this information continues to increase. Beyond the question of how to navigate through this large amount of information, there is the more important question of judging the quality of this information. With this in mind, the European Commission prepared a report on the quality of websites related to healthcare<sup>3</sup>. The second group of information related to healthcare, which cannot be found on the Internet is usually meant for doctors and other medical personnel. The Internet is an ideal setting for circulating the newest scientific findings.

## **INDIVIDUAL INFORMATION**

Individual information is always related to a specific person and is sensitive personal data. Individual information is acquired by doctors during a

<sup>1</sup> Commission Communication COM(2004) 0304

<sup>2</sup> European Parliament resolution on modernising social protection and developing good quality healthcare (2004/2189(INI)): Social protection and good quality healthcare. P6\_TA-PROV(2005)0152

<sup>3</sup> Commission Communication : eEurope 2002: Quality Criteria for Health related Websites, COM(2002)0667, 29.11.2002

consultation. In their first years of study of medicine, medics are taught how to acquire information through anamnesis, physical check-up and laboratory inspection. Anamnesis is the acquisition of information from a patient, which relates to not only the identification of the patient, but also a description of his or her problems and their development. It includes previous diseases, treatments undertaken and their results. A whole individual chapter of anamnesis is family anamnesis, which lists the diseases that have occurred in the patient's family. Other examples are work anamnesis and social anamnesis. A correctly recorded anamnesis is an important source of information and often the most important factor in deciding treatment and predicting the outcome.

Physical check-up is another important source of information gained through physical contact and includes information on height, weight, blood pressure and temperature. As more technology infiltrates into medicine, the volume of information gained through the technology increases. This information includes the results of laboratory tests, such as blood tests. Also included in this category are the results of so-called imaging methods, usually X-Ray, ultrasound, tomography or magnetic resonance tests. Another chapter is the information gained through invasive tests.

A completely distinct group of information is that obtained from actual treatment. This information is created gradually as the treatment occurs. It includes, for example, information gained during operations or reactions to medicine, the effectiveness of medicine and any possible negative side effects, all of which is used when deciding the next medical treatment, investigations, or treatment regimes.

### SHARING OF INFORMATION

It is clear that it is beneficial to share and filter individual medical information. It is not possible, nor correct, to gather all the information every time a decision needs to be made. It is therefore necessary that each piece of information, once it exists, is made available for the making of the next decision. The most common source of information is the patient on his or her own history, but the patient does not usually remember all the necessary information, does not recognise the importance of the individual information and does not understand all the information and as a result does not give it in an accurate form to the doctor. In some cases, the doctor meets a patient that is capable of giving little, if any,

detailed information (for example, young children who are not accompanied by an informed guardian).

Another source of information is the written report from a doctor, who provided previous treatment. This information can contain the anamnesis as well as recommending treatment. However, we often come across patients who do not have previous recommendations from another doctor and who do not have any report with them. Even if they do have a report, it does not always contain all the necessary information, but is better than nothing at all. The results of laboratory tests, imaging methods or invasive tests are all considered as medical reports in this context. A medical report can be either in paper





or electronic form sent by email. This latter option is without doubt favourable on the condition that there is proper security of sensitive personal data against unauthorised access.

Information systems of medical centres are becoming the main sources of medical information. In these systems, there is the amalgamation of a large quantity of individual medical information and if the next medical treatment is provided at the same centre, then the availability of this data is excellent and the decision regarding the proposed treatment is much more accurate if the information is correctly used. We now find information technology is facilitating the sharing of individual medical information between individual information systems. Medical information details of individual patients can be stored in databases. Authorised personnel can access these databases and use this information, which is a very convenient form of sharing information when appropriate security measures against unauthorised access are taken. The main question arising is the agreement of the patient to allow a third person, such as another doctor, to access the information. The patient does not always automatically agree to his doctor having access to all his medical information. The main problem with this sharing of information is the

need to know the medical centre in which the previous medical treatment was provided, with the data storage where the information is archived. If the patient has received care from many medical centres and the patient's information is saved in many different data storages, then locating this information becomes unbearably complicated.

#### **THE INFORMATION BELONGS TO THE PATIENT**

There is a very interesting debate emerging about who this individual health information belongs to, who is eligible to access it and use it. It is the author's opinion that despite arguments to the contrary, information must ultimately belong to the patient, and only the patient can decide to whom it is accessible. Doctors do not have the right to transfer among themselves sensitive citizens' personal data, which undoubtedly the individual health information is, without their consent. What remains to be resolved is the method and the shape in which the patient will obtain information, how it will be recorded and how it will be further transferred to doctors providing treatment in future. The first and the oldest method used for communicating this information is verbal transfer. The doctor conveys the result of the examination to the

patient, the patient remembers it and conveys it to another doctor. This method is simple, but the least reliable. The transfer of a written report is another classical method whereby a report is sent by mail to the doctor who will be providing the next care to the patient. A written report can be sent by the messenger, most likely by the patient himself/herself. If the patient has the report with him/her, it is sure that the information will be available where the patient is and where the next series of care is being provided and decisions being taken. However, if the report is being carried by the patient, there is quite a high risk of the messenger failure – the patient may forget, lose or destroy the report.

#### **THE HEALTH BOOK**

The health book is the tool for sharing an individual's health information. The health book belongs to the patient. Individual doctors make their health records into the health book. The patient can make himself/herself familiar with the information recorded in the health book and can then show the book to other healthcare providers according to his/her decision. The patient has all the information with him/her, thus the information is usually always available. The idea of the health book is not new, for example, it was used in the Czechoslovak Army for several decades. The health book can have various technological designs. The classical form is a paper booklet, notebook, into which the doctors write the individual information. Such design has its own limits. The paper form of the health book has a limited capacity and may be forgotten, lost or destroyed. Moreover, information stored in the paper health book is not protected against unauthorised access in any way. An increasingly popular technology is the chip card which has many advantages compared to the

paper health book. The information can be more easily written into the chip card by means of the information system used by the doctor and can be easily read. Information is far better protected against unauthorised access. Along with individual health information the chip card can also carry other information, for example identification data readable optically and electronically or secured electronic signature. However, even the card has a limited capacity, it may be lost or forgotten and the use of chip cards is conditioned by technical equipment.

### IZIP SYSTEM

Project IZIP, started in 2000 in the Czech Republic, selected a new technology for the health books of the patient. The health books are placed on the Internet, are not limited in volume and cannot be lost, forgotten or damaged. The writing and reading from the Internet health book is done through a personal computer connected to the Internet, and there is no need for any special software or hardware equipment for access. The protection of the sensitive personal data is secured at a much higher level than with paper books or chip cards. Another advantage of the health books on the Internet is the possibility to write from several places simultaneously without physical presence of the patient. The laboratories can thus record the individual results in the Internet book online and practically in

real time. Through Project IZIP, every Czech Republic citizen can request the establishment of a health book on the Internet (free of charge). Within a couple of days, the book is established and the citizen obtains exclusive access rights to it. All doctors who have applied can access the system free of charge. The doctors however, cannot read the information without the right being first granted to them by the citizen.

The information in the health book of the patient is accessible through the Internet and the browser of the web pages without any further restrictions from any computer in the world connected to the Internet. Thanks to this feature, the individual health information of the patient is available

without any restriction anytime and anywhere. System IZIP has been used already by 800,000 citizens in October 2005 in the Czech Republic; more than 8,000 doctors have written about 2 million health records (in their health books). The system is debugged, verified and ready to be expanded into other countries.

### CONCLUSION

Healthcare needs fundamental change and should have a deeper focus on the patient. Healthcare is the system of services from professionals to patients, the purpose of healthcare as a service is to fulfil the expectations of the patient. The decisive role in healthcare and its reform cannot be made by the state, nor the health insurance companies, nor doctors nor hospitals. The decisive role must be played by the citizen. The citizen who really gets the actual, not just a formal, right to choose will be equipped with sufficient clear and correct information for decisionmaking and will bear real responsibility for his/her decisions. The providers of the healthcare services in such a system

“The decisive role in healthcare and its reform must be played by the citizen.”

will be professional advisers to citizens and administer their responsible decisions. They will be in competition with each other as competition is the guarantee of continuous increase in the quality of the service. The target is nothing else than the quality, availability and long-term financial durability of healthcare. ■

### About the Author

Dr. Milan Cabrnoc is a Doctor of Medicine (pediatrician). From 1994-1997, he worked as Director of Health for the insurance department of the Ministry of Health and in 1998 as Deputy Secretary of Health for health insurance and legislative area. As a member of the Czech Parliament, from 1998-2002, he worked as chairman of the Subcommittee for drug policy and refund of medical care, and was the vice-chairman of the committee for social policy and healthcare service. Since 2004 Milan has been a Member of the European Parliament and works on the Committee on Employment and Social Affairs.

# Medical innovations in the EU - investing in health, value for society



By Prof. Dr. Günter Neubauer and Philip Lewis

This article considers the existing approval system and reimbursement systems for medical innovations in Europe and the future implications.

## 1. THE FUNDAMENTAL ECONOMIC PROBLEM OF HEALTHCARE IN INDUSTRIALISED COUNTRIES

By using the example of medical innovations in German hospitals, the following article describes the current situation of medical innovation and how innovation finds its way into the healthcare system. To begin with, this section places the situation into a global healthcare perspective.

Developments in healthcare expenditure are influenced by factors both on

menting health expenditure (through the development of global morbidity) and health receipts (limited by national economic development) lead to an increased scarcity of resources in healthcare.

## 2. EVALUATION OF MEDICAL INNOVATIONS

Medical innovation means medical-technical progress whenever this progress generates greater benefit/efficacy relative to conventional treat-

## 3. INNOVATION AND SYSTEMS OF REIMBURSEMENT

Section 1 described the general fundamental economic problem in health economics. This problem is particularly pronounced in the field of medical technology. The economic pressure faced by health service providers such as hospitals, is typically in part passed on to the medical industry. Due to low short-term rationalisation potentials, hospitals' acceptance to introduce higher-quality medical innovations is typically low. Thus, the cost-benefit analyses described in section 2 are an important factor in determining the efficiency of medical innovation.

We shall look at the means of introducing medical innovation into the German hospital landscape. Medical innovation is henceforth

“Increasing divergence between augmenting health expenditure and health receipts lead to an increased scarcity of resources in healthcare.”

the demand side and the supply side. Supply side factors such as medical-technical progress and increased healthcare capacities are driven by demographic change of an ageing population as well as increased individual preferences for healthcare. These mutual influences between demand and supply lead to increases in health expenditure which outpace increases in health receipts. As regards health receipts, the financial amount generated for healthcare is determined by financing parameters as well as the defined catalogue of health services. Overall, limits to increases in health receipts are set by economic growth as well as the employment situation of a national economy. To summarise, increasing divergence between aug-

ment methods. In order to answer questions on economic as well as medical-technical progress, the costs of an innovation must also be taken into account. Costs and benefits are set against each other in order to establish the efficiency of an innovation. Medical-technical and economic progress is guaranteed with higher efficacy plotted against lower or else constant costs/expenditures. However, the most typical scenario consists of higher costs and higher benefits of an innovation. In this case, it must be analysed whether the supplementary costs justify the additional benefits, thus enabling economic progress.



defined as new medical products or methods with a proven medical benefit towards conventional methods of treatment. The examples stated below consist of medical innovation applied to frequent and highly relevant medical problems. With medical-technical progress as the starting point, up to five levels need to be passed in order to successfully establish medical innovation in German hospitals, as illustrated in figure 1.

view of the supplementary benefits, a cost-reducing innovation will automatically always be economically efficient per definition. In the case of cost-increasing innovations, the cost-benefit ratio needs to be tested from the view of individual patients as well as for the national economy as a whole.

At a **third level**, the reimbursement system relevant for the medical technology in question is taken into

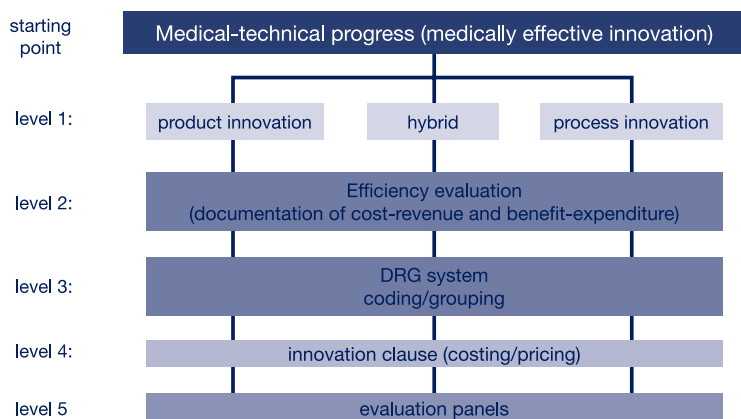
specialist organisations to work together in order to document a high enough patient number.

Once the question concerning the procedure code has been addressed, it needs to be clarified whether an appropriate diagnosis-related group already exists, into which the medical innovation in question can be introduced. If this is not the case, an application must be made to the Institute for Reimbursement Calculation in Hospitals (InEK). Deadlines for applications are set at the end of March of each year, for consideration starting the following calendar year.

At a **fourth level**, once it has been established that coding and grouping allows for the introduction of medical innovation, questions on costing and pricing need to be addressed. While costing deals with the issue of whether a DRG is appropriately calculated, pricing establishes whether or not this allows for appropriate reimbursement, covering the cost of the innovation.

In the case of a cost-reducing innovation, applications in German hospitals are unproblematic from the view of service providers due to higher hospital profits (or else lower losses), assuming constant revenues. Even cost-increasing innovations may for one be outweighed by direct increased patient benefits. They might however also indirectly strengthen a hospital's position through higher quality patient treatment and image improvements. Resulting increases in patient numbers then lead to reduced costs per patient. Further examples of rationalisation potentials are reductions in lengths of patient stay or longer-term substitutions of personnel. Social health insurance funds may also be persuaded to finance cost-increasing innovations, if these lead to longer-term savings potentials. Taking into account that patients also benefit from medical

Fig.1: Steps of introducing medical innovation into the German hospital landscape



At a **first level**, a medical innovation is classified by innovation type, either as a product or process innovation or else as a hybrid form between the two. Process innovations describe new diagnostic and therapeutic methods without the use of a new medical product. A typical example would be the implantation of a knee prosthesis with the help of new, computer-animated procedures. Drug eluting stents are a typical example of a pure process innovation.

At a **second level**, the efficiency of a medical innovation is evaluated. From the viewpoint of the health service provider, the cost-revenue situation is of primary importance. From the viewpoint of social health insurance, medical benefits must be compared to additionally incurred health expenditure. In

consideration. In the case of German hospitals, this is the German system of diagnosis-related groups (DRGs). As regards to coding, it needs to be clarified whether an operations and procedure code (OPS) already exists, describing the use of the medical innovation in question. If this is not the case, an application needs to be sent to the German Institute for Medical Documentation and Information (DIMDI). Specific aspects such as relevance, frequency applied, costs per case and independence of the procedure all need to be addressed in this application. In order to acknowledge a new procedure code, DIMDI requires around nine months for data processing. Having to document the frequency of the procedure applied typically makes it necessary for hospital and medical associations as well as

innovation, a win-win situation may result for all parties involved.

In the case of cost-increasing innovations, a hospital needs to clarify with the contractual partners (the umbrella organisation of the statutory health insurance sector, the national federation of private insurance and the German Hospital Federation) at a national level by October 31<sup>st</sup> of each year on whether or not an innovation reimbursement is granted under DRGs. This necessary step is stipulated in the so-called “innovation clause” of the Hospital Remuneration Act, KEntgG, § 6(2), in combination with the 2<sup>nd</sup> Fee Per Case Amendment Act, article 2, point 4.

In the case where innovation reimbursement is not provided for under DRGs, supplementary payments ‘Zusatzentgelte’ may be agreed upon between hospitals and social health insurance funds. In the case of no consensus, the federal state arbitration board may call for the so-called Hospital Committee to evaluate the case for the following calendar year. In this case, a literature-based review for the upcoming calendar year however seems unlikely, due to the short time remaining.

The Hospital Committee ‘Ausschuss Krankenhaus’ is one of several committees of the Concerted National Committee ‘Gemeinsamer Bundesausschuss’, GemBA. It instructs the Institute for Quality and Efficiency in Healthcare ‘Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen’, IQWiG to undertake scientific evaluations of medical innovations, where appropriate. Thus, at a **fifth level**, a medical innovation may be evaluated by the Hospital Committee in the case of a process or hybrid innovation. Such an evaluation is however optional and not a prerequisite for usage in German hospitals. In the

case of a product innovation, the Institute for Reimbursement Systems in Hospitals (InEK) is directly responsible for possible evaluations.

In what follows, two examples of medical innovations are illustrated in order for the reader to better understand the individual steps necessary for introducing a medical innovation into German hospitals.

A first well-known example is the drug-eluting stent (DES). This substitute innovation towards conventional stents can be classified as a pure product innovation (level one). Drug-eluting stents lead to increased direct costs, but also cause reduced follow-on costs through a reduction in re-stenosis rates, thus being cost efficient (level two). Since procedure codes originally only existed for conventional stents, a codification within the DRG system was not possible. An application was then sent to DIMDI in order to achieve a DES- and non-DES differentiation within the OPS-system. The new OPS could then be mapped onto appropriate DRGs. However, since no appropriate cost differentiation was established within these DRGs, a further application for a DRG split needed to be made (level three). If this DRG split is not granted, there will finally be no appropriate costing (and hence pricing) of this medical innovation (level four). In this case, a possible evaluation can be undertaken by InEK, responsible for product innovations (level five). Until then, supplementary payments can be agreed upon between hospitals and social health insurance.

A second good example of a medical innovation is the implantation of a knee prosthesis with the help of computer-animated navigation programs. In this case, conventional implantations describe the conventional method of treatment. This is a typical process

innovation, since the type of prosthesis remains unchanged (level one). Computer-based support when implanting a knee prosthesis is cost-increasing, since the operation period is increased by around 15 minutes. Tangible benefits can only be evaluated once longer-term results become visible over the next 10 to 15 years (level two). A procedure code (e.g. 5-822.: Implantation of an endoprosthesis at the knee joint) already exists and codification into a DRG is possible (level three). Due to cost increases, appropriate reimbursement is not accounted for. A hospital thus has to inform itself with the self-governing body at a national level on whether the innovation could be reimbursed under existing DRGs (level four). An evaluation by the Hospital Committee may optionally be authorised, in order to establish the cost-benefit ratio of this medical innovation.

#### 4. THE ROLE OF PRIVATE INSURANCE

The triangular picture in figure 2 describes three layers of supply provision of medical technology. The ground layer depicts basic healthcare provision accessible to the general public. Patent-protected innovations do not yet form part of basic healthcare, but are also accessible to everyone. On the other hand, new innovations have not yet found their way into social health insurance. Instead, they first need to go through a process of medical evaluations by institutions such as NICE (National Institute for Clinical Excellence) in the UK, and GemBA in Germany. During this time, private self-financing is the only means through which such innovations are able to enter the market for medical technology.

Fig. 2: The fundamental economic problem of healthcare in the context of medical innovation

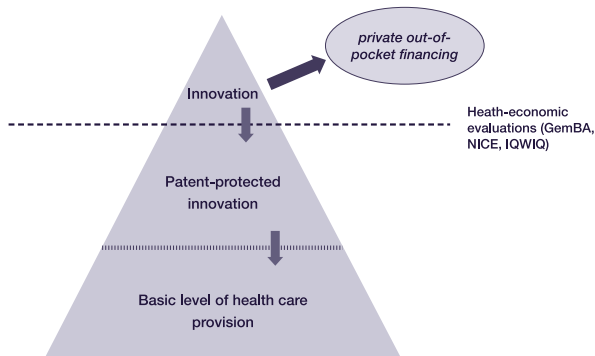
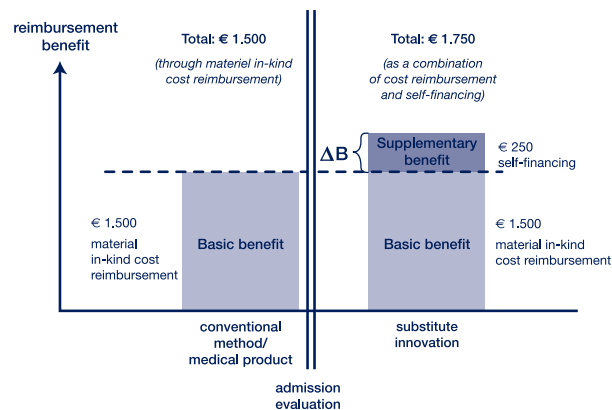


Figure 3 describes this feature in the case of a substitutive innovation. The conventional method/existing medical product provides a basic benefit paid by social health insurance through material in-kind cost reimbursement of €1.500. A substitutive innovation is typically more expensive, however providing supplementary benefit. A possible way of enabling this medical innovation into the healthcare system, is to allow an individual free choice over whether or not to opt for this supplementary benefit. While the basic benefit would continue to be financed by social health insurance, the supplementary benefit would be paid for from an individual's own pocket.

Fig. 3: Private self-financing of medical innovation



**5. THE OUTLOOK FOR THE FUTURE FOR INNOVATIONS WITHIN THE EU**

supplementary benefits of medical technology. ■

The underlying article described the fundamental economic problem of scarcity, which also particularly applies to the health sector. Cost pressure is typically passed on to the medical

industry, making cost-benefit analyses of medical innovation increasingly necessary. Introductions of new medical technology into the healthcare system may take a long time and must be planned well, as the example of innovations and German DRG hospital reimbursement has shown. As introduction of new medical technology becomes increasingly difficult, new methods of private self-financing will have to be established in order to allow individual access to

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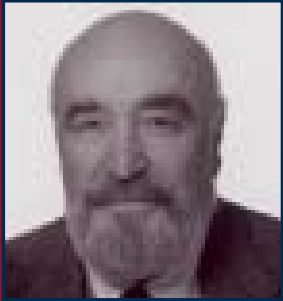
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# The future of quality patient care, clinical safety and operational efficiency



By Dr. Vincenzo Costigliola

This article considers actions that must be taken by all stakeholders to safeguard the provision of quality healthcare in 2050 and beyond.

Making predictions is not an exact science. It is desirable that medicine is available to everyone and provides concrete solutions to acute and chronic problems. Medicine should add more quality to life and seek to win the battle against pain. Even the most complex and costly therapies should be available to anybody that needs them, regardless of their social status. Genetic therapies provide hope. Thanks to biotechnologies and immunology, we expect solutions which will treat the majority of pathologies. The use of robot-

surgeons, IT-based techniques and telemedicine enable increasingly minimally invasive therapeutical solutions with great impact.

As mentioned in the Health First Europe core messages, there are weaknesses in European healthcare systems and a rethink is required in order to meet current and future health challenges. A brief overview of healthcare systems in Europe may help us understand the differences that exist between our EU healthcare systems. Health systems in practice vary considerably

from country to country and depend on several factors including the economic, political and working culture of the country, its economic situation and demographic trends. In the European Union, health systems are organised in:

- Bismarkian systems;
- Beveridge systems;
- Mixed systems.

The Bismarkian system was established in the 1880s, as a social insurance. It consists of obligatory professional social assistance, financed by a tax





on salaries paid by the worker or the employer. It covers social risks (accident, sickness, old age) through obligatory contributions to distinct schemes of support.

The Beveridge system was established in the immediate post-war period, as a national health service. It is based on the principles of universality (all the population is covered), uniformity of coverage (regardless of the amount contributed) and unity of management (given to a public service). It is wholly financed by the state (tax-based).

The mixed system provides for health-care provision and foresees obligatory professional social assistance

Although a lot of progress is being made in the domain of economic and political union, there is still no common healthcare system in Europe. Special agreements among Member States do exist which confer upon European citizens the right to be treated in all Member States.

#### THE CURRENT SITUATION

Access to medical treatment is everybody's right and is embedded in European legislation. Generally, today's patient is more informed and more

motivated than in the past. Patients are more and more demanding in terms of medical performance. They want treatment in shorter times and a reduction in the occurrence of medical errors. The patient expects higher levels of safety in clinical operations.

Demography is changing: we are facing the phenomenon of an aging and multi-ethnic population and at the same time the number of people suffering from chronic diseases is growing.

Medicine is changing. The main actors' needs, namely patients and doctors, have changed. Roles, strategies and interventions by national healthcare institutes and insurance companies

have changed. The organisation of healthcare is undergoing changes as well. Medical treatments have to meet management and efficiency criteria. In order to succeed in this changing environment, we have to redefine roles and decide what we intend by economic assessments.

#### ACTIONS TO BE TAKEN

Firstly, those responsible for taking political decisions at European and national level, in order to ensure high level standards of healthcare in 2050 and beyond, should aim to reduce health inequalities. This approach could include:

- consideration of the need for health-care and cost containment;
- defining professional roles and tasks for doctors;
- supporting patients' and healthcare professionals' mobility ;
- supporting and promoting understanding among Ministries of education responsible for universities and Ministries of health responsible for medical practice;
- promoting quality assurance;
- supporting the development of new and flexible modes of healthcare delivery;
- promoting the concept that "Health equals wealth", in that health is a productive economic factor in terms



of employment, innovation and economic growth.

In order to ensure high level standards of healthcare in 2050 and beyond, doctors specifically should:

- take part in the management of the social and healthcare system;
- manage resources (which are often insufficient);
- respond to and deal with new social-economics needs;
- be able to use innovative technological solutions provided by industry;
- make full and appropriate use of all diagnostic and therapeutical resources;
- apply all possible systems available in order to avoid and reduce the occurrence of errors;
- be constantly up to date with developments and support improvements in the quality of treatments;
- be ready to work in multicultural societies and handle intercultural dialogue.

Meanwhile, national governments must - in conjunction with healthcare organisations - seek to control rising costs, whilst improving quality of care. The scarcity of resources and the funding of healthcare does not always make the allocation of necessary resources for investment in European healthcare systems possible. Tendencies have traditionally been to reduce healthcare costs and at the same time try to maintain high quality patient care. Healthcare needs to be considered as an industry which delivers patient care services and products that affect the quality of human lives and which needs technology development. In a globalised world, governments must take into account geostrategic changes in politics and medical ethics. In recent years, private insurance companies have become increasingly present on the healthcare market, offering additional services and developing

strategies which make it easier to access complex medical treatments. Although unfortunately, in some instances this has led to health inequalities.

As such, insurance companies and professional structures, together with academic authorities and patient organisations, must:

- set the implementation and control criteria for quality patient care;
- set quality standards in basic medical education;
- set quality standards in clinical safety ;
- set quality standards in operational efficiency;

- provide continuing medical education;
- reduce asymmetry of information;
- ensure that patients and clinicians have equitable access to modern, innovative and reliable medical technology.

Finally, medical schools are particularly involved because of their educational role during the pre-graduate, post graduate phase and in Life Long Learning. This involvement demands that medical schools:

- take into account the aims of the Bologna process and Declaration and incorporate them in pre-graduate courses;





- educate MDs to respond to the needs of the changing healthcare requirements and the challenges of new technologies;
- respond to demands for new specialities;
- propose opportunities to respond to the increasing demand for Life Long Learning;
- promote student and professor mobility;
- promote the diversity of teaching-learning;
- create networks which enable the recognition of foreign diplomas.

At present there is little harmonisation across the EU, despite the fact that

different initiatives are being carried out at all levels. A new approach for tomorrow's medicine is to plan new strategies, taking into consideration new social determinants of health such as: life expectancy, stressful circumstances (anxiety, depression), mothers and young children, poverty and social exclusion, environmental factors and workplace, job security, social support, abuse of alcohol and drugs, food supply and nutrition culture. These factors need to be addressed not only from a medical point of view but also in terms of organisation, social legislation and financial commitment.

The quality of patient care, clinical safety and operational efficiency, is a legitimate aspiration which can be achieved. All the points mentioned above should be discussed and analysed in more detail so as to turn this aspiration into a reality by 2050. ■

## About the Author

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European Medical Association (EMA): <http://www.emanet.org>

# Prevention and detection - the future of diagnostics



By Christine Tarrajat

This article looks at in vitro diagnostic testing and what potential it holds for the future of healthcare.

Turning the clock back 50 years, most of today's life-threatening pathogens such as HIV/AIDS were not yet discovered and cardiology and oncology were in their infancy. While such diseases and health conditions have developed and come to the fore, medicine has also come a long way over the course of the last five decades. In vitro diagnostics in particular has been an area of constant innovation.

In vitro diagnostics provide information of value that forms the basis for better decision in healthcare. The results of in vitro tests are a unique source of objective information about your state of health or disease. Valuable information about your state of health, about your body and how it functions can be obtained by taking samples (e.g., blood, tissues or urine) from the body and performing tests on these samples. These tests include measuring the concentrations of various chemical and biochemical components, counting cells, measuring physical properties of the sample, microscopic examination of cells and other structures or making biological cultures. Healthcare professionals refer to these tests as in vitro diagnostic (or IVD) tests because many were originally performed in a test tube (in vitro is Latin and means literally "in glass") and because they are mostly used to help determine (or diagnose) what is wrong with a patient.



While many medical laboratory tests are used in diagnosis, perhaps in connection with an infection or an accident, in vitro tests are increasingly being used to monitor the treatment that is given. One of the first steps

after a medical examination is often to take a blood sample and to request the medical laboratory to carry out a number of in vitro tests. The results of the tests are used in disease management to assist the doctor (in the

hospital or in general practice) in making the best decisions about treatment. Laboratory tests are also widely used in prevention of disease, for example, to screen populations or groups for hidden disease or risk factors and some tests are being used increasingly in health management to check personal health status. The results of these in vitro tests provide objective information to help establish the state of health of individuals, as well as to indicate the state of health of the general population as a whole. The technology used is

diverse, complex and often at the cutting edge of development.

Recent developments of diagnostic tools (e.g. tests based on molecular biology) offer devices with better sensitivity, specificity and reliability, providing an increasing amount of information (such as phenotypes, genotypes), allowing us to identify a disease earlier, at pre-symptomatic stage of an illness, and minimising the risk of misdiagnosis. The analyses produced are now highly automated, reducing labour and allowing screening

of a large number of samples. User-friendly devices can be used by medical professionals (Point of Care testing) or by the patients themselves at home (self-testing). The samples taken are smaller and less traumatic (other body fluids than blood are more often used), and the results are obtained faster (in minutes instead of days or weeks in the past). Information technology further helps to reduce potential errors in test requesting, sample identification and transmission of the result to the doctor.



In the future, these trends will be reinforced, in that the general population will be more educated and knowledgeable in the field of medicine. Such knowledge will increase the demand for diagnostic testing. Better and more accessible information will create higher demand. Advances in molecular testing and automation will result in an increased demand on the education and training of lab personnel. The standards and quality of diagnostic tests will become global and not regional. US and European Union IVD regulations may be replaced by new worldwide standards and regulations. With the possibility of travelling and living in space, a new field of diagnostics will develop: space medicine!

The application of new techniques from the electronic industry have enabled the miniaturisation of bio-sensor(s) (sensor containing a biological element, such an enzyme, recognising and informing about the presence of a molecule) used in IVD tests ("Nanodiagnosics"). Ultra-sensitive biochips will provide a full medical diagnostic from one sample. Several analytical tests will be incorporated into "lab-on-a-chip" devices. Some diagnostic nanobiodevices called "gene-chips" will be available to measure parts of the genome. 'Cells-on-chips' will be available for pathogen or toxicology

screening. Combined techniques between in vitro (probes and markers) and in vivo diagnostic (imaging technology) can be envisaged, as advancement in in vivo diagnostics will offer minimally invasive implantable devices.

Combined techniques between diagnostic and therapy, known as "theranostics" could be one of the major healthcare tools in the future (the "Find, Fight and Follow" concept of early diagnosis, therapy and therapy control) and will allow for personalised therapy. Nanoparticles carrying therapeutic agents into disease cells will check for over dosage before becoming active, thus preventing drug-related poisoning.

In the control of diabetes, the evolution of new insulin will make the necessity

of injection less frequent. In parallel, insulin pumps will continue to be developed for better patient compliance or adherence to treatments. Self-monitoring systems will become less painful and more precise. Continual monitoring systems will eventually substitute the ones currently used today that provide patient with "spot data". The patient will therefore receive real time information on his glycemic level. The parallel development of self-monitoring instruments with continuous measurement and insulin micro-pump systems will make "artificial pancreas" available that could "self-regulate" insulin infusion, taking into account the glycaemia concentration that is continuously measured. Furthermore, advancements in communications means will allow the glycaemia and insulin micro-pump values to be transferred to the physician

or the diabetes centre in real time. It will therefore be possible for the physicians to monitor their patients remotely and intervene if necessary (e.g. by regulating insulin quantities) or to give them instructions.

Close iterative cooperation between diagnosis and intervention will have resulted in vast pharmacogenetic know-how translating individual metabolic fingerprints for use in personalised medicine, tailored to individual needs as the broad common standard. All cancer therapy will be based on individual molecular fingerprints. The increased understanding of genomic information will have subdued the impact of cardiovascular and other multi-morbid metabolic diseases as well as mental illnesses. The evolution of information technology for healthcare applications will have potentiated



effectivity and speed from emergency settings and hospitals, right to people's homes, providing enhanced safety on the one hand and greater flexibility for those affected by the remaining chronic diseases, on the other. As a result, life span will have increased, also based on improved diagnosis of predispositions and the possibility to effect gene therapy and germ line gene therapy, as far as the ethical consensus permits.

In 2004, the European IVD Market was estimated at €7.803 million (based on 14 EU countries - EDMA source). It can be expected that by the year 2050, the contribution of diagnostic tests, procedures and knowledge will have had significant impact on the delivery of healthcare in all important areas, such as disease detection, administration of therapy, monitoring of therapy success, as much as effecting an optimised utilisation of healthcare resources.

By 2050, European healthcare systems will face the difficult challenge to achieve a status quo between affordable technologies and treatments, possible waves of infectious pathogens such as SARS or Bird Flu through Europe and the needs of a relatively healthy but aging population. There is a great potential for healthcare to benefit from the revolution in diagnostics technology. However, these benefits will only be achieved if the resources are allocated differently. Today, the IVD Market represents generally less than 2% of the total healthcare expenditure in Europe (i.e.



less than €20 per capita and per annum). IVDs provide critical health

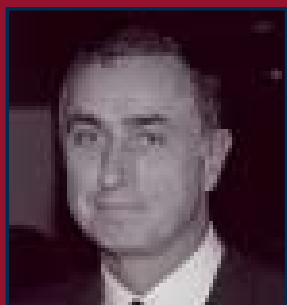
“By 2050, European healthcare systems will face the difficult challenge to achieve a status quo between affordable technologies and treatments.”

information. In the future, greater appreciation and appropriate spending on IVD would have a positive impact on healthcare. ■

## About the Author

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# Patient mobility – what does it mean for the future?



By Dr. Max Ponseillé and Paolo Giordano

This article looks at the place of patient mobility in the future provision of healthcare.

Patient mobility is regarded as a major challenge in a Europe that wishes to be considered closer to its citizens. The future of patient mobility looks bright: globalisation will certainly drive patient mobility into a great expansion. Integration in health matters

that benefit from a monopoly that does not work efficiently and that raises the public debt and by consequence taxation. Free competition and liberalisation of services is necessary to improve the European economy. The private sector can play

often, and will, instead chose to create centres of excellence in the different Member States in agreement with national healthcare authorities. As an example, a Member State can specialise in a certain field while another one can provide services in a completely different discipline. This is already seen in practice areas like dentistry and hip replacements. In the future, there will be a greater mobility of patients across the EU. This will extend beyond the EU as well. Nowadays, much of the cross border mobility is outside of the EU. An example would be the agreements concluded between England, Tunisia and India for sending English patients to those countries for lower cost healthcare treatment.

“The future of patient mobility looks bright.”

cannot go without upgrading to a European level what, up to now, has been regarded as a simply national matter. The European Union's functional approach is moving in the same direction: since the beginning, the EU's most ambitious projects have had a bottom up structure, arising from solutions to real issues. In light of the above, in 2050 patient mobility will surely be more developed compared to today. The health achievements that Member States wish to reach are more likely to happen if healthcare is not confined to national boundaries but becomes a European issue clearly based on a good funding sustainability linked to best quality. In Commissioner's Byrne words: *“The future economic growth and sustainable development of the entire Union depends on investment in health – investment that will be doubly important for the new Member States to reduce the gap with the rest of the Union.”*

an important role by investing and choosing to specialise in those sectors where it feels more comfortable. For instance, a country could specialise in a particular branch therefore ensuring the best quality care. However, there are checks such as competition regulation and price controls. These types of barriers create further risks for independent investors which can restrict their investment in new capital expenditure like hospitals. Because of this reason, investors

Financial sustainability has become a basic concept in the field of healthcare. There are too many public structures



The process on patient mobility began a long time ago. Thanks to the European Court of Justice, this matter has gained importance and relevance to national healthcare systems. The ECJ cases have been very proactive in the healthcare field, particularly compared to governments who have lagged behind for various political reasons. Social and health-related questions are always difficult to address at the European level, because of the Member States' competence when it comes to organising those services. A clear example of this is point 5 of article 152 stating that *"Community action in the field of public health shall fully respect the responsibilities of the Member States for the organisation and delivery of health services and medical care."*

This article has remained through all subsequent treaties. Even in the draft Constitution it has continued intact.

Consequently, acting independently and in accordance with the Treaties, the European Court of Justice started the process with several famous decisions such as Kohl-Decker, Smits et Peerbooms, Vanbraekel, Inizan, Leichtle. Despite some of these groundbreaking cases, the different European Councils needed almost two years to modify Regulation 1408/71 on the social security schemes' coordination which were affected by these cases.

However, the lack of clear EU policy in light of these judgements eventually forced the hand of the EU to address the issue of patient mobility. A High Level Group on patient mobility was created within the European Commission to investigate in which way the EU could codify these cases in policy while at the same time exploring the value of patient mobility to the cross-border EU health market. This High Level Group lists several re-



commendations and substantially improves the outlook for improved patient mobility. The European Parliament has also contributed to the debate with several resolutions in that field during the past years.

The current situation can be described as follows: if a patient cannot get hospital care in his country of residence, he is entitled to receive the same treatment in another Member State and his national social security system is obliged to cover all the costs. Concerning non-hospital care to which one is entitled in his/her own

Member State, this may also be sought in any other Member State without prior authorisation. That is the general picture. European institutions or Member States still have to define all the particular aspects of this new regulation. The European Court of Justice stated that in order to benefit from hospital healthcare, the patient needs pre-authorisation from his social security. But this must be given if the treatment cannot be provided in the patient's country of residence.

The High Level Group has focused on the information that should be given to patients in relation to the care across borders. Nowadays, patients do not even know their rights derived from these ECJ judgements, which is why so very few patients consider the opportunity to be treated abroad.

Following the process of open method of coordination, Member States should give all requested information such as:

- the way reimbursement works;
- how much they are obliged to reimburse (according to the rights prevailing in the country of origin, it seems that the reimbursement could not exceed the costs which would normally be charged in the patient's country of residence for the same treatment);
- whether travel costs are reimbursed or not;
- the existence of information centres for patients, etc.

Community regulations have formed a very important instrument of coordination, and the new health card replacing the old E111 document goes in that direction. However, the level of coordination is still at a minimum and one should improve the freedom of movement for patients. The regulation must state that the patient has a free international choice as to his service provider and hospital. The only public health restriction that could be justified is the requirement of a high level of quality that is comparable among treatment providers. This level is guaranteed by the mutual recognition of degrees, equipment and medical devices, as well as medicine.

Mobility of patients is linked to the principle of free movement of goods and services that must be applied to all social security systems. The Community authorities do not have to standardise a treatment or payment system, but rather lay down principles



that respect the right of patients to choose the place of treatment, internationally or nationally and to use all the available establishments, public and private. In many countries such as France, Italy and Germany, the

private sector is at the same level as the public health service. It has been decided to establish agreements between the private sector and the public social security. Patients who, for instance, choose one of those

private hospitals do not have to pay anything. It is their social security system that will pay for them, just as if they went to a public structure.

The competence of the EU covers the coordination of:

- non-discriminatory conditions of access;
- coverage by each country of services freely chosen in another EU country;
- mutual and minimum guarantees of quality and qualification;
- Member States' limitations or obstacles, without actually choosing a system or rules or programmes.

Unlimited freedom of movement of patients can be envisaged in the short-term. It would sound absurd not to allow citizens to seek a fundamental medical treatment wherever a better quality or quicker service can be dispensed. Citizens of new Member States must be able to enjoy the same quality of healthcare as citizens of the original fifteen Member States. The quality of their healthcare systems should be improved but they should also have the possibility to choose what they consider the best structure for them without discrimination.

Statistical data shows that there is not enough patient movement between Member States to undermine national healthcare. Patients have the right to take advantage of all the healthcare services provided by their Member States and beyond in order to avoid

long waiting lists. The concept of European citizenship must be thought through i.e. what rights are recognised to patients. A "Patient rights Charter" is indeed being discussed: every citizen has the fundamental right to receive healthcare services. This shall not be an obstacle for citizens. In the same way, patients need all the necessary information to remove administrative difficulties. There is still a lack of information about available treatments.

In the light of this, it would be useful for the future if the European Commission could approve a decision which enforces and underlines all the European Court of Justice decisions and all the recommendations of the High Level Group. Eventually, this decision should foresee funding opportunities to help Member States to build up the required information system. This in accordance with the principle of subsidiarity.

But what of patient mobility in 2050? Undoubtedly the strains on healthcare systems will rapidly rise given the ageing population. Given that many systems provide "guaranteed" delivery of healthcare to patients, this will call for increased efficiency as costs rise. The result will be a rationalisation of how medical treatment is provided, not if it is provided.

Patient mobility in 2050 will see a large percentage of treatment outside of the home country. The private sector

will have its own place and function within the national and international hospitals network and would be involved in the social dialogue, intended to promote the hospitals sector within the framework of a global health policy. ■

## About the Author

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# Health is wealth - strategic visions for European healthcare at the beginning of the 21st century



By Prof. Dr. Felix Unger

This article looks at the future of healthcare delivery in the EU.

Delivery of healthcare is now a matter for serious public discussion and the future of European healthcare is based on the patient's own responsibility in a free market. Old national structures are seen to have failed and this has resulted in growing public frustration coupled with exploding costs. People react angrily if they are denied access to care or services and in many countries healthcare is considered as a part of social welfare, and is generally a high political priority. This combination gives rise to national state-monopolies with few private exceptions. This in turn has proved to be a source of mismanagement and discomfort to patients. Against this backdrop, Europe is ripe for a European market for healthcare with the essential prerequisite "Health for All". The development of this market will depend on clinical leadership. Key challenges are posed by progress in therapy and diagnostics, which make healthcare more and more specialised and expensive in an environment of an ageing population compounded by declining birth rates.

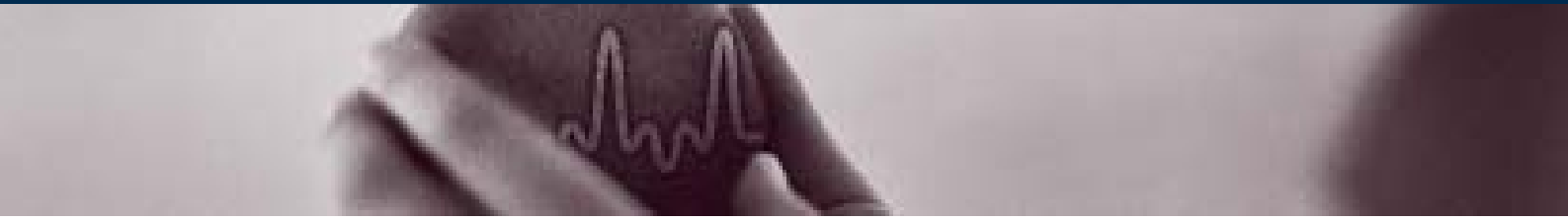
In Europe, medicine expenditure represents approximately 14% of GNP. When all other health markets such as wellness, para-medicine and all related structures in health and care

are included, this is estimated to increase to 20 – 25% of GNP. However, public contributions to the costs of healthcare via insurance premiums and taxes cannot sustain unlimited growth while the working population is shrinking. The potential for cost reduction has to be quickly realised by redefining healthcare packages that can be provided from public funds based on the levels of solidarity in European society. The private sector will cover any additional costs not covered by public funds and subsequently will gain more importance. Finally, young people have to be advised today about providing for their health coverage of tomorrow.

Europe demands a new comprehensive European healthcare system to overcome national barriers and to foster greater mobility in an open market. The European Academy with its Institute of Medicine sees this as a great opportunity to consolidate the different national models and inherited systems in a European Healthcare Market (EHCM) and consequently to stimulate clinical leadership to achieve sustainable reforms. The goals of EHCM are the following:

- healthcare for all;
- health resource allocation based on evidence and efficacy;
- cost control;
- transformation of healthcare from national monopolies to a European market.





The common concern is the increasing cost of provision. Stabilising costs in an environment of a decreasing working population is very challenging. By modernising systems there is potential for controlling costs, the processes for which have still to be identified. Most national reforms have failed due to massive political influence especially where healthcare together with welfare is operated as a state-monopoly.

My strategic vision for the future of healthcare is based on the following goals:

- To provide healthcare for all European citizens;
- To transform healthcare from national state-monopolies to an open European market allowing mobility and better use of resources;
- To identify potential for cost control.

This strategic vision has four mutually dependent parts: the patient is in the centre, and surrounded by the Medical Arts, the Medical Organisation and Financing. It is structured in 4 segments (A-D below) which represent the corner stones for establishing a real European healthcare market.

#### A. THE PATIENT

There is a change in today's paradigm: the patient has become the focal point.

“There is a change in today's paradigm: the patient has become the focal point.”

The patient of today is increasingly well-informed and motivated. The patient is at the centre of all efforts, and all healthcare provisions are constructed around the patient. The patient is both a consumer and a contributor to the EHCM.



#### B. MEDICAL ARTS

The optimisation of Medical Arts and Sciences is an essential prerequisite of the strategic vision. The focus here is on the basics of diagnosis, therapy and prevention. Conservative, invasive and prophylactic principles cover the whole range of possibilities including the prediction and prevention of diseases. To use Outcome Related Medicine (ORM) as a measure of effectiveness, medical conditions have to be classified. The capacity for purchasing has a direct effect on the access of patients and clinicians to all therapies and diagnostics. It is neces-

sary to monitor the effectiveness of healthcare provisions, to perform quality control checks and to measure therapy by means of health technology assessment and outcome indicators. Assessment can be done by patients, clinicians, healthcare organisations

and providers of finance. Research, development and industry play indispensable parts in developing the medical arts. Europe has to encourage and promote innovation in new therapies and diagnostics.

#### C. ORGANISATION IN MEDICINE

Greater effectiveness in the organisation of healthcare can be achieved by the alignment of best practices and in boosting synergies in access and quality. The main nucleus of the EHCM is that healthcare is delivered by doctors for in- and out-patients in acute, chronic and long-term conditions. New educational concepts on healthcare provision will have to be introduced at universities and schools for nurses and paramedics. It will be essential in the future to create and to foster sustainable clinical leadership. There will be no sustainable reform in the future without a solid core of medical professionals. eHealth will play a major role in medicine for information, transfer of findings and avoiding duplication of effort. A patient's "Health literacy" will gain in importance. It is foreseen that 80% of patients will perform "self-care" actions

without the involvement of healthcare professionals.

**D. FINANCING OF HEALTHCARE**

Healthcare financing must be patient oriented and make use of several instruments: insurance premiums, co-payment systems, capitation, taxes, voluntary payments, out-of-pocket expenses etc. Covering healthcare costs will need a combination of national healthcare allocations and individual contributions to provide all citizens with equal access, responsive-

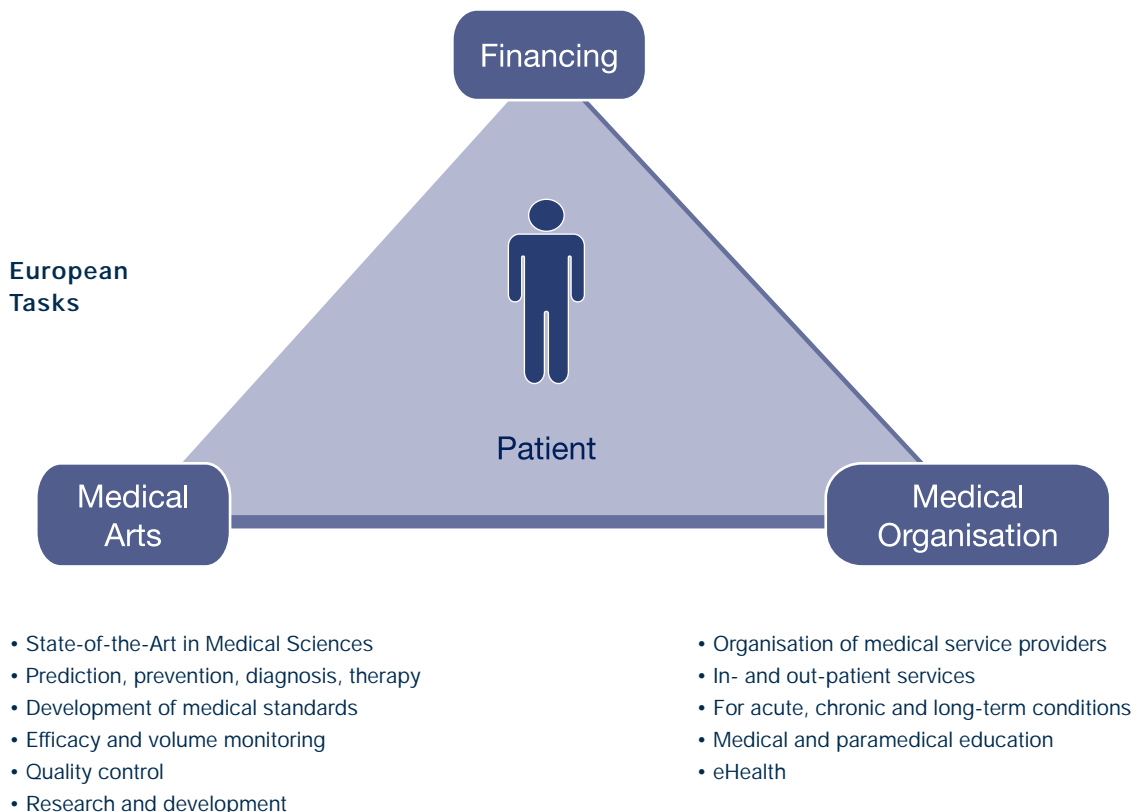
ness and to demonstrate fairness in financing. Surveying Europe shows that there are a variety of systems in operation: including the Anglo-Saxon (Beveridge) universal state-centred, tax-based social security system, and the continental "Bismarck" model financed by social insurance and corporate elements (Chassard and Quintin 1992). The private sector will gain increasingly in importance and in the future copayment systems will be unavoidable, and the methods of financing by solidarity contributions will need to be redefined.

In summary healthcare of the 21st Century must have the patient as the central fulcrum of all stakeholders. This approach will drive necessary changes at both EU and national level, as well as at the level of the private sector, including insurance, medicine, and eHealth. Health policy relating to EU citizens will no longer be the remit of government alone, but rather a nature mix of investment by all stakeholders. ■

Fig. 1: Overview of the European Healthcare Market

**National Tasks**

- Funding the European Healthcare Market
- Providing equal access, broad population coverage and high quality
- Setting reimbursement standards



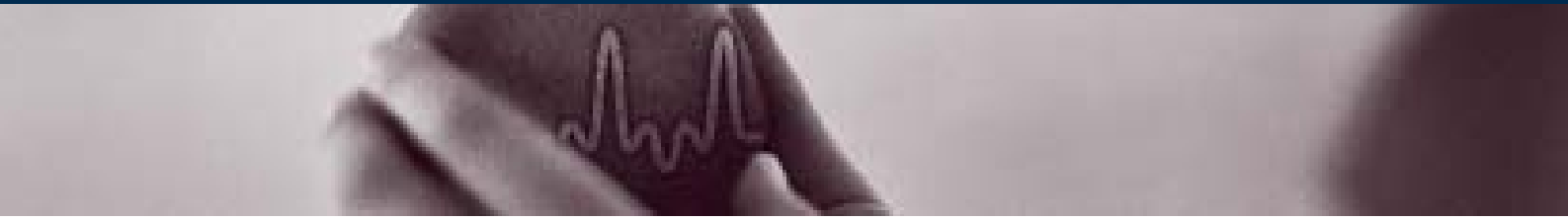


Fig. 2 Structural Reform for European Healthcare

Current: National monopolies	Future: European HC Market
<p> <b>Cost explosion</b>  <b>Rigid public structures</b>  <b>Unequal access to Healthcare coverage</b>  <b>Resource mismanagement</b>  <b>Patient dissatisfaction</b>  <b>Unsatisfactory outcomes</b> </p> <ul style="list-style-type: none"> <li>• No holistic view of the patients and their role in HC</li> <li>• Diverging funding systems (public/private)</li> <li>• Each country has specific, regulated HC organisation</li> <li>• Different principles of HC regulation                             <ul style="list-style-type: none"> <li>– State-run</li> <li>– Self-administration with national regulation</li> <li>– Mixed forms</li> </ul> </li> <li>• Unclear distinction between healthcare and social welfare</li> <li>• Diverging medical usages</li> </ul>	<p> <b>National cost control and solidarity</b>  <b>Health for all in open EU market</b>  <b>Market arbitration of resources</b>  <b>Responsible patient = decider</b>  <b>Evidence-based standards</b> </p> <ul style="list-style-type: none"> <li>• The responsible and informed patient is at the centre and drives the European HC market</li> <li>• Funding systems aligned but maintained as national task</li> <li>• HC organised as a European open market</li> <li>• European HC regulation standards                             <ul style="list-style-type: none"> <li>– Standards for state participation</li> <li>– Standards for self-administration</li> </ul> </li> <li>• Clear separation of HC and social welfare tasks</li> <li>• Common European medical classification based on efficacy and evidence</li> </ul>

### About the Author

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# Invest in healthcare workers = invest in the future of the healthcare sector



By Bert Van Caelenberg

This article looks at the role to be played by healthcare workers in the future of healthcare.

## INTRODUCTION

In the course of the last decade, the healthcare sector has been confronted with ongoing problems as regards

“10% of Europe’s working population works in the healthcare sector.”

healthcare workers, and indeed the future of healthcare workers may not be so bright. By throwing light, in a constructive manner, on some of the most pressing problems in this field, this article should provide European policymakers with suggestions for solutions.

Threats to European healthcare workers are of a diverse nature and are in such a way interrelated with each other that they can have an influence on all actors in the sector. Employers and workers, trade unions, industry, authorities, schools and universities may undergo the consequences of this. In order to effectively deal with these problems, we need to invest in the sector’s biggest capital: its workers. This will be even more important in 2050, when there will be more people who need healthcare, but less people who can help them.

## 1. THE HEALTH OF HEALTHCARE WORKERS

A recent study of the Austrian “Ludwig Boltzmann Institute for the Sociology of Health and Medicine<sup>1</sup>” has shown

that 10% of Europe’s working population works in the healthcare sector

(7% in hospitals). Precisely because “health” is one of the main pillars of our economic growth and development, makes the healthcare sector such an interesting one.

The problem is that workers of the healthcare sector are under heavy health pressure. Indeed, it is widely known that this sector is one of the most hazardous to work in, pathologically speaking. Both physical problems (e.g. infections, MRSA,



AIDS, sharps' injuries) and psychological problems (e.g. burn-out) are very frequent in this sector. That is why health and health promotion have to be seen as a real management task for the institutions. On the one hand, because these institutions depend on the health of their staff for their own continuous functioning (absenteeism, mistake risks, early departure of collaborators, etc.). On the other hand, because they are themselves (co-)responsible for this promotion and maintaining the health of their workers.

Therefore, it is necessary to establish a basis for strategies, programmes and measurement instruments to improve the health of the workers in the next fifty years and practise benchmarking between various organisations and units.

## 2. THE EUROPEAN WORKING TIME REGULATION FOR EUROPEAN HEALTHCARE WORKERS

The work in continuous shifts with permanently staffed services and the shortage of healthcare workers in this sector mean that workers in this sector are confronted with having to perform far too many hours consecutively. Therefore, it is of great interest that a good working time regulation is designed and implemented<sup>2</sup>.

## 3. MIGRATION OF HEALTHCARE WORKERS

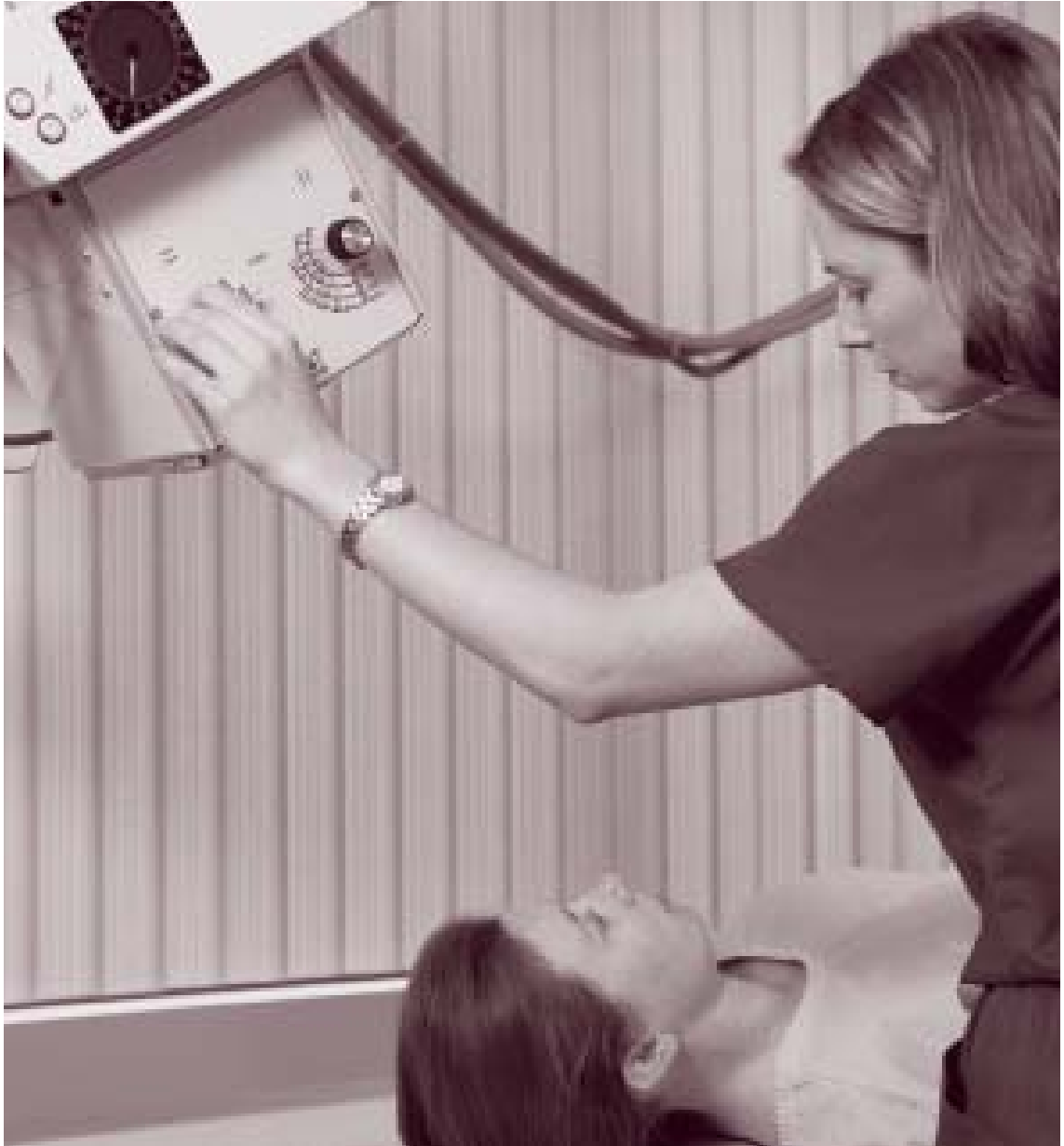
The testimonies given by Poland and Slovakia at the final conference of the NEXT-Study<sup>4</sup> exceeded all imagination. Migration has become such a great problem in Eastern European countries that it risks putting a real threat on public health. Some hospitals even have to close doors on certain days because they do not have enough healthcare workers.



This migration is mostly an economic migration to Western EU Member States, the USA, Canada and Australia. The problem has to be tackled. It also shows itself in African and Asian countries. Furthermore, these migrants are often exploited in Western countries, where they may do the job well but are paid as a cheaper workforce.

## 4. TRAINING AND SKILLS OF HEALTHCARE WORKERS IN EUROPE

There is a great variety of training and certificates in Europe. The permanent evolution of health science requires that all healthcare workers permanently improve their skills. Therefore, it is in the interest of everybody (employers, workers, industry, patients) that healthcare workers acquire the



necessary skills on the work-floor, in accordance with new developments, rather than super-specialise themselves without any guarantee for the future. More permanent training on the units within the framework of lifelong learning is required instead of super-specialisations.

#### **5. DEMOGRAPHIC PROBLEMS AND THE EARLY EXIT OF HEALTHCARE WORKERS**

The demographic changes in today's society are the result of a few basic developments<sup>5</sup>:

- continuing increases in longevity as a result of considerable progress made in healthcare: the age of the population will continue to increase;
- continuing low birth rates as a result of a number of social and economic factors such as difficulty in finding a

job, lack and cost of housing, older age at which people have their first child, occupational choices, study choices, etc.

These demographic developments will have the effect of increasing work pressure and putting even more strain on working conditions in the healthcare sector so that even less people will be urged to choose a job in this sector.

Furthermore, as regards training, it is increasingly assumed that younger people today are better trained and, so, are more productive and more capable of working with flexibility. But people should become aware that flexibility also has its borders. It is precisely because the pressure put on healthcare workers as regards flexibility has reached such a high level, that they are not capable of flexibility anymore.

Europe should invest in better demographic developments for the future.

#### FINAL OBSERVATIONS

##### 1. Healthcare must be a political priority!

Healthcare should get a better place in the political mainstream.

“It is necessary to establish a basis for strategies, programmes and measurement instruments to improve the health of the workers in the next fifty years...”

##### 2. Monitoring of the problem:

Public authorities and government must be key players in eHealth.

##### 3. Healthcare as action programme:

Healthcare must have a place in the future European health action programmes.

##### 4. Invest in healthcare workers:

Healthcare as one of the biggest sectors in Europe must be able to develop itself in the future.

Investment in the healthcare workers is a long-lasting responsibility. ■



<sup>1</sup> Ludwig Boltzmann Institute for the sociology of health and medicine and the Institute for Sociology, HUSO university of Vienna : “Health of the Healthcare Workers” by Sonja Novak-Zezula.

<sup>2</sup> Amendment to 2003/88

<sup>3</sup> Opt out concept = worker can agree to deviate from the working time regulation by signing an opt-out.

<sup>4</sup> NEXT-Study : “Nurses’ Early Exit Study” - <http://www.next.uni-wuppertal.de/download/NEXTscientificreportjuly2005.pdf>

The NEXT-Study is a European research project investigating premature departure from the nursing profession in European healthcare. It is being financed by the European Commission (QLK6-CT-2001-00475).

European NEXT-Study coordination by Hans-Martin Hasselhorn, MD, PhD & Professor Bernd Hans Müller. Department of Safety Engineering, Division of Occupational Safety and Ergonomics, University of Wuppertal, Germany.

<sup>5</sup> See COM(2005)94

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# Standards of care for Europe's aging population - osteoporosis in Europe



By Prof. Dr. Antonio Moroni  
and Amy Hoang-Kim

In this article the effects of osteoporosis on an aging European population are considered, and possible strategies for improved care are put forward.

According to the 2002 UN World Population Prospects, by 2045-2050, the average life expectancy in Europe is expected to rise to 80.5 years from the currently estimated 73.2 years. There will also be more elderly people as one-third of Europe's population will be at least 60 years

old by 2050. As Europe's population ages and becomes more sedentary, the number of people affected by osteoporosis will increase significantly. Hip fractures, which are a severe consequence caused by weak porous bone, are expected to double in the next 50 years.

fracture even when the radiographs appear normal. People with broken bones suffer severe pain and disability, resulting in a loss of quality of life and independence. There is also an increased risk of death, as a result of osteoporosis not being diagnosed in time.

Pneumonia, congestive heart failure, thromboembolic disease, decubitus ulceration, and further generalised musculoskeletal deterioration are frequent complications in bedridden elderly patients. A comprehensive working knowledge of diagnostic modalities, medical therapeutics, and the special needs of the osteoporotic surgical patient will become more important as the population continues to age. Furthermore, widespread insufficiency in calcium and vitamin D intake as well as lack of exercise throughout Europe will have an impact on bone health and on the number of people with osteoporosis in the future. The majority of fractures of the long bones in elderly osteoporotic patients are best managed by early surgical fixation. These fractures are fixed with surgical implants which have been designed for healthy bone fixation. This often leads to a high incidence

of fixation failures and poor functional outcomes. Furthermore, surgery should be kept simple to minimise operative time, blood loss, and physiologic stress.

## SOCIAL COST

Unless osteoporosis prevention and treatment becomes a priority for government and healthcare providers, this growing number of osteoporotic fractures will have a serious impact on society, not just in terms of people's quality of life, but also in regard to increased expenditure for healthcare, rehabilitation and nursing care. In fact, patients with osteoporotic fractures are among the highest risk patients for further osteoporotic fractures, often within one year of the fracture.

## WHAT ACTION CAN BE TAKEN?

Although fractures of the spine, hip and wrist are most typical of osteoporotic condition, fractures of other bones, such as the ribs, humerus, and pelvis are not uncommon. Compared to individuals with no history of fracture, a patient with a prior vertebral fracture is nearly five-times more likely to suffer future vertebral fractures and up to a six-times more likely to suffer hip and other non-vertebral fractures. The risk of any osteoporotic fracture increases exponentially with aging in both men and women of all races.

“By 2045-2050, the average life expectancy in Europe is expected to rise to 80.5 years from the currently estimated 73.2 years.”

Bone mass can be determined with dual energy x-ray absorptiometry (DXA). The rate of active loss can be assayed by the detection of bone collagen breakdown products in the urine. Strategies for the prevention and treatment of osteoporosis are directed at maximising peak bone mass by optimising physiologic intake of calcium, vitamin D therapy, exercise, and maintenance of normal menstrual cycles from youth to adulthood. Coupled with drug therapy should be a comprehensive approach to exercise and fall prevention. Stretching, strengthening, impact, and balance exercises are effective.

**IS GENERAL BONE HEALTH NEGLECTED BY EUROPEANS?**

65% of women past the age of menopause have varying degrees of lactose intolerance and by preference avoid lactose-containing dairy products. There is also constant pressure on the public to slim, and calcium-containing products, most notably milk, are perceived to have high caloric densities. Consequently, whether by choice, habit or design, most Europeans have calcium intakes below the recommended level, particularly in the elderly years. Even with detailed instruction and guidance, it is difficult for individuals to obtain adequate amounts of calcium (specifically, 1,500 mg daily) strictly from their diet. Therefore, supplements are required if age-corrected physiologic calcium intake is to be achieved. Established recommended daily levels of calcium intake indicate that calcium is most effective when taken throughout the day, with no dose being larger than 500 mg at a given time. Dietary sources of calcium include dairy products, broccoli, tofu, and rhubarb.

**THE ADHERENCE GAP: TARGETING TREATMENT**

The survey conducted for the International Osteoporosis Foundation by IPSOS Health, aimed to understand the reasons why women with osteoporosis do not stay on treatment. It showed that 34% of women interviewed either didn't know what the benefits of their medication were or wrongly thought there were no benefits at all. Drawback of treatment identified by women were predominantly related to inconvenience and side effects. 85% of doctors prescribed a bisphosphonate, the most commonly prescribed osteoporosis treatment, and patients stopped treatment too early to get full benefit. Evidence suggests that the communication gap between doctors and patients threatens effectiveness of long-term treatment. Stopping treatment leaves

pendence and increased mortality. Worryingly, 70% of doctors acknowledge that they do not know why so many patients spontaneously stop taking their bisphosphonate medication. While 90% of women view osteoporosis as a serious condition they don't fully appreciate all the benefits of their treatment. Three-fifths of patients questioned felt that focussing on the positive outcomes of treatment - such as knowing they were doing something to help themselves - provided the greatest motivation for continuing their therapy. Conversely, 41% of physicians focussed on negative motivators such as fear, believing the best way to motivate patients to continue treatment is to explain or remind them about the risks and complications of fracture if they abandon treatment.

“Evidence suggests that the communication gap between doctors and patients threatens effectiveness of long-term treatment.”

patients at greater risk of fracture and associated disability, reduced inde-

In addition, while doctors agree on the importance of long-term treatment



*'Ringing the changes: a strategy for older people'*  
- Northern Ireland Report

and 82% said they told patients to stay on therapy for a minimum of one to two years, just over half of patients could not recall being told how long they should continue their medication. The survey shows that where doctors and patients do agree is in relation to how treatments could be improved. Eight out of ten doctors believe improvements in osteoporosis treatment are necessary for effective disease management and three-quarters of those interviewed felt that altering the dosing frequency of bisphosphonates would have a strong influence on adherence. Patients concur, citing reduced side effects and having to take treatment less often as the top two things they think would improve adherence. A Canadian study followed patients with a fragility fracture from five community fracture clinics. It would appear that patients who understand the clinical implication of low bone mass are more likely to seek treatment. Therefore, promoting patient information and patient education are vital to the success of any future fracture prevention strategy.

#### HEALTHCARE STRATEGY FOR THE ELDERLY

Because the primary objective of the orthopaedic surgeons is treatment of fractures, they have not wished to assume central responsibility for evaluation and management of the underlying chronic disease. Identification of these patients through primary care practices has to date been unreliable and incomplete. The development of a fracture liaison service can and should assume the responsibility for assessing and performing diagnostic evaluations (including the use of DXA scans) and making specific treatment recommendations for the secondary prevention of osteoporotic fractures. This is a service in which specialised nurses have primary responsibility for identifying fracture patients at all sites,

both in-patient and out-patient, and providing the evaluation process. An efficient system includes a competent orthopaedic ward staff maintaining a list of fracture admissions between visits by the nurse, using general hospital IT systems to track patients, and working with the clinical secretaries in the orthopaedic departments to obtain copies of all reports relating to new in-patient and out-patient fracture attendances that are routinely sent to primary care physicians from the orthopaedic consultants. In this setting of a nurse-led clinic, recommendations would be made to the primary care physician to commence calcium and vitamin D without further assessment. At the time of bone density measurement, the risk factors for osteoporosis and fractures are identified and discussed. These results and their implications would be discussed with the patient. Educational material about osteoporosis and reduction of fracture risk would be given to the patient. Risks and benefits of possible treatments including appropriate lifestyle modifications would be agreed upon. This DXA report would then be sent to the general practitioner after the DXA assessment. A computerised database is necessary for the management of osteoporosis including fracture history, past medical history, risk factors for osteoporosis, risk factors for fracture, current medication use, DXA results and interpretation, lifestyle recommendations, osteoporosis treatment recommendations and arrangements for follow-up. The lead advocate, who may be from Primary Care, Secondary Care or a Nurse Consultant, is the driving force of a fracture liaison service.

#### PREVENTION OF FALLS AND FRACTURES

Action should be taken to prevent falls and other injuries in older people. Recommended health promotion acti-

vities in the Northern Ireland report *'Ringing the changes: a strategy for older people'* include ways in which to reduce the severity of osteoporosis and also recommendations for safe-proofing the home for the prevention of falls.

#### IMPROVING MEDICINES MANAGEMENT

The work of ISFR and partners is encouraging the local planning and provision of a range of additional or reconfigured services delivered by healthcare practitioners and by specialists in the care of people with these conditions. These initiatives have been aimed at further improving older patients' access to proper diagnosis of osteoporosis. Older people often need multidisciplinary assessment which has to date not been available. The coordinated improvement action is to ensure that no osteoporotic fracture patient spends more time than necessary in the hospital ward. The development of services both in the hospital and the community should provide one-on-one assistance in order for the patients to fully understand their condition and subsequent treatment modality. Therefore, a top priority for reducing pressure on emergency services is the development of improved management of chronic conditions in the community. Furthermore, older people would benefit greatly from increased hospital capacity for elective surgery, particularly in relation to orthopaedics, where intervention makes a big difference to their independence and quality of life.

By 2050, these prescriptions for better treatment and prevention will be well advanced as personal clinical and out-patient care grows increasingly sophisticated on the back of modern technology. This will slowly follow the main trends in patient healthcare – i) the issue of personal

management of treatment and prevention through increased knowledge of their vulnerability and steps that a patient can personally take to decrease their risks of disease or injury; ii) rise and adoption of wellness programmes in which the patient is incentivised to pursue proper health management and; iii) specialisation of clinical functions to deliver centres of excellence around a specific condition or injury. ■

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# Diabetes - about cure, care and prevention



By Dr. Wim Wientjens

This article looks at diabetes as a growing concern in the healthcare sector and how this epidemic should be approached so as to ensure best care and containment in the 21st Century.

Nowadays, diabetes is still an incurable disease and a very serious disease. That's the bad news. The good news is that diabetes is a treatable disease and a manageable disease.

There will be more than 300 million persons in 2025 with diabetes and this will increase further to more than 500 million in 2050 if we don't succeed in changing our lifestyle. In many of our modern societies our lifestyle is

This poses fundamental economic and productivity problems for governments and individuals alike. Prevention or at least delay of any resulting complications has been proven very cost effective and help sustain a longer and more active working life. However, this rising problem will not be countered unless we adopt a new view on patient treatment, not just for diabetes but

notable, complications from diabetes remained a serious health risk.

Diabetes is a chronic condition that arises when the pancreas does not produce enough insulin, or when the body cannot effectively use that insulin. In general, we are talking now about two types of diabetes. Diabetes type 1, in which type of diabetes the production of insulin by the body completely stops. Diabetes type 2, in which type of diabetes there is still insulin production, but the working of insulin is not good. Insulin is necessary to get glucose into the cells of the body. Common symptoms of diabetes type 1 include excessive thirst, constant hunger, frequent urination, sudden weight loss, extreme tiredness, blurred vision. People with diabetes type 2 may have the same symptoms but they may be less apparent. Many have no symptoms and are only diagnosed after several years with the condition.

“There will be more than 300 million persons in 2025 with diabetes and this will increase further to more than 500 million in 2050 if we don't succeed in changing our lifestyle.”

one of the major causes of diabetes. The composition of what we are eating and drinking contributes to this rising epidemic. Too many calories, too many wrong fats and obesity are growing risk factors in the spread of diabetes.

For people with diabetes, the development of one or more serious complications is, of course, personally very dramatic. Blindness (10%), kidney failure (30%), neuropathy (45%), amputations (every 30 seconds a leg is lost due to diabetes somewhere in the world), and heart failure are all follow-on conditions from diabetes.

for all chronic and debilitating conditions.

From the moment insulin was discovered (more than 80 years ago) one could survive by receiving

“Every 30 seconds a leg is lost due to diabetes somewhere in the world.”

injections with insulin. This major breakthrough help millions to survive the traumatic ramifications of the disease. However, while survival of diabetes itself was becoming more

The amount of people with diabetes type 2 has increased tremendously in the last couple of years. The expectations are that the amount of people with diabetes in the world will increase from about 130 million people in

2003 to more than 300 million people in 2025. About 10% of these patients will have diabetes type 1 and about 90% will have diabetes type 2. This disease has the capacity to cripple health systems as they are today.

“The amount of people with diabetes in the world will increase from about 130 million people in 2003 to more than 300 million people in 2025. This disease has the capacity to cripple health systems as they are today.”

When a person is diagnosed with diabetes, three processes start in that person and he/she will play three roles according to these three processes. These processes will become more prevalent for patients over the next few decades and serve as a guide to what will happen with patient care. They are not exclusive to diabetes patients.

First of all, there is a process of good treatment and care, in which process the person with diabetes plays the role of a patient - getting medicines and devices, diagnosing the condition and understanding any possible complications. This is indicative of one of the major trends in treating chronic disease - the informed patient. As the array of treatments increase, patients will seek information on not only the most appropriate treatment, but the cost and availability of such treatment. Information will unleash a whole new set of patient demands with assessment and preliminary diagnosis being shared between patient and doctor, if not challenged by patients.

Second, there is the process of education, in which the person with diabetes plays the role of a pupil or a student who has to learn to manage diabetes in their daily life. A very good self-management of diabetes is

often necessary and in most cases is now possible. This trend towards self-treatment has been around for years, but technology and medicine are now releasing new methods of patient own-care. Increasing homecare solutions and ease of use will allow patients to increasingly self-treat, thus avoiding hospital visits and radically changing the way patients seek assistance. This will have a major impact on how healthcare is delivered as it will no longer simply be the doctor - hospital nexus which drives treatment.

Third, there is the process of being a full member of society, in which the person with diabetes has to play the role of a patient with interests, with all the rights and duties as everyone else in this world. This may seem

obvious, but patient rights will no longer be about demanding in-patient treatment, but equally seeking out-

patient solutions and home care. This will cut across the previous “doctor knows best” approach to treatment and involve a new layer of complexity to patient decisions.

From 1922 (the year insulin was discovered) up to now, much more is known in the diabetes field. Since then many innovations have taken place regarding medicines against the disease itself, including medicines against several follow-on complications, new blood glucose monitoring and monitoring of other important blood parameters, new methods of education, especially regarding psychosocial aspects and new approaches to diet and exercise.

In many countries, National Diabetes Programmes exist with a range of modern possibilities of treatment and including many guidelines and standards. However, the implementation of these programmes are very poor. This mainly concerns the quality and the availability for everyone of proper medicines (including insulin), lack of a critical mass of healthcare professionals, not enough reimbursements for cutting-edge technologies and a lack of investment in new methods of treatment.

Therefore, the first step in the coming decades must be the proper **implementation** of good diabetes care for everyone anywhere in the world. This includes the millions who already have diabetes but are still not diagnosed. Late diagnosis can leave

“Patient rights will no longer be about demanding in-patient treatment, but equally seeking out-patient solutions and home care.”

diabetes undiscovered for up to 5 – 10 years. Complications are already present before the diagnosis takes

place and this requires a whole new level of treatment.

Good implementation of existing knowledge means also the willingness to change treatments, when it is necessary. Many patients with diabetes type 2 start with tablets, but change far too late from tablets to insulin injections or to combinations of several tablets and insulins. This increases the propensity for further complications.

Not only are life saving medicines and medicines against complications necessary, but also treatments which improve all the aspects of having a normal quality life without unnecessary limitations and unjustified discrimination. So in the coming years implementation of good diabetes care and diabetes education will also be characterised by a goal of leaving the patient with a good future quality of life. No longer should treatment be about mitigation of symptoms, but making continued health a priority.

The second main step in the coming decades will be **prevention**. In this respect we have to talk about prevention of diabetes itself and about prevention of diabetes complications. This step involves the two aforementioned approaches – self-education of the patient and training for self-treatment. One of the biggest problems is tackling those who are undiagnosed for diabetes, particularly type 2. A major thrust will be to diffuse information and self-testing as soon as possible. Like annual tests for automobiles for roadworthiness, there



will be a new regime for health prevention involving regular scheduled tests for major diseases, particularly those affected by lifestyle.

The third and ultimate big step for diabetes this century must be a cure. Unfortunately, there are too few signs of exploratory research work in the field of curing diabetes. Of course, these kind of breakthroughs cannot come from practicing doctors, but dedicated R&D departments. Real breakthroughs must come from other disciplines. From immunology, genetics, stem cell research, and vaccination research amongst others. The costs of this research are far below the costs of the treatment of diabetes patients nowadays. Costs analysis finds that investment in finding a cure for diabetes and its subsequent pay-off in terms of the general well-being of diabetes patients is far below the costs of getting people to the moon for instance. The fear of course is that delay will further saddle later generations with the bill for not addressing chronic disease.

Representatives of governmental health departments and patients' organisations from all European countries met with diabetes experts under the aegis of the WHO Europe and the IDF Europe in St Vincent (Italy) in October 1989. They unanimously agreed on general goals for people with diabetes and on many five-year targets in the framework of the St Vincent Declaration (SVD). In

the 1990s, St Vincent became a real concept in the diabetes world. European meetings for the Implementation of SVD were organised (Hungary in 1992, Greece in 1995, Portugal in 1997, Turkey in 1999). The European Association for the Study of Diabetes (EASD) joined the St Vincent movement, and IDF/EASD co-operation continues to thrive today. For several reasons, including the organisation of SVD, the outcome of improved recording of diabetes itself and of the complications (as mentioned in the SVD targets), and the access to good information about the progress of the national action plans were very difficult. But at the same time, WHO Europe, IDF Europe and EASD realised how important the concept of the St Vincent Declaration still is. Even stronger: SVD is more needed than ever. It is still used as a guide to national diabetes service developments. In addition, the epidemic growth of diabetes and the tremendous increase of complications and of the very serious socio-economic impact of diabetes in the many countries of the European Region of IDF and WHO, demand a response at national and regional levels.

Coupled with the SVD, IDF is seeking a United Nations Resolution on Diabetes in 2007. The possible outcome of such a UN Resolution would be to increase global awareness of diabetes, to increase the recognition of the burden of diabetes

(humanitarian, social and economic), to increase the chances of diabetes to become a health priority in individual nations, to promote strategies for the prevention of diabetes complications (in particular cardiovascular disease), to promote public health strategies for the prevention of diabetes itself, to recognise the special need groups (diabetes in children and adolescents, the elderly, pregnancy, migrant populations, people in developing nations, indigenous peoples).

In conclusion, 2050 will need to bring about a revolutionary change in the way we address chronic diseases such as diabetes. The patient-centric model will be the main driver for treatment involving a large preliminary stage of prevention and self-education. The result will be less later stage treatment and a reduction in expensive complications which require time-consuming and costly treatments. Such a model can be developed but without proper nurturing we may find ourselves talking about the same thing in 45 years time. ■

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International Diabetes Federation Europe: [www.idf-europe.org](http://www.idf-europe.org)

# Promoting gender equity in European healthcare



By Peggy Maguire

This article considers the inequities in healthcare treatment between men and women and recommends strategies to deal with this.

Women comprise no less than 50% of the population in any EU country<sup>1</sup>, and as half of the population women ought to be entitled to the same level of healthcare as their male counterparts. This must become a reality by 2050. The last twenty years has seen a growing debate about the links between gender and health, and gradually a consensus is emerging on the broader economic and social gains to be made from promoting the health of women. The promotion of gender equity has been a long-standing theme in the philosophy and operations of the EU (mainstreaming of gender was formalised in the Treaty of Amsterdam, in articles 2 and 3, and by inclusion of a statement to the effect that human health should be protected in 'all Community policies and activities'). However, improvements to date have not gone far enough in respect of the creation of equitable and inclusive European healthcare systems that realistically and pragmatically identify and address the needs of women.

Inequalities between the sexes are further compounded due to the lack of disaggregated information on a sex and gender basis, and for which the relevant statistical data is urgently required. Indeed, these necessities were at least partially identified in 2001 in the World Health Organisation's (WHO) Strategic Action Plan

for the Health of Women in Europe<sup>2</sup>. For example:

- mental health statistics often conceal considerable differences in prevalence and disease manifestation at different stages in the life cycle between women and men;
- the causes of higher rates of depression and mental illness in women remain unknown;
- cardiovascular disease is a lead killer of women but the vast majority of research has been based on long-term studies of men, making the findings not always applicable to women;
- the risk of HIV infection during unprotected intercourse is two to four times higher for women than men, yet much of the research is gender blind, women have been excluded from clinical drug trials and are frequently diagnosed at a later stage in the disease than men;
- most pharmaceutical research is still carried out on men, even when it is known that the disease in question is more frequent in women;
- recent studies suggest the health risks associated with alcohol abuse may be greater for women than men.

Furthermore, as an increasing proportion of the population reach old

age, more attention must be paid to the healthcare needs of women who have a higher life expectancy, and are known to spend, at all ages, greater proportions of their life in states of chronic illness and disability.

## HEALTH ISSUES MORE PREVALENT AMONG WOMEN

Some diseases are more prevalent among women, though both sexes can be affected. Although men can get breast cancer too, this condition is typically associated with women. It is estimated that 1 in every 12 women will develop breast cancer at some point in their lifetime. Risk factors for breast cancer can include genetic predisposition, hormonal effects and age, but many women develop breast cancer without any of these factors present.

Statistics on mental health disorders often conceal the considerable differences that exist between men and women in the prevalence of specific types of mental disorders and at different stages of the life cycle. Depression and depression-related problems are today amongst the most pressing public health concerns. The causes of the higher rates of depression and mental illness are not

<sup>1</sup> World Development Indicators (2002): <http://www.genderstats.worldbook.org.home.asp>

<sup>2</sup> World Health Organisation Regional Office for Europe (2001) Strategic Action Plan for the Health of Women in Europe Copenhagen: WHO Regional Office for Europe

known. However, we do know that risk factors prevalent in women include poverty, violence, self harm, sexual abuse, family responsibilities and the role of the carer. One important consequence in relation to mental disorders is suicide and attempted suicides. Risk factors for suicide and para-suicide (attempted suicide with higher rate among women) include alcoholism, depression, and socio-economic problems. Women with eating disorders, such as anorexia and bulimia, are also at higher risk of committing suicide and para-suicide. Statistics also show that women who have attempted suicide are much more likely to try again. Women are twice as likely to be diagnosed as depressed, yet doctors often do not take women with depression seriously. Elderly women have the added disadvantage suffering the stereotype that depression is a normal part of ageing. Specialists point out that women have different symptoms when they suffer depression.

#### HEALTH ISSUES SPECIFIC TO WOMEN

The existing healthcare system has historically underestimated the importance of the differences between women and men in terms of the impact on morbidity and mortality and on public health. Also less money has been invested on research into women-specific illnesses and diseases. Women's reproductive capacity brings them into the healthcare system more often than men. This increased contact provides opportunities for such preventive measures as screenings for breast cancer and cancer of the reproductive organs, fertility control and support during pregnancy. Cancer of the cervix is the second most common female cancer in the EU. Early screening and detection can improve survival rates, but only about 40% of all women over the age of 15 report having had a cervical

smear in the previous year. A major barrier to addressing and treating this wholly preventable, disease has been the lack of resources available to implement national and/or regional cancer screening guidelines and cervical cancer screening programmes.

The EU has recognised the potential of population-based cancer screening programmes in its Council Recommendation adopted in 2003 (Official Journal of the EU L327, 16.12.2003). It remains to be seen whether the Recommendation for breast, cervical and colorectal cancer screening will be implemented in the 25 Member States.

#### HEALTH ISSUES AFFECTING WOMEN DIFFERENTLY

Cardiovascular disease causes 1.9 million deaths a year in the 25 countries of the EU. The most common cardiovascular diseases are hypertension, ischaemic heart disease and cere-

brovascular disease. Cardiovascular disease is an important cause of premature mortality in the accession countries where rates are higher than the EU average. Much of the research on cardiovascular disease has been based on long-term studies of men, and the findings are not always applicable to women. Yet, cardiovascular disease remains a lead killer of women in most developed countries. There is increasing evidence from all fields of medical research, suggesting that on both the biomedical and social side, the risk factors, biological mechanisms, clinical manifestation, causes, consequences and management of disease may differ in men and women. In such cases, prevention, treatment, rehabilitation and care-delivery need to be adapted according to gender. Consequences for not doing so impinge on the health of both women and men. For example, emerging research on gender epidemiology has revealed the serious shortcomings of applying



"male-based" diagnostic techniques and treatments to female patients. This stems mainly from the increased recognition that symptoms of heart attack differ significantly between men and women and that life-threatening delays in diagnosis (via EKG) of women may occur because of lack of awareness of the unique nature of female symptomatology.

An important increase in the number of HIV positive women reflects their greater biological vulnerability to this illness. Biologically, the risk of HIV infection during unprotected intercourse is 2-4 times higher for women than men. Women are also more likely to have other STD's (sexually transmitted diseases), which can increase the risk of HIV infection by 3-4 times. This is because women are biologically more vulnerable, and because 50-80% of STD's have no symptoms in women. If a woman becomes infected with HIV, she may also suffer inequalities during the treatment.

#### ACCESS TO HEALTHCARE

There is now considerable evidence of differences in access to healthcare. Despite the fact that women use medical services more often than men do, it has emerged that care provisions are inferior for women who belong to another underprivileged group, such as black, migrant and ethnic minority women. There are consistent indications that gender divisions can be a causal factor limiting the quality of care women receive. This is especially evident in reproductive health services where providers are often too concerned with controlling women's fertility especially when it concerns marginalised groups of women such as disabled, poor and/or minority and migrant women. Furthermore, different treatment for women than men is the

norm especially when it comes to treatment of heart disease.

#### WOMEN AS BETTER INFORMED PATIENTS AND CARERS

Women have a keen interest in health information. Easily accessible and easily understandable, high-quality, accurate, reliable and up-to-date health and disease information to patients and the general public is an essential step towards achieving a high level of health protection. Today's information technology has the potential to empower and support women as patients, guardians and carers of family health. Appropriate information can improve communication between patients and their doctors, lead to improved health status and a sense of being in control. For these reasons, women are rightfully viewed as protagonists for positive change. In fact, the WHO acknowledges that women are one of the strongest means for improving health in families and communities. As such, women should be central to future EU health policy and their

women, and to ensure effective public health policy and strategies for all by 2050. All healthcare services in all EU Member States need to be sensitive to women's health needs, and to ensure gender mainstreaming in health, to make explicit how women's physical, psychological and social health should be addressed.

Quite simply, to begin to redress the structural, and resulting policy and delivery, deficits in healthcare, a revision of the parameters for data collection and analysis is necessary, as these determine subsequent policy and programme delivery. Additionally, using both morbidity and mortality rates (rather than just mortality rates), to inform public health policy would go some way towards addressing gender imbalances. It will also broaden health targets for diseases with high mortality (such as cancer and heart disease) so as to include diseases with high morbidity (such as arthritis and osteoporosis).

“The WHO acknowledges that women are one of the strongest means for improving health in families and communities. As such, women should be central to future EU health policy.”

perspective must be included from the start of the formulation process rather than as an afterthought.

#### ACTIONS TO BE TAKEN

It is the belief of the EIWH that there are obvious first steps to take towards remedying the disparities in healthcare encountered across Europe by

In relation to research and policy, full attention to women has only been given in the area of reproductive health and even there, many gaps still exist between women's health needs and healthcare provisions. Ignorance of women's health needs, may indeed contribute to generating life-threatening conditions for women. It is a fact that women consume more medicines than men, but most

pharmaceutical research is still carried out on men, even when it is known that the disease in question is more frequent in women than in men.

Determinants of women's health, drawn from both gender differences and interdisciplinary research, are necessary to tackle ways of reducing the present health gaps for women. At its most simplistic level, this requires the disaggregation of all health and healthcare statistics by sex to provide a more complete picture of women's health. Interdisciplinary collaborations to analyse existing data sources are also necessary: research on women's health generates a wide variety of data, ranging from essentially qualitative assessments, through to epidemiological and clinical trials. Scientific data that reflects the state of health of different population groups and divided along gender lines is an essential tool for improving the state of health of the population in Europe.

It is of utmost importance that the health professions develop a gender sensitive approach and that the relevant teaching institutions such as medical schools, begin to integrate a gender perspective into their curricula. The different health needs of men and women need to be met in an equitable manner in prevention, treatment and care services. Medical care and services often do not respond adequately to the specific needs and concerns of women and men. Health services for women tend

to focus on their reproductive functions, neglecting other needs including those before or beyond reproductive age. Conversely, men's reproductive health needs are often inadequately met by healthcare policies and services. The means to help public health professionals to consider gender issues in their work are limited. In order to demonstrate that a gender perspective does improve the health of women and men, information about good practices needs to be widely available to public health staff and wider stakeholder groups.

Current and future European policy initiatives must be targeted at women

from the fields across the world, resulting in a large depository of information on women's health. This will be available at the fingertips of women patients and thus make them more knowledgeable about prevention and treatment.

Finally, women's health in 2050 will centre around the patient-centric model of delivery. Women will be better able to understand their specific needs and be empowered to argue for those. All of society stands to gain by an intelligent and appropriate use of scarce healthcare resources. The issues I have taken up in this article – creating gender sensitive healthcare

“Women's health in 2050 will centre around the patient-centric model of delivery.”

as well as at men in order to harness the benefit of better health outcomes by 2050.

for women will then become achievable in the overall framework of good health for all. ■

#### WHAT WILL WE SEE IN 2050?

The mainstreaming of women's health will result in an increased focus on appropriate health services and lead to two dramatic steps in healthcare delivery. The first is the rapid rise in information which allows for a critical mass of evidence in more narrow or neglected sectors such as women's health. Information technology is bringing information and evidence

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Health First Europe (HFE) is an alliance of patients, doctors, nurses, academics, experts and industry that aims to ensure that equitable access to modern, innovative and reliable medical technology and healthcare, is regarded as a vital investment in the future of Europe.

The core messages of HFE are the following:

- There are weaknesses in European healthcare systems; a rethink is required in order to meet current and future health challenges.
- Patients and clinicians should have equitable access to modern, innovative and reliable medical technology.
- The development of new and flexible modes of healthcare delivery will benefit both patients and healthcare providers.
- Health equals wealth. Health is a productive economic factor in terms of employment, innovation and economic growth.

Since our launch in March 2004, HFE has been involved in numerous activities (awareness-raising events, position papers, press releases, etc.) aimed at encouraging Europe to lead the way in developing a truly patient-centred healthcare, where every European citizen is able to benefit from the best medical treatments available. For full details of our activities, please see our website: [www.healthfirsteurope.org](http://www.healthfirsteurope.org)

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Aktion Meditech  
 European Academy of Science and Arts / EOM - European Institute of Medicine  
 European Alliance for Medical and Biological Engineering and Science (EAMBES)  
 European Brain Injury Society (EBIS)  
 European Diagnostics Manufacturers Association (EDMA)  
 European Federation of Crohn's and Ulcerative Colitis Associations (EFCCA)  
 European Federation of Public Service Employees Unions (EUROFEDOP)  
 European Federation of National Associations of Orthopaedics and Traumatology (EFORT)  
 European Health Telematics Association (EHTEL)  
 European Institute for Womens' Health (EIWH)  
 European Medical Association (EMA)  
 European Patients Forum (EPF)  
 European Society of Cardiology (ESC)  
 European Union of Independent Hospitals (UEHP)  
 European Medical Technology Industry Association (Eucomed)

Heart EU  
 Institute for Health Economics (IFG)  
 International Alliance of Patients Organizations (IAPO)  
 International Diabetes Federation – Europe Region (IDF-Europe)  
 International Organization for Standardisation (ISO)  
 International Society for Fracture Repair (ISFR)  
 The Medical Technology Group (MTG)  
 The European Federation of Nurses Associations (EFN) (Associate member)

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