

# Hospital



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## SUSTAINABILITY for **Economic** and **Environmental** SUCCESS

### Plus

- > Risk Management
- > Cardiology Supplement
- > The DebugIT Project
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Editor-in-Chief and Publisher, Secretary-General  
of the European Association of Hospital Managers

Willy Heuschen  
willy.heuschen@eahm.eu.org

European Association of Hospital Managers  
General Secretariat  
32 Blvd du Jardin Botanique, B-1000 Brussels  
Tel.: +32/ 2/ 733 6901  
Website: www.eahm.eu.org

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#### Guest Authors

Daniele Amoruso, Stan A. Amundson, Paulo Alexandre Boto, Natale Daniele Brunetti, Roland W. Chalons-Browne, Dirk Colaert, Fernando Leal da Costa, Alan Dilani, Manuel Delgado, Giulia Dellegrottaglie, Peter Gausmann, Luisa De Gennaro, Giuseppe Di Giuseppe, Barbara Gozzi, Bruce J. Kimura, Robert Kis, Michele De Michele, Daniela Pedrini, David Shaw, Gaspare Serrazanetti

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# WE ARE EUROPE...

Politicians, artists and intellectuals from all over Europe called for a new "bottom-up foundation of Europe" with a manifesto published in the European press. In it, the group called for a voluntary year of social work, which they view as the answer to the current European crisis, in particular the crashing job markets which have hit some European countries so hard. In a way, this would allow John F. Kennedy's idea of a Peace Corps to be applied to Europe – and it would also be a sign for active political participation, instead of handing over sole responsibility to politicians and technocrats.

In light of the cancellation of the European Association of Hospital Managers (EAHM) Congress in Athens, we have repeatedly called for actions of solidarity, as this is the only way in which a social Europe can continue or indeed be established. And it is the youth of today in particular who are in dire need of such a Europe as a sign of encouragement, considering the fact that by now every fourth European under the age of 25 is unemployed. This is the reason why we are happy to support this manifesto. It contains not just fine words but demands active participation as well. The EAHM assumes responsibility in this aspect. Without the framework of social security the entire social fabric would be under threat. Hospitals are important service providers of social security. Their place value may be more or less pronounced from one system to another and they might be under cost saving pressure, but the fact is that these hospitals offer an indispensable service to public health, especially in times when an increasing part of the population is at risk of slipping beneath the poverty line. It is the only way the social fabric can be rescued. And this insight is not only true for individual countries, but valid on an EU-level as well.

Up until now, the competence of public health systems was solely in the hands of national states. However, the obligatory implementation of the guideline on cross-border healthcare is a clearly visible indication that times are changing. In his opening statement at the European Hospital Conference (Dusseldorf 2011), Luxembourg's



Willy Heuschen

Health Minister Di Bartholemeo stressed the impact of this guideline. It not only secures the right of reimbursement after claiming health services in other EU-countries, but also obliges national states to openly state the quality of the services offered, he said.

Without question it is not only health ministries that are under obligation, but any organisation offering health services, hospitals in particular. As the above-mentioned manifesto on the new bottom-up foundation of Europe demands, hospital managers now have the unique opportunity to actively participate in a Europe-wide process of securing both high-quality and transparent health services. As soon as the quality standards of each country are made public, it will not take long for comparisons or grading of strengths and weaknesses to follow. Indeed, nobody would be able to refuse a well-informed patient the access to transparent results and information.

Actively creating this bottom-up process is not only a matter of concern for the EAHM; rather, it is an obligatory goal. Following the opening conference at the MEDICA we invite all our members to a further seminar on 16 November 2012, in Dusseldorf. Based on concrete examples of how to deal with quality standards, we will aim to initiate a profound process of reflection that should act as an incentive for further work in the respective national associations and raise curiosity on how the European neighbour countries are coping. Suggestions compiled in the national associations would allow our members to introduce their input in the implementation of the European guideline, thus making us a good example for active participation in a 'bottom-up' Europe. We should focus less on the certainly indispensable, bureaucratic rules and more on the patient. It is the patient after all who is our foremost duty in the daily management of our hospitals. Now, it is time to deliver the goods as Europeans – from the bottom up.

#### Willy Heuschen

EAHM Secretary General and Editor-in-Chief



The editorials in (E)Hospital are written by leading members of the EAHM. However, the contributions published here only reflect the opinion of the author and do not, in any way, represent the official position of the European Association of Hospital Managers.



## Sustainability for Economic and Environmental Success

This issue's cover story focuses on sustainability, both economic and environmental. As austerity measures sweep the continent, we at *(E)Hospital* want to know how financial constraints are affecting healthcare systems and hospitals in particular. In the first of a two-part series, *(E)Hospital* spoke to representatives from our Greek and Portuguese hospital managers associations.

From the environmental perspective, Roland W. Chalons-Browne tells us how green hospitals can have a positive financial and environmental impact and Daniela Pedrini et al. illustrate the University Hospital Authority St.Orsola-Malpighi Polyclinic of Bologna's rational use of energy and environment.

## Cardiology Special

In this issue we have a special cardiology supplement with articles on telecardiology with a single regional hub serving four million inhabitants and pocket ultrasonic stethoscopes for improved bedside diagnostics. You will find the articles in two formats: One set inside the journal for you to keep and a second set as a pull-out supplement. The second set is for you to pass on to your colleagues in the relevant departments.

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**Focus: PORTUGAL**



The main issues with the Portuguese national health system are related to the current economic crisis the country (and Europe in general) is going through, and the need to ensure the system's sustainability. In the context of the global economic crisis, the country and the healthcare system are currently under pressure to be more efficient while ensuring access and quality.



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## PUTTING THE CROSS-BORDER HEALTHCARE DIRECTIVE INTO HOSPITAL PRACTICE

In June 2006, the Council of Europe published its Conclusions on Common Values and Principles in EU Health Systems which called for an initiative on cross-border healthcare to ensure clarity about the rights and entitlements applying for EU citizens seeking treatment abroad. But at end of 2006, the Directive on services in the Single Market was adopted, excluding healthcare.

This ambiguous approach continued until the adoption of the Directive on the application of patients' rights in cross-border healthcare in March 2011, which is the first EU legislation specifically targeting the healthcare services. It is balancing between the European Court of Justice (ECJ) decisions of the last decade and Member State competence to manage their own health systems.

The Directive aims to clarify the patients' rights to receive healthcare in another Member State and to put in place measures to support the provision of cross-border healthcare for the benefit of both patients and those managing health services. It is supposed according to be transposed into national law in the Member States by 25 October 2013.

Member States are free to decide themselves on the conditions, procedures and eligibility criteria to be followed for the receipt of cross-border healthcare and reimbursements. But transposing this directive into national law is a difficult exercise as it concerns the reimbursement, quality and safety standards of healthcare services. Also the creation of an up-to-date and transparent register of all eligible healthcare serv-

ices, their quality and their costs will be a challenge, given the vast differences between EU health and social security systems.

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On the other hand, many initiatives all around Europe have been taken in recent years to face the various challenges and to ensure high quality of care on national, regional and hospital levels. It is important that these initiatives do not remain isolated from the European evolution; on the contrary they deserve

a closer look within the context of this Directive.

In February, the Subcommittee European Affairs of the EAHM decided to contribute to this transposition process in two ways:

### Questionnaire

The questionnaire, targeting hospital managers, is focusing on quality of care in hospitals around Europe. It includes different aspects, from the definition of quality and its operationalisation to the steering processes for quality. Attention is also given to the provision of information to patients.

The questionnaire was launched on 20 August.

### Seminar: 16 November, Düsseldorf

During this transposition process, actors involved in hospital management should express their vision and contribute to the actions to be taken. The seminar offers this opportunity and will smooth the path to a consensus on improvements to be made regarding the exchange of experiences and information. The seminar will take place on 16 November in Düsseldorf (Germany). The programme includes various speakers from Europe, a panel debate as well as a guided visit of the exhibitors of MEDICA.

More information on the questionnaire and the seminar can be found on the EAHM website: <http://www.eahm.eu.org>

For more information, please contact: [Jos.Vanlanduyt@eahm.eu.org](mailto:Jos.Vanlanduyt@eahm.eu.org)

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# FRAGMENTATION AND INTEGRATION - VALUES AND ETHICS IN HEALTHCARE: 38<sup>th</sup> ANMDO NATIONAL CONGRESS, TURIN 2-4 MAY 2012



The 38th ANMDO National Congress: 'FRAGMENTATION AND INTEGRATION - Values and Ethics in Healthcare', held again in Turin to celebrate the 65th anniversary of the ANMDO foundation, analysed the issues of the on-going processes of fragmentation and integration of the healthcare systems, in particular looking at the ethical values involved. Various aspects of the problem have been highlighted: The role of Medical Management; health technology assessment (HTA); prevention; clinical risk management; and hygiene in health facilities.

Moreover, new forms of collaboration, cooperation and competition in the countries of the European Union have been presented, and great interest was expressed by the participants.

Fragmentation affects policies, organisations and operation in healthcare. Responsibilities are more and more fragmented at the different institutional levels. Integration policies do not seem to be at the centre of intense dialogue among the subjects involved. According to ANMDO, a constructive, interactive relationship between the different disciplinary and specialised skills, and between the different professionalisms in healthcare, based on a shared vision of values and ethics, is the best and only strategy to reduce fragmentation and promote integration.

National Health Services must learn and evolve. An integrated approach is mandatory. Healthcare systems management and planning have to evolve around the citizens' needs, enhancing the role and responsibilities of doctors and health workers, in order to have services improved, and of higher quality.

Clinical governance is the set of tools and processes which allows healthcare or-

ganisations to inspire and give support to the various healthcare workers' acts and conducts on diagnostic, therapeutic and rehabilitative choices, providing, in parallel, clear scientific evidence and the ability to evaluate correctly cost-effectiveness and cost-efficiency. The objectives of a clinical governance strategy are the continuous improvement of service quality, the achievement and sustainability of high standards of care and work environments that foster professional excellence.

giene related, preventive and legal activities. She/he has also to deal with education and training, improving the health services quality and performances. The medical manager has the responsibility to set the course of actions, taking into account the continuously changing environment in which one has to operate, proposing optimal solutions.

We live in a time of accelerated innovations. The evolution of science and knowledge in all areas influences political,



In Italy, the medical manager of a National Health Service Trust is also responsible for clinical governance. It is his/her duty to manage the four key dimensions of quality: Professional quality; perceived quality (ability to satisfy the expectations of patients and employees); efficiency (rational use of available resources); and risk management (patients' risk reduction). To this end, the medical manager promotes and coordinates actions aimed to improve the efficiency and effectiveness of health services. At the hospital level, the medical manager is engaged in managerial, organisation, scientific, hy-

social and economic dimensions. New approaches and solutions are urgently needed to cope with the current changes. Clinical governance, health technology assessment, evidence-based healthcare and risk management are quintessential tools of growing importance. But they do not suffice. Rational principles to express value judgements about human actions are equally important. One has to design and manage possible futures. What is needed, badly needed, is ethics with its set of values and characteristics.

We, medical managers, should, now more than ever, eliminate ineffective, negligent

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and utilitarian behaviours. We must maximise our ability to create an environment that is able to ensure proper patient care and the responsible management of common wealth.

ANMDO believes that passion, compassion and honesty are among the fundamental ethical values in healthcare. Passion is the love for the medical profession

and, for those who need assistance, passion is the ability to short circuit brain, heart and guts. Compassion is what makes us feel sorrow or pain for wrongs of others and is the main ethical principle of human relationship. Honesty is acting and communicating in a fair, honest and transparent way, according to moral principles that are universally considered valid.

Today, to what extent are these values present in healthcare? The ANMDO National Congress has tried to suggest possible answers also to this question.

**Gianfranco Finzi**  
ANMDO National President  
**Ugo Luigi Aparo**  
ANMDO Scientific Secretary

# MEPS AND HEALTH COMMUNITY CALL FOR AN END TO CUTS IN HEALTH AND WELFARE

For the first time, 9 MEPs, 65 leading trade unions, civil society organisations, health organisations, and industry associations have united in an open letter calling on European leaders to stop cutting essential health and welfare systems and focus on ordinary people living in Europe coping with the dire impact of a financial crisis of which they are the first victims. The toll on physical and mental health is becoming unbearable, and health systems are at breaking point. The coalition is led by the European Public Health Alliance, whose recent briefing note summarises the evidence of the devastating impact of the financial crisis on human health. The evidence in rising suicides, mental health problems, rates of infectious disease are warning signs that current policies are hurtling Europe in a dangerous direction.

For millions of people living in Europe, these last few years have been devastating in a way few had imagined Europe would face again. Rising levels of unemployment, high levels of household debt and cuts to public services have left many people desperate and in need of support. The current cuts to social support and healthcare not only threaten the fundamental right of access to care, but also undermine the core values at the heart of the European vision.

"We need a long-term strategy. What's the point in having social protections during the good times but then taking away

*the safety net during the tough times? Our happiness and health cannot be solely reliant on the will of the markets, or the performance of the banks,"* said **Glenis Willmott**, British MEP, Progressive Alliance of Socialists and Democrats. **Alejandro Cercas**, Spanish MEP, Progressive Alliance of Socialists and Democrats is concerned that "In Spain, health is becoming a commodity instead of a right".

**Anders Olsson**, President of the European Patients' Forum believes that "Short term 'savings'...undermine access to treatment and care and will create worse health outcomes and higher expenditure as patients will need more intensive and expensive interventions in the longer term. The huge impact among disadvantaged groups living with chronic diseases, including those living in poverty, children, disabled people, and older patients will increase further health disparities."

"The present lack of political coherence and strong leadership in Europe has cost us far too much. With social instability, inequalities, depression, and suicides ominously rising among the lower and middle classes, Europe's leaders should amend their own mistakes before it is too late," points out **Monika Kosinska**, Secretary General of European Public Health Alliance (EPHA). "Public healthcare is among the worst-hit sectors across the EU. This is an inevitable outcome of blindly trusting fick-

le and unaccountable financial markets to set public spending priorities. At this critical juncture, European leaders should meet the legitimate expectations of citizens that put them in office in the first place, as a loss of confidence in the state's ability to support its citizens is a threat to the stability Europe takes for granted," stresses Ms. **Kosinska**.

The open letter urges European leaders to realise that cutting spending on essential services such as health, particularly in primary care and early intervention, is a false economy. It will drive up long-term costs, leading to the re-emergence of communicable diseases and put the burden on those people who can afford it least. The lessons learned from the crises of the past are to keep supporting people through the hard times, reform smartly and ensure you have a healthy population that can pick up when the economy improves.

The joint letter concludes that "at this decisive time the public health community and people living in Europe look for courageous leadership from Heads of States and Government to take action on prioritising and championing the health of people, not sacrificing health for short term financial gains."

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# SUSTAINABILITY FOR FINANCIAL SUCCESS

## Quality Healthcare Provision in Economic Uncertainty

No one can deny that these are trying times for most European countries. As austerity measures sweep the continent, we at *(E)Hospital* want to know how financial constraints are affecting healthcare systems and hospitals in particular. Who better to speak to than those countries most affected: Portugal, Greece, Spain and Ireland. In the first of a two-part series, *(E)Hospital* spoke to representatives from our Greek and Portuguese hospital manager associations to find out how they are coping and if they have any solid advice for their European colleagues.

After talking to George Stathis and Victor Herdeiro it is clear that difficult financial and political situations in both Greece and Portugal have pushed healthcare providers to shift their focus to patients rather than professional interests. Significant budget cuts coupled with a rise in the number of patients using the public health service has necessitated significant changes in both countries. In fact, both men believe that in some ways, facing the financial crisis has led to positive changes in the healthcare sector. For Greece, positive changes include the modernisation of processes and a clamp down on illegal practices. In Portugal, economic uncertainty has promoted rationalisation and increased efficiency.

### Interviewees

#### Greece: George J. Stathis

President  
Hellenic Health Services  
Management Association

#### Portugal: Victor Herdeiro

Chairman of the Board of Directors,  
Unidade Local de Saúde de Matosinho

### Your country has been severely affected by the ongoing economic crisis. What have been the main effects on your healthcare system and hospitals in particular?

**(George J. Stathis)** Facing a fiscal deadlock, Greece has been forced to come to agreement with its loan providers and accept the application of a very strict austerity programme and internal devaluation. In both the public and private sector, salaries and pensions have been cut significantly; public servants have been laid off and public spending dramatically cut in all sectors. This also applies for the National Health

System with serious consequences for public hospitals where budgets have been curtailed by 50% over the last two years. At the same time, admissions and hospitalisations to public hospitals have increased, as the severe income reductions constrain the citizens in seeking services in private clinics.

Of all consequences of the new financial situation, the problems in the availability of hospital consumables are the most visible to the patients. In some cases patients have to buy consumables at their own expense. There are also cases in hospitals when planned operations are cancelled in order to save materials for emergencies.

**(Victor Herdeiro)** Due to the adjustment programme in the public healthcare system, there was a big cut on the 2012 annual budget (globally and in each hospital in particular). Furthermore, the government determined a 5% cut on public employee salaries above 1,500 euro and a cut on the holiday and Christmas subsidies for public employees whose salaries are above 1,000 euro. The public managers had, in addition, a 5% cut on their salary.

In the private sector, the government abolished the tax benefits of the insurance premiums (health and others). Furthermore, after a negotiation with the pharmaceutical industry there was an administrative reduction on medicine and diagnostic and treatment procedures.

### Is your government making special provisions to protect the healthcare sector? If so, please tell us about them.

**(George J. Stathis)** Over the last decades the Greek government has ignored proposals by health economists and specialised

hospital managers calling for the financial reform of the health sector in order to fight corruption and overspending and contain the costs. Because of the financial crisis, the government was only recently forced to adopt our proposed measures.

So, recently, among other measures, important changes have been introduced: DRGs, e-procurement, digitalised prescription and a quota in generic prescription in both hospitals and pharmacies. The absorbance rate of all these measures at the same time is somehow slow and the true benefits are yet to show. Some physicians who were found to be involved in supplier induced demand or asked for illegal extra fees from their patients have been made redundant from their place of work and legal and financial punishments have been imposed.

I believe if these measures had been applied in healthcare in a timely manner and in some other sectors, Greece would not have had the fiscal deadlock it now has to face.

**(Victor Herdeiro)** Yes. The purpose is to have a public healthcare sector similar to the English NHS. There's unanimity in the whole society to preserve the public healthcare sector. So, to make it sustainable, the government is trying to promote the reorganisation of the national healthcare supply, reducing the service surpluses.

### On the hospital level, what are you doing to combat these financial constraints? How are you sustaining high quality healthcare (E.g. new technologies, new initiatives, staff cuts etc)?

**(George J. Stathis)** Hospital managers have very limited authority in taking these initiatives. New job appointments in healthcare

have been prohibited, which directly affects administrative and nursing staff. Medical staff remain abundant in main Greek hospitals and in some cases there are more than needed. On the other hand, physician shortages still occur in some peripheral health units in remote areas.

Our economic everyday reality does not allow for new investments in medical technology, but in general, hospitals are well-equipped in technology dating from the previous economic period. Moreover, construction and refurbishment of hospital infrastructure is not permitted.

Overall it is fair to say that the quality of medical services has been preserved as before, although the quality of the hospitality, nursing care services and the timely responsiveness of the healthcare system to patient needs have deteriorated.

**(Victor Herdeiro)** The boards implemented several measures, such as:

- Price and quantity renegotiation with the pharmaceutical industry;
- Services centralisation;
- Internalisation of diagnostic and treatment procedures; and
- Only substitution investment.

### **Has anything positive come out of this situation?**

**(George J. Stathis)** The positive outcome is that politicians are eventually forced to apply modernised measures to public health and to face the moral issues surrounding illegal practices from a considerable part of physicians. The once powerful medical lobby is now under acute public scrutiny and in the medium term it will comply. The same applies to pharmacists and pharmaceutical companies.

Another positive aspect is that private clinics and diagnostic centres as well as private practices have reduced their fees.

**(Victor Herdeiro)** This financial and economic crisis has highlighted the need to focus on our core business: patients' needs rather than professional interests. We are now eliminating redundant services, promoting rationalisation and making services more efficient.

### **What is your outlook for the future?**

**(George J. Stathis)** My view is that in the

next few years the Greek healthcare system will move from being doctor-centric towards becoming patient-centric. But this will need to operate in a much smaller budget compared to what it was up until 2009, when Greece had a leading position in expenditure among other European states.

Thousands of physicians would need to either change profession or emigrate. Already, representatives of the German service EURES have visited Greece in May in order to offer placement opportunities in German hospitals. Approximately 6,000 Greek doctors are currently employed in Germany, with many others preferring other countries as far as Australia. Note that Greece has the greatest ratio of medics per inhabitants among OECD nations and probably the rest of the world. But now more than ever there is an absolute necessity to shift healthcare expenses to where they are truly needed, i.e. to the patients, as it is unjust to use these scarce resources in order to fuel unnecessary medical payments.

**(Victor Herdeiro)** With the increase of the average life expectancy and the increasing number of new technologies, the challenge in the healthcare system will be to maintain the healthcare service level without increasing the citizens' taxation. This means that it's going to be difficult to keep up with the launch of new technologies and on the other hand, it will be difficult to keep waiting times short as it is nowadays.

### **How has your national association of hospital managers addressed the financial crisis? What are they doing to help?**

**(George J. Stathis)** Unfortunately, until today hospital manager positions are not considered technocratic but political. Every government and every Health Minister would change the serving hospital managers and replace them with acquainted professionals of any sort and arguable ability to manage.

In our national association, members are strictly specialised healthcare professionals who strive to change this ill-fated situation. We try to promote those measures that target the real issues, which are innovative practices, tested and successful in other healthcare systems. We believe that the crisis will highlight the need to pass hospital management over to specialised and experienced professionals.

## **THE IMPACT OF THE FINANCIAL CRISIS ON HEALTH**

### **Shocking Figures from the European Public Health Alliance**

- In 2010 the Portuguese Ministry of Health budget was cut by 12.3%
- The overall budget for health in Ireland was down by €746 million - a year-on-year 6.6% cut.
- The Greek health budget for 2011 was decreased by €1.4 billion.
- The French government expects to reduce spending by €2.4 billion on the health insurance side - 40% of the reductions will be made through pro-generics policies and savings on medicines and medical devices.
- In Austria it is planned that, between 2010 and 2013, the expenditure and foreseen budget on the healthcare sector will drop by about €1.7 billion.
- The Spanish Government reduced spending on health and education by €7 Billion in 2012.
- The Hungarian public health budget decreased from almost €4 billion to €1.2 billion - with a 40% cut in the pharmaceutical sub-budget.

This will be a significant progress for the Greek healthcare system, which will enable a faster resolution of the crisis.

**(Victor Herdeiro)** The association promoted meetings with hospital managers around the country to help them to deal with the main constraints imposed by the adjustment programme and by the government.

### Finally, what advice do you have for other countries in similar situations?

**(George J. Stathis)** I believe that the healthcare sector should not be compressed by austerity policies, except for cases of proven overspending and bad management.

Ageing population and advancements in technology will increase health costs in the

medium term, but every country must find ways so that the utilisation of the additional budgets would directly target patients and quality of service. Healthcare systems must become more patient-centric.

**(Victor Herdeiro)** First of all, it's important to have a good overview of the healthcare sector situation (demand, supply – public and private, financial, so-

cial, epidemiologic and demographic characterisation).

For countries with a public healthcare sector, with the increasing of the average life expectancy and the need to make the system sustainable and to preserve the welfare state, it's important to make a reflection about the healthcare service level without increasing the citizens' taxation.

# GREENER HOSPITALS FOR ECONOMIC SUCCESS AND SUSTAINABILITY

By Roland W. Chalons-Browne

**The world's population continues to rapidly increase as well as grow older. The growth in the world's population parallels a rapid increase in healthcare needs. And, more than anything, an ageing society places greater demands on medical services. Thus, around the world, the cost of healthcare is skyrocketing while the threat posed by various diseases continues to loom large. Increasing public spending is not a sufficient response to the rising costs of delivering healthcare services. To establish effective healthcare systems over the long term and to make healthcare affordable for everyone, we also need technological and financial innovations that both improve the quality of medical care and help save money.**

The world's population is not only expanding, it is also getting older. The situation is particularly acute in developed countries where medical advances have lowered mortality and extended life expectancy. In these countries, one-fifth of the population is already 60 years old or older, and that proportion is expected to grow to almost a third of the total population by 2050.

The surge in older populations has resulted in a corresponding spike in such chronic diseases as cancer, diabetes, heart disease and respiratory conditions. Consider this startling fact: In 2010, it is estimated that more than one-third of Europeans will have developed at least one chronic disease. When poorly managed, these chronic diseases can account for up to 70% of healthcare expenditures.

Furthermore, rapid urbanisation, a fast-food culture, high calorie diets and unhealthy, passive lifestyles have made obesity and its resultant health risks very apparent. According to the latest statis-

tics from the World Health Organization (WHO), more than 1.4 billion adults around the world are overweight. Of these, 500 million are obese.

Other factors are driving up healthcare expenses as well. Among these factors are the rising costs of bringing new medicines and treatments to market and the growing demands of an increasingly Internet-savvy consumer base with online access to the latest information on modern medicine.

It's hardly surprising then that healthcare spending continues to rise faster than economic growth in most European countries. In fact, according to World Bank figures, public expenditure on healthcare in the EU could jump from 8% of GDP in 2000 to 14% of GDP in 2030 and continue to grow beyond that date.

With the financial and debt crisis still holding much of Europe firmly in its grip, healthcare faces significant future challenges, especially since healthcare costs are expected to rise even further. To-

day's challenge is for hospitals to balance budgets more carefully and to do more to wring better value out of healthcare spending.

### Technological and Financial Innovations

An effective way of establishing efficient healthcare systems over the long term and ensuring that healthcare is universally affordable is through technological and financial innovations that both improve the quality of medical care and help save money. Here is where an integrated offering comprising technology and financing best addresses the challenges hospitals currently face. A financing partner that has industry expertise is better able to understand the needs of hospital management, enabling the speedy and efficient execution of projects that enhance performance and economic success. What's more, the financial backing provided by the manufacturer also un-



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derscores its confidence in its own products and solutions.

An increasingly popular area for increased efficiency and sustainability in hospitals is in their use of energy. Hospital requirements for 24/7 lighting, heating, air conditioning and ventilation systems, not to mention sterilisation and high-tech equipment, add up to enormous electricity bills. It's no wonder that European hospitals measure annual energy costs in the billions of euros.

economy that is still reeling from economic crisis, the access to capital for modernisation projects is bound to be harder to come by.

In such a scenario, customised performance-based solutions that allow facility and technology upgrades to be made within existing budgets are essential. These improvements not only help to reduce operating costs while providing the additional value of new, energy-efficient equipment. They also utilise the

year in energy costs.

An essential part of such projects is to conduct regular measurements and verification, so the solutions guarantee energy savings throughout the contract period. Thus, the savings can be used to fund the project itself, making it in effect a zero investment, zero risk model. In the case of the Bavarian hospital, the modernisation costs accrued to around €3 million. Rather than compel the hospital to make a large investment all at once, the Energy-Saving Contracting scheme enabled the energy-efficient investment costs to be offset against the energy savings made throughout the financing term. In a win-win solution, the hospital was able to reduce energy consumption via green technology implementation while rerouting the efficiency gains towards financing investments in the new equipment.

In a similar deployment, the University Hospital in Heidelberg, Germany, overhauled its conventional lighting and ventilation system in a bid to minimise its electricity consumption and operating costs. The result was a reduction of 1,385 megawatt hours of consumption, translating to savings of around €155,000 per year. What's more, the contractually guaranteed energy- and operating-cost savings during the term of the agreement ensured that the medical centre's investment financed itself. Today, around 30 hospitals are being modernised under the Energy-Saving Contracting scheme in Germany alone.

### Conclusion

As ageing societies across Europe place greater demands on medical services and the threat posed by various diseases continues to loom large, healthcare spending will undoubtedly continue on its upward spiral. Faced with this grim reality, intervention in the form of energy efficient projects will help to deliver on the promise of efficient and sustainable healthcare and infrastructure for a better quality of life.

### Author:

Roland W. Chalons-Browne  
CEO  
Siemens' Financial Services Division (SFS)

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“Today's challenge is for hospitals to balance budgets more carefully and to do more to wring better value out of healthcare spending.”

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Energy prices and levels of consumption also seem to be on an upward trajectory, straining hospital budgets and taking a severe toll on the environment. Indeed, the carbon footprint of the European healthcare sector amounts to at least 5% of total EU emissions, a level comparable to that of international aviation and shipping activities.

In light of growing environmental concerns, hospitals need to “go green” and invest in modern and energy-efficient equipment, technology and buildings that can facilitate huge savings in primary energy consumption. It is estimated that if hospitals could reduce their electricity consumption by a fifth, annual national energy bills could be cut by €300 million to €400 million, even by conservative estimates. More importantly, going beyond the cost efficiencies, hospitals will be building an environmentally responsible, efficient and sustainable healthcare system.

The transition to energy-efficiency is a challenging issue, however, as it demands vast investment sums. In an

very same energy and operational-cost savings to pay for the investment.

Such an Energy-Saving Contracting project typically begins with a preliminary analysis to determine a hospital's current energy usage and identify areas to maximise energy savings. Most hospitals will be surprised to find plenty of opportunities to correct the mismatch between energy supply and actual utilisation.

### Working Examples: Energy-Saving Contracting

Take the example of a hospital in Bavaria, Germany, that replaced its oil-fired steam generators used for kitchens and sterilisation areas with electric boilers that only operate on demand. The oil-fired steam generators that were left on throughout the year accounted for a significant share of the hospital's energy bills, not to mention the huge sum of money spent on maintenance. With the change, the hospital now emits 1,600 fewer tons of CO<sub>2</sub> annually and, since 2008, has saved around €250,000 a

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Meeting Chairman: J.L. Vincent  
Email: [j.vincent@ulb.ac.be](mailto:j.vincent@ulb.ac.be)

Manager: V. De Vlaeminck  
Email: [veronique.de.vlaeminck@ulb.ac.be](mailto:veronique.de.vlaeminck@ulb.ac.be)

Dept. of Intensive Care,  
Erasmé University Hospital  
Route de Lenik, 809,  
B-1070 Brussels, Belgium  
Phone: 32.2.555.92.15/96.34,  
Fax: 32.2.555.45.55  
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# RATIONAL USE OF ENERGY AND ENVIRONMENT: THE CULTURE FOR A WINNING SUSTAINABILITY

By Daniela Pedrini, Gaspare Serrazanetti, Michele De Michele, Barbara Gozzi

The University Hospital Authority St. Orsola-Malpighi Polyclinic of Bologna is organised into seven departments of integrated activities (DAI), including 91 operational units and is equipped with 1,758 beds with a staff of 5,355 employees. 72,000 hospitalisations are carried out per year and 4,000,000 specialist services are made for outsiders. Overall an estimated 20,000 people visit the hospital daily (employees, students and academics, patients, visitors and contractors, etc.). Since 2007 the project has focused on reducing energy consumption and increasing environmental sustainability.

The project is based on strategic health estate planning to achieve results in the short, medium and long term. This is achieved by new technologies based on low carbon solutions for energy efficiency in the maintenance and transformation of business assets (facilities, plants, technologies and equipment) and raising awareness of internal staff and healthcare services users (internal and external infrastructural staff, users, visitors, students, etc.). The purpose is to pursue a greater sharing of common aims and to contribute to the progressive improvement of environmental conditions in which we work and live.

## Design Strategy

It is important to differentiate between a next generation hospital designed from the beginning to achieve low power consumption and an existing hospital featuring pavilion blocks built in different historical periods with high-energy consumption. In this case is very important to intervene in all levels through a strategy for short, medium and long term with attention on the one hand to daily actions and to behaviours of all people and on the other to the use of new technologies and of renewable energy in order to improve efficiency in maintenance and trans-

formation of hospital real estate (structures, plants, technologies and equipment) and through participatory decision paths and forms of comparison between different services.

The strategy for rational use and energy saving is based on different but converging intervention lines so their synergies can be properly exploited. It includes:

- Actions on energy efficiency of heating systems and lighting systems;
- Use of energy renewable sources, water saving and waste reduction;
- Application of green procurement principles;
- Management of yards (across the entire process from materials procurement to waste); and
- Providing training and information to all operators.

The hospital established a new group entitled 'Environmental Management and Sustainable Development' to define corporate strategies for information, education and training of workers and to define roles of the new posts of Mobility Manager and Energy Manager; figures of great importance in environmental management processes. The group is also in charge of checking the effectiveness of new technological solutions, the qualitative and quantitative results in terms of

energy consumption, the waste management products and of the operating costs incurred over the years for each type of intervention. The main purpose was to create a culture for a winning sustainability that pursues the ethical and moral commitment of contributing to the environmental protection through greater awareness and the involvement of staff and all users dealing with contracts, jobs, facilities and services.

## Projects and Interventions

The strategies taken at the technological innovation level involved the implementation of significant projects carried out from 2007 to 2010. The planned measures were oriented around the rational use of heating energy, electricity and water. The design choices were determined primarily by the costs and payback through stakeholder involvement in the planning, management and maintenance of works to be done.

For heating energy, a system for monitoring and automated management of heating systems has been adopted. This optimises the internal temperature compensation curves based on outdoor temperature, reduces the extra hours of heated operating rooms during holidays, at night and in absence of activity. Fixtures have been replaced in order to install a type of thermal break, floors are insulated to reduce energy losses and thermostatic valves on radiators regulate room temperature. The implementation of these interventions has allowed an average saving of 551,636 mc per year for heat consumption with a saving of over 300,000 euro per year. Systems based on controlled mechanical ventilation with heat recovery activities were installed into the construction of the new Surgical and Emergency Complex; that allows an overall reduction between winter and summer period of about 160 tons of CO<sub>2</sub>.



Figure 1. Photomap of the University Hospital Authority St.Orsola-Malpighi Polyclinic area



The most innovative work regards the construction of a co-trigeneration plant for more than 6 MW that will deliver energy savings equal to 29% of all the hospital's total consumption with an annual saving of more than 8,000 tons of equivalent CO<sub>2</sub> and cost savings from 3,800,000 to 4,600,000 euro per year. It was possible thanks to the available resources of project-financing.

Regarding electricity, the interventions adopted include: The replacement of incandescent/fluorescent lighting systems with fluorescent, A2 efficient, longer life and low power consumption ones; the gradual replacement of electric motors over 5 KW with high F1 class efficiency motors in case of breakage or extraordinary maintenance; the installation of LED lighting systems; the installation of free-cooling plants in some conditioned rooms such as technical rooms that house the UPS and batteries.

The rate of electricity consumption was in line with regional average increases of 4-5% per year. This rate is due to the continuous increase of equipment (electromedical, refrigeration units, computers, etc...) and of air conditioning systems in more areas. A further increase in electricity consumption occurs with the set up of the new Surgical and Emergency Complex, the new building which houses 12 new operating rooms and an emergency area.

Water consumption peaks during the summer months due to increased use of air conditioning so centralised installation cooling towers were installed. Seven softening systems for the cooling towers allow the breakdown of suspension salts and therefore reduce high quantities of water drainage and replenishment. The consolidated annual water savings is 100,000-120,000 m<sup>3</sup> per year of water and cost savings at current prices of about 310,000-370,000 euro per year. Another significant intervention was the progressive elimination of all water loss cooling systems such as the elimination of refrigerator-cooled water loss cells of the kitchen or the replacement of liquid ring heating pumps with those cooling air.

### Controlled Mechanical Ventilation with Active Heat Recovery

A new innovative system of waste heat recovery for air renewal was installed. The system allows the recovery of waste heat through the use of heat pumps associated with hydronic circuit connected to the extractors and to the air-handling unit; this allows a yield of 60% in-

	CONSUMPTION			AVERAGE PRICE		
	2008 VS 2007	2009 VS 2008	2010 VS 2009	2008 VS 2007	2009 VS 2008	2010 VS 2009
<b>GAS</b>	97%	99,90%	110,21%	+14,09%	-4,81%	+0,13%
<b>WATER</b>	94%	95,41%	102,39%	+8,26%	+6,87%	+7,18%
<b>ELECTRICITY</b>	104%	104,54%	103,81%	+14,26%	-13,12%	+9,12%

**Figure 2. Increased consumption and Energy prices from 2007 to 2010**

stead of 30% from conventional solutions of heat recovery using simple hydronic circuit for heat exchange.

The use of a heat water pump powered by electricity provides a decrease of outlet air temperature and transfers the heat to the batteries of pretreatment air unit through the use of the hydronic circuit. In this way an adequate temperature difference between the water of the hydronic circuit and the inlet air is always guaranteed, while maintaining high the efficiency of the system.

The active recovery system of heat places the building in the energy class of type D with a primary energy demand in winter amounted to 42,45 kWh/m<sup>3</sup>, while the use of conventional recovery would place the building in the energy class of type F with a primary energy demand amounted to 67,32 kWh/m<sup>3</sup>.

As regards the saving of CO<sub>2</sub> emitted into the atmosphere, the active recovery system of heat allows a reduction of approximately 160 tonnes of CO<sub>2</sub> between winter and summer. The reduction of emission will be particularly reduced by more than 8% in winter and about 24% in summer.

### Co-Trigeneration Plant

This is the most important aspect of the project. This plant with more than 6MW will deliver a saving about 6,000 TOE (tonnes of oil equivalent) per year, 29% of which is polyclinic energy consumption, a saving of more than 8,000 tonnes of equivalent CO<sub>2</sub> and cost savings from 3,800,000 to 4,600,000 euros per year. This economic saving will allow to finance most of the following new projects:

- St.Orsola-Malpighi thermal power plant;
- Malpighi steam power plant;
- Therm-refrigeration power plant;
- Distribution systems (hot water, steam, chilled water);
- Substations systems;
- Drinking water network;
- Networking and industrial water wells;
- Fire works and exits through the tunnels; and
- Palagi pavilion block refrigeration plant.

### Results

From a management perspective the implemented systems allow continuous documentation and verification by all operators who are called to contribute to the achievement of results.

The originality of the project lies primarily in two aspects: The involvement of all operators through their daily behaviour in the use of available resources and the use of project financing for the procurement of the necessary economic resources for implementing the interventions on plants.

### Conclusions

All actions taken were focused on oriented design solutions, constructive projects, organisation and management and aligned with guidelines of the Kyoto Protocol and Johannesburg Declaration. It is always possible to verify and document the results obtained, even in economic terms of cost saving.

The overall impression is positive. The project successfully spreads the culture of low carbon solutions for energy efficiency and environmental sustainability through the involvement of both users and professionals. The approach we intend to pursue is therefore to diffuse, constantly day after day, the culture for a winning sustainability for all, both at work and at home.

### Authors:

#### Daniela Pedrini

Technical Department. Planning, Development and Investments Head Office – University Hospital Authority St. Orsola-Malpighi Polyclinic; S.I.A.I.S. National President - (Italian Society for Healthcare Architecture and Engineering)

#### Gaspere Serrazanetti

Technical Department. Energy Manager. University Hospital Authority St. Orsola-Malpighi Polyclinic

#### Michele De Michele

University Hospital Authority St. Orsola-Malpighi Polyclinic

#### Barbara Gozzi

Freelancer Architect

# FROM RISK MANAGEMENT TO PATIENT SAFETY MANAGEMENT

By Peter Gausmann

After quality management made its entry into the healthcare system at the beginning of the 1990s, triggered by the commodification of the medical and care sector, the year 2000 saw the establishment of risk management with the aim to lower complication and loss rates. For several years now, movement and further development has been recognisable. The patients themselves, as a target group of service provision in healthcare, are calling for not only good quality diagnostics, therapy and care but also a high level of safety. The error of comparing quality, risk and patient safety management should be avoided. All three concepts are strongly connected to each other and are logical extensions of one another. Clinical risk management (cRM) operationalises quality management and patient safety management substantiates and specifies risk management focusing on the addressee of service.

There are still relatively few studies on the degree of implementation of risk management measures in German hospitals. The DKI hospital barometer 2008 showed that the vast majority of clinics have only recently started to be concerned with the development of clinical risk management and are still a long way from implementation. A 2010 study carried out by order of the Institute for Patient Safety (IfPS) concluded that German hospitals have become more active with regard to prevention (case conferences, risk audits, full-time employees), but that there are still many development potentials.

## Critical Success Factors of Clinical Risk Management

Like other activities which bind to a high extent human and organisational resources it is important to concentrate on the essential contents. The following six point proposal may contribute to promote an efficient use of resources and, in particular, to motivate employees to get involved.

### 1. The cRM shall consider relevant safety problems

Worldwide, there are various initiatives aimed at promoting patient safety. According to the "High Five" Recommendations of the World Health Organization (WHO), global measures

- For managing concentrated injectable medicine;
- For assuring medication accuracy at transitions in care;
- Communication failures during patient handovers;
- Addressing healthcare-associated infection; and
- For performance of correct procedure at correct body site

are action fields which have to be treated with high priority. The German Action Group Patient Safety (APS) developed clear and pragmatic recommendations for promoting patient safety, for example to avoid leaving unintentionally foreign objects in the surgical field or wrong site surgery, for secure patient identification and for medication therapy safety.

However, a glance into the error in treatment registers of the insurance sector shows that the prevention measures outlined above do not cover the entire spectrum of the causes of loss.

Illustration 1 shows the distribution of causes considering 110,000 claims which were handled by Ecclesia Versicherungsdienst GmbH. It is ob-

vious that diagnosis and therapy errors represent the most frequent causes of errors in treatment. Prevention measures such as mortality and morbidity conferences, inter-professional diagnosis and indication checks (e.g. in the tumour board) and interdisciplinary evaluations of treatment results are of incomparable usefulness and paramount importance.

### 2. Patients should be involved in the development of patient safety

The processes in medicine and care have become more complex, technologies have become more sophisticated and the patient himself has become considerably more critical as compared to 20 years ago. In other production and service sectors it therefore seems reasonable to involve the recipient of services in controlling and development. The WHO has taken the initiative with the project "Patient for Patient Safety" in 2004, and sponsors projects for the "Patient Empowerment". In the meantime, there are specific survey instruments for patients available, which are specifically aimed at patient safety (e.g. PaRis - Patient Risk and Safety survey of the research group Metric in Germany).

The Austrian platform Patient Safety and the Foundation Patient Safety in Switzerland have developed information booklets which inform the patient about his/her cooperation possibilities for promoting his/her safety already at hospital admission.

The Klinikum Altenburger Land finished and published a patient safety movie in October 2011. In a six minute video which the patient receives on admission, which is also shown on the hospital's website and will be soon shown on screens in the waiting zones, patients learn what is done for their safety, what previously remained hidden to them: The counting control in the OR,

Causes	Share
Wrongly performed therapy	32.5%
False diagnosis	9%
Therapy which was not initiated or initiated too late	7.5%
Wrong therapy	6%
Required diagnostic findings were not initiated	6%
Fall incidents	5%
Leaving foreign objects	4%
Damage to or cutting of a nerve	3.5%
Wrong care intervention / prophylaxis	3%
Wrong positioning of the patient	2%
Wrong administration of medicines	2%
any other (Violations of supervisory duty, severance of blood vessels, hygiene failures, monitoring faults, incorrect patient information, documentation error ...)	19.5%

**Figure 1.**  
Causes of medical malpractice  
n>110.000 loss events  
(Ecclesia Versicherungsdienst 2009)

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the cardiopulmonary supervision in the on-guard-room or ensuring the right medication.

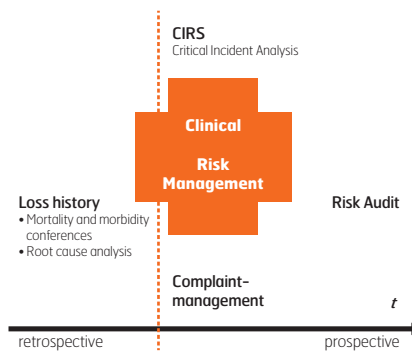
The presented examples are highly suitable to involve the patient in the safety process and to promote an atmosphere of confidentiality.

**3. The aims and initiative of the cRM need to be communicated**

The measures for the promotion of patient safety and for clinical risk management are usually very varied. The department for anaesthesia uses, for example, the Critical Incident Reporting System for its special branch, the employees of the care team work with international grading systems for a care diagnosis without coordinating these with the medical service, or the physiotherapy department develops standards for fall prevention without any lasting networking in the therapeutical team. For developing effective prevention structures it is necessary to introduce system networking like in all other areas. Intranet portals on institutional level are of great benefit here. A broad inter-professional participation in the systems is essential.

**4. Suitable instruments need to be applied in the cRM**

Different instruments and methods of working are available. In principle, these should actively support the RM process in all phases of risk identification, assessment, management and control. Different instruments interfere at specific points in this process, and complement one another with regard to the effect. The impact is such that safety vulnerabilities are identified, and, based on this, preventive measures may be initiated.



**Figure 2. Instruments of cRM**

Retrospective procedures are aimed at analysing events of the past. So a root cause analysis or the mortality and morbidity conference are used for the retrospective analysis of actual loss events. The Critical Incident Reporting System (CIRS) and a complaint or feedback management system are focused on actual medical processes: Errors not involving damage and

patient complaints are assessed as simultaneously as possible to the treatment process. The analysis of such errors and occurrences leads to the development of prevention measures.

Prospective instruments aim at preventing loss events before their emergence by classifying high-risk workflows or structures with regard to the probability of loss occurrence and the potential extent of loss. Scenarios are developed and analysed with the help of safety and risk audits in order to derive suitable prevention measures from it.

It is one of the primary tasks of those responsible for the cRM to make a situation-specific and targeted use of these different instruments and methods.

**5. The effects of prevention measures need to be measured**

cRM procedures call for a high level of involvement of physicians and nurses and also considerable financial resources. In this context it is especially important to measure the effect of the corresponding measures. In this respect, a lot has been done in recent years. For the last five years results of studies which explicitly address the topic of patient safety have been published. Pointing the way ahead was probably the study of Haynes from 2009 for the introduction of a Surgical Safety Checklist, with which the effect of using an OR check list could be proved. The mortality rate stood at an average level of 1.5% before the introduction, and after that it lowered to approx. 0.8%. The complication rate could be reduced from 11% to 7%. Now, this check list (surgery preparation/team-time-out/postoperative care) is used in many operating theatres in German-speaking countries, often in a tailored version.

In 2008, Steyrer analysed the safety culture in hospitals in Austria. Employees were questioned to assess the safety culture of nine specialist departments using the Viennese safety culture questionnaire. Six departments were examined in which RM audits were carried out and a critical incident reporting system (CIRS) was introduced and also three departments without any audits or CIRS. The questionnaire was distributed in a phase before the risk audit and in a defined phase after the evaluation audit. At the same time, the questions were also asked in non-CIRS departments.

The CIRS group considerably improved in the following categories:

- Communication and cooperation with respect to patient safety;
- Attitude towards error management;
- Personal acceptance of responsibility;

- Assessment of the initiated safety efforts; and
- Knowledge of specific problem areas.

In as much as patient safety and cRM become the subject of scientific research internationally, before its introduction every single hospital needs to define when and by what methods the projects shall be evaluated. The institutions owe it to their patients and employees to be able to make a statement on whether the error rate decreased due to the introduction of CIRS or whether the complication rate could be reduced due to the the establishment of a mortality and morbidity conference.

The results of studies and examinations on the effect of cRM show that six target levels can be reached. It promotes patient safety, serves the organisational development, sensitises the therapeutical team in terms of risks, supports inter-professional communication and cooperation, creates legal certainty, and provides the prerequisites for the insurability of the respective institution.

**6. The conditions must be developed and promoted**

Patient safety requires a safety culture. Pfaff defines this as an institution's stock of knowledge, values and symbols, which increases its capacity to promote safety. It concerns the provision of knowledge and skills and also the development of standards and rules of conduct. In addition, the institution needs to define safety as a special "value in itself".

Hoffmann and Rohe accurately classified five levels of maturity of a safety culture:

**Negative safety culture (level of maturity 1):** Patient safety is considered only hesitantly. When critical events occur, guilty persons are searched and sanctioned.

Learning from errors does not take place.

**Reactive safety culture (level of maturity 2)** The organisation only takes action when critical events occur.

**Correct safety culture (level of maturity 3)** Quality and risk management models and systems are complied with due to pressure of external guidelines.

**Pro-active safety culture (level of maturity 4)** Measures for the increase of patient safety are initiated without any critical events having occurred.

**Trend-setting safety culture (level of maturity 5)** Patient safety is a self-evident and routine part of work for all persons working in the organisation.

Many institutions are currently still in a condition between level 2 and 3. However, many

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hospitals have already set out to reach level 4 or even 5 by introducing and establishing suitable systems and instruments.

### Conclusion

We have achieved so much for the development of clinical risk management and for the promotion of patient safety within the last 10 years. However, there is still considerable potential for development. A great concern is the patient's perception. The patient is increasingly uncertain despite all inner clinical developments. Recent studies show that patients are particularly afraid of hospital infections. The media has played a

part in this "uncertainty perception". Robert Wächter accurately says in his book "Understanding Patient Safety" published in 2008:

*"Patient safety could be increased enormously. But we should not rest, until patients exclusively come into our care with fears and worries about their illness and possible consequences. They should not have any fears and worries, about suffering damage or even dying from a medicine, which was actually intended to help them. There is still a long way to go!"*

Clinical risk and patient safety management is no longer a voluntary exercise but a "must-have programme" for every hospital. Patient safety also contributes to brand development in the

growth market healthcare, and it is a business management option since hospitals are better insurable with an established RM. But first and foremost the service providers owe it to the patients. Patient safety is a patient right and the obligation of all members of staff.

### Author:

Dr. Peter Gausmann  
Gesellschaft für Risiko-Beratung mbH  
pkausmann@grb.de  
www.grb.de

References available upon request,  
lee@myhospital.eu

## OCCUPATIONAL ACCIDENTS IN HUNGARY: EFFICIENCY OR COST-EFFICIENCY?

By Robert Kis

Ten years of data analysis, observations and research work preceded the recently completed study, "Expenditures and economic efficiency of the Hungarian accident insurance practice in an international context" in Hungary, which highlights the characteristics and challenges of the Hungarian occupational accident medical care practices. For comparisons to the data collected in Hungary, Austria and Switzerland were selected considering the similarities in terms of area size, population number and cultural roots. However, the historical past, industrial structure and economic wealth of these countries differ significantly from Hungary. Even after taking such differences into consideration, the study reveals quite shocking data and conclusions.

### Conclusion One: In Hungary, one quarter of the Austrian and Swiss medical care costs are used for covering occupational accidents

Even considering the monetary (disability) allowances provided by the social security system, the costs per one incident (3,651 euro/incident) are still only one fourth of the Austrian and Swiss costs (12,314 and 12,985 euros/incident). What can be the reason behind such a significant difference? Could this indicate a much higher efficiency in Hungarian healthcare? Should the Austrians and the Swiss come and learn about efficiency from Hungarians?

Any professional who has visited the accident rehabilitation institutions in Austria (AUVA) or in Switzerland (SUVA) and also visited Hungary will easily notice the difference compared to the moderate Hungarian healthcare conditions and technical equipment capacities. Although the first Hungarian state-owned healthcare institute supplied with western technology and world-class equipment, i.e. the National Institute for Medical Rehabilitation opened in Budapest more than ten years ago, the initiative has not spread throughout the country. In general, Austria and Switzerland have significantly larger healthcare capacities.

The reason for the availability of a relatively small extent of healthcare capacity is the peculiar nature of Hungarian healthcare funding, which does not ensure the funding of Western quality accident rehabilitation care at a prime cost level. The issues that make high-quality healthcare more costly, such as special building structures, technology equipment availability and the application of special therapies have not been included in the already very stretched Hungarian healthcare budget. Other therapeutic standard equipment financed in the Western countries such as intelligent artificial limbs, computer-controlled tools for the disabled, or the conversion of living spaces for persons of reduced abilities are also not included. According to the above, only the costs of care are cheaper in Hungary, but the end product, the quality of healthcare, if it is specified in years of healthy life gained, will fall very much behind what is experienced in Switzerland and Austria. The reason for the Hungarian 'cheap' cost structure inherited from the past and unfortunately still existing in accident healthcare culture is prosaic and pitiful. In Hungary, both the population and the government favour monetary compensation over medical treatment. The state cannot provide

such a wide range or such a high level of medical services as Austria or Switzerland. People often believe a serious accident at work is a great way of receiving extra money. This diagnosis seems to be confirmed by the composition of expenditures of Hungarian work accident insurance practice: 98% of the total expenditure are monetary payments of the national social security system. On the other hand, this status also sort of declares that no other alternative can be provided for the individuals but the financial compensation and the government endeavours to compensate for the disadvantages of the individuals for the rest of their lives in the form of a pain award. The numbers in the Austrian and Swiss statistics include the costs of full re-integration, occupational rehabilitation, and, if necessary, the creation of living space more suitable for the changed life conditions, and thus the citizens of those countries are given a real choice and achieve a significantly higher ratio of health profit.

*Conclusion Two: The number of reported occupational accidents is one fourth and one tenth of the incident numbers in Austria and Switzerland, respectively.*

Not only do the Hungarians cover occupation-

al accidents for just a fraction of the sum spent by their Western neighbours, they also have to cover significantly less incidents. Although the population number and area size of the countries in concern are nearly the same, the number of registered occupational accidents vary largely. The number of occupational accidents in Hungary (23,971) is one quarter of the respective Austrian (107,287), and one tenth of the Swiss (257,246) occupational accidents. When merely considering the numbers, one could come to the conclusion that there is a high level of occupational safety implemented in Hungary and as a result of the mutual efforts and mutual interests of the employers and employees, there is very little chance for occupational accidents. Based on this conclusion, the numeric 'competition' has been won by Hungary, demonstrating an example to follow for Western neighbours.

Unfortunately, however, the huge difference in the number of occupational accidents is not to be explained by the excellent quality of labour safety capabilities, nor by the differences in the industrial structure of the given countries, as the latter only partially covers the reason for the variance. Unfortunately the primary reason for the 'excellent' Hungarian results is to be found in the legal regulations and operational organisation behind accident insurances, i.e. they are of an administrative nature. In the Hungarian accident-related culture (rooted deeply in the past) the employee, having suffered an accident, will think that the best and safest thing that can happen to him/her is receiving money. Accordingly, they tend to accept or even suggest a settlement agreement with a large amount of money and leave the incident unreported. This is in the logical interest of the employer as well, both financially and legally as the employer may also face legal condemnation if its clear responsibility is stated in the case of an accident. Thus, apparently, both players choose the lesser of two evils. The high number of unreported occupational accidents in Hungary that are outside the range of vision, never reported as occupational accidents, can also be explained by the legal employment relationship.

In Hungary, for tax- and labour right reasons, there is a preference for invoice-submitting contractors rather than employees. Accordingly, many employees are self-employed as private entrepreneurs or being in a limited partnership, and the proportion of such relations is higher than in Western Europe. Contracted employees rarely report occupational accidents, in line with the fact that employers tend to throw most of the responsibility of establishing safe work conditions upon the contractors. However, the industrial structural differences in the countries cannot justify the large variance between the number of incidents. It is definitely thought-pro-

voking and telling: Based on the facts, one can draw a conclusion that only a fraction of occupational accidents are actually reported as occupational accidents (taking place on-site), and a major part of them are never known by the authorities.

**Conclusion Three: In Hungary, the total numerically specified expenditure spent on occupational accidents is hardly one fifteenth-thirtieth of the Western countries, respectively.**

Comparing the difference between the number of accidents and the extent of healthcare costs, one may as well conclude that the annual expenditure spent on the total number of occupational accidents is only one fifteenth and one thirtieth of the respective costs of the Western countries. Demonstrating it this way, one can see the shocking difference, but based on the above described issues, it is understandable, as in Hungary people suffering accidents are provided a much more moderate extent and quality of healthcare.

In line with the above, one cannot be optimistic to welcome the most recent, quite favourable result of Hungary on an international scale, which was the proportion of the whole direct and indirect impacts of the accident insurance practices on the domestic economy compared to the GDP. The full burden of the accident insurance practices in Hungary in 2005 was 85 billion HUF (336m EUR). Accordingly, it meant only 0.386% of the GDP measured on the market price of 22,027 billion HUF (87md EUR), contrary to certain estimations, which calculated a burden on the domestic economy to be up to 4% of the GDP in international relations. The reason for the optimistic Hungarian result can be found in the data calculated on the basis of the principle of prudence: Whatever could not be interpreted in a cause and effect relation was not considered as a cost factor regarding the indirect impact on the domestic economy. What was given was the direct medical care costs of the incidents (monetary and in-kind). The study considered as indirect costs the loss of tax and contribution revenues suffered by the state, the changes in the composition of the consumer basket and the exclusion from the generation of revenues, which could be statistically quantified. No other life quality factor was considered.

The economic correlations between a higher level of domestic economic output, a healthy nation and economic wealth are well-known. The issued study focuses on a more complex quality perspective rather than the quantity perspective, and looks behind the Hungarian numbers that can look optimistic at first sight, and compares them on an international level. The conclusion can be drawn accordingly, i.e. there is an East European country that can advance over its Western counterparts in something. But what kind of competition is exactly won?

It is important to know that the practice of accident insurance in Hungary is not a separately existing activity; funding and data management are handled together with leisure, road and home accidents, whereas in the major part of Europe, the economic and social advantages of handling occupational accidents separately have been recognised. The reason for separate handling valid in almost all cases is that the practice of risk-proportional fee payment can be implemented, allowing opportunities to call for funds and applying the principle of fairness.

There is also a significant difference between the range of the Hungarian and the Swiss occupational accident insurance policy services. In Hungary, services include acute treatments, a part of the rehabilitation care process, the supply of medicine and therapeutic equipment as well as the payment of allowances. The available services do not include employment and social rehabilitation, and the conversion of the living space for changed life capacities.

In Hungary, the basic issues of accident insurance need to be reconsidered, such as the place of the activity within public healthcare, its funding, task management, documentation and regulations. As can be seen from the above outline of the study, the results achieved in Hungary in international relations speak for themselves. The advance of Hungarian results towards European ones is not primarily a matter of increasing the budget, as the occupational accident insurance activity could be a solution in itself through the risk-proportional fee payment system. It is advisable to manage the activity separately from the rest of the health insurance activities and to conceptualise the range of services. There are also professional and financing policy issues to be reconsidered. The primary challenge for Hungarians – not just in the field of occupational accident insurance, but also in general – is to give up the current healthcare culture, and to replace the money-centred approach by a health-focused approach for both the population and the financing government. Naturally, this requires the development of appropriate incentives. It is also critical to think in the appropriate period of time, and successful implementation also requires political determination, consensus and consistency, which is a huge challenge in itself, considering the Hungarian political rotation. Due to extending the implementation period to a strategy range, the accomplishment of a political consensus is a huge step forward in improving the economic-social competitiveness of the country in international relations.

#### Author:

Robert Kis  
Economist, Healthcare Manager  
Kovalens Plusz Ltd  
kisrobert75@gmail.com



*(E)Hospital* knows that hospital managers need to keep up to date with the latest innovations and news across all medical specialities to better understand the needs and challenges of each hospital department. For this reason we have been publishing specialist supplements with each issue. Two copies are included: An insert for your own use and a pull out to pass on to a relevant colleague.

In this issue, the focus is on cardiology. Being an extremely large and important discipline, we can merely scratch the surface in our eight-page supplement. For this issue we have chosen two aspects of cardiology: The increasingly important discipline of tele-cardiology and portable ultrasound. Both disciplines can aid quicker diagnosis and improve patient outcomes.

## **TELECARDIOLOGY WITH A SINGLE REGIONAL HUB SERVING FOUR MILLION INHABITANTS**

### **Telecardiology- Healthcare's Version of "Beam me up, Scotty"**

By Natale Daniele Brunetti et al.

"Beam me up, Scotty" is a catchphrase that made its way into popular culture from the science fiction television series *Star Trek*. Thanks to his chief engineer Montgomery "Scotty" Scott, the commander, Captain Kirk, could be transported anywhere from the *Starship Enterprise*. We are, of course, interested in facts, not science fiction. How can a cardiologist be brought to wherever he/she is needed, without the aid of Scotty's tele-beam? Telemedicine application in the field of cardiology has made this possible in Puglia. The region is currently served by a telemedicine hub from where cardiologists, available 24/7, report back on electrocardiograms recorded on a small pocket device, the CardioVox P12 TM (Aerotel, Holon, Israel), and transmitted by telephone (mobile or other).

A telecardiology hub provides electrocardiograms which enable real-time reporting for public emergency medical services throughout the Puglia region (4-million inhabitants) in Southern Italy

#### **How Does It Work?**

The pocket recorder may record a complete 12-lead electrocardiogram in a couple of minutes; after telephone coupling, the ECG is sent to the telecardiology hub, which is located in

Puglia's capital city, Bari (Figure 1). Here, the cardiologist may read the ECG on a computer screen and report back on the findings; when necessary, a brief consultation may also occur between the on-site sender – a physician, paramedics or members of the public – and

the cardiologist. Remote senders may receive back the ECG report on their smart-phone or iPad, or on a PC via an Internet or telephone connection. The electrocardiograms may be easily stored and printed as required.

The telecardiology hub, which serves the whole



**Figure 1.** A complete 12-lead electrocardiogram may be recorded anywhere in a couple of minutes by the CardioVox P12 pocket recorder. After telephone coupling (mobile or other), the electrocardiogram is sent to the telecardiology hub, where a cardiologist available 24/7 analyses the data on his/her computer screen and reports back on the electrocardiogram. The electrocardiogram and the report may be sent back by telephone or internet and visualised on a smart-phone, iPad or computer screen, or printed off.

region, is operative 24/7; two cardiologists are on duty, and there are 12 computer terminals, 25 telephone lines and two call centre operators available 24/7. About 20 cardiologists are involved in providing the telecardiology service.

An emergency power system is ready in the case of electrical power outage. All the services and the entire network are shielded from virus threats by a combination of hardware and software firewalls, and a comprehensive antivirus suite capable of real-time scanning and updates, in addition to software back-up procedures. A comprehensive network management programme ensures that all systems have real-time updates and that the latest security patches are installed as soon as they are released.

All data is electronically stored onto computers using a unique identification number for centre and individual, under the provisions of the Italian Privacy and Personal Information Protection Act (D. Lgs. 196/2003).

The telecardiology service has been in operation since 2004 and is available for the "118" regional public emergency medical service, the national "911" medical emergencies service (178 ambulances and 41 First Aid Points are at the disposal of the more than four million inhabitants, Figure 2.) and hundreds of private customers (patients, pharmacies, general practitioners, specialists in occupational medicine, nursing homes).

In June 2012 the 500,000th electrocardio-

gram was analysed by the service, which is a particularly interesting example of synergy between public health authorities and private enterprise. The regional 118 service is run by the regional government while the telecardiology service is provided by Cardio-on-line Europe s.r.l., a private company.

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A complete 12-lead electrocardiogram may be recorded in a couple of minutes and transmitted by telephone to a telecardiology "hub" where a cardiologist promptly sends back the exam and his/her report.

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The telecardiology service in Puglia is an extremely interesting example of how it is possible to reconcile the two main models of telemedicine delivery for cardiology emergencies: The Boston model, which involves only a small number of telemedicine providers, covers a small area and assigns the ECG analysis to paramedics; and the Los Angeles model, with a larger area but a large number of telemedicine providers and a computer-algorithm-based ECG report. The Puglia model provides not only qualified, remote, on-site as-



**Figure 2.** All the 118 public emergency medical service crews are equipped with a telecardiology electrocardiogram recorder (there are 178 ambulances, 41 First Aid Points at the service of a population of more than 4 million inhabitants).

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sistance from a cardiologist – as is required by Italian law for electrocardiogram analysis – but also cost reduction: A single telemedicine hub may potentially support even more than one region with several million inhabitants.

### The Evidence

Several studies have shown that telemedicine support can improve the quality of medical assistance and reduce cardiovascular mortality. International guidelines as well as other consensus and scientific statements recommend that emergency medical service acquires and uses pre-hospital ECGs to evaluate patients with suspected acute coronary syndrome.

Transmission of a pre-hospital 12-lead ECG directly to the attending cardiologist's mobile telephone decreased door-to-PCI time by >1 hour when patients were transported directly to PCI centres, bypassing local hospitals. In referred patients, median time from 911 call to PCI was significantly shorter than in the control group (74 vs 127 minutes;  $p < 0.001$ ); accordingly, door-to-PCI time was 63 minutes shorter for referred patients versus controls (34 vs 97 minutes;  $p < 0.001$ ). In another study assessing the diversion of ST-elevation myocardial infarction patients for primary angioplasty based on wireless pre-hospital 12-lead electrocardiographic transmission directly to the cardiologist's handheld computer, hospital arrival to procedure start was 40 minutes, compared with 94 minutes in a historic control group ( $p < .01$ ).

At a local level, in Puglia, for over 233,657 subjects with suspected acute heart disease who were screened over a period of six years using pre-hospital ECG through telemedicine support, 45% of electrocardiograms were abnormal; of these, 18% showed signs suggestive of acute coronary syndrome, 20% were indicative of arrhythmia, and minor problems emerged in 62% of cases. In cases of suspected acute coronary syndrome, ECG findings were normal in 77% of patients; 74% of subjects with suspected acute coronary syndrome were screened within 30 minutes from the onset of symptoms.

In another study, ECG showed signs of ST-elevation in only 3.84% of patients with acute chest pain, while only 78.94% of patients with ST-elevation acute myocardial infarction reported acute chest pain. The diagnosis was therefore based mainly on ECG findings with telemedicine pre-hospital electrocardiograms despite the presence of atypical clinical presentation. About two thirds of patients with ST-elevation acute myocardial infarction were res-

ident in small towns without coronary care units, and thus particularly benefitted from an immediate pre-hospital diagnosis.

Telecardiology pre-hospital ECG screening could significantly help in avoiding errors and delay in STEMI diagnosis in elderly patients. Among STEMI patients older than 70 years, atypical presentation was detected in 32% [95% confidence interval (CI): 26.8-38.1] of patients (vs. 11% 95% CI: 7.8-15.5,  $P < 0.001$ ). The rate of atypical STEMI presentation, immediately diagnosed, thanks to telecardiology, rose from 9.2% (95% CI: 5-17%) in the 60-69 years age range to 25.6% (95% CI: 20-35%) in the 70-79 years age range, to 35.2% (95% CI: 26-45%) in the 80-89 years age range, and to 46.1% (95% CI: 26-67%) in patients older than 89 years of age ( $P < 0.01$  in all cases). The number needed to treat (to avoid a single missed STEMI diagnosis) was 9.4 (95% CI: 6.4-12.9) for patients younger than 70 years, versus 3.1 (95% CI: 2.6-3.7) among those older than 70 years ( $P < 0.001$ ).

Telecardiology support may also improve the sensitivity of diagnosis of atrial fibrillation with atypical presentation in elderly patients. In a cohort of emergency medical service patients, the rate of subjects with atrial fibrillation and typical symptoms significantly decreased with age (<65 years 29.58%, 65-75 years 17.06%, >75 years 10.35%,  $p < 0.001$ ). The number needed to diagnose an atrial fibrillation with atypi-

cardiovascular risk in a Mediterranean population and to draw charts of cardiovascular risk in a Mediterranean context.

Screening studies for early ECG diagnosis of cardiovascular disease among primary and high school students and professional athletes are currently in the advanced planning phase. Further initiatives will probably be useful in the future in reducing waiting lists for electrocardiogram examinations in public regional hospitals.

### Conclusions

Telecardiology allows for the remote specialist interpretation of electrocardiographic recordings via telephone transmission, and can help support general practitioners in the diagnosis and management of acute and chronic cardiac disease, as well as provide the potential for screening opportunities in patients at particular risk. According to some authors' analysis, telecardiology is set to revolutionise cardiac care in the community, leading to a reduction in costs and bridging the gap between primary and secondary care.

The Puglia telecardiology network provides an interesting demonstration of telemedicine potential in healthcare management, reconciling high quality of medical assistance with optimal spending of public resources.

## Several studies have shown the potential of a regional telecardiology network to reduce time of diagnosis and medical errors in the field of cardiovascular emergencies.

cal presentation (number needed to treat) decreased from 45 (<65 years) to 9 (65-75 years) and 5 (>75 years) ( $p < 0.001$ ). Telecardiology support increased the rate of at-home diagnosis of AF from two-fold (in 40-year-olds) up to four-fold (60-year-olds) and seven-fold (70-year-olds).

### The Final Frontier

Telecardiology is now established in Puglia. Several studies of primary and secondary prevention, also with the support of pharmacies, have been carried out. In the CAPITAL (Cardiovascular Prevention with Telecardiology in Puglia) study, ten thousand patients are currently involved in a project to estimate car-

References available upon request,  
[lee@myhospital.eu](mailto:lee@myhospital.eu)

### Authors:

**Natale Daniele Brunetti,**

*MD, post-graduate in Cardiology, PhD, Cardiology Department, University of Foggia, Italy*

**Daniele Amoroso,**

*MD, post-graduate in Radiology, U.O. Cardiologia, Azienda Ospedaliera Policlinico, Bari, Italy*

**Luisa De Gennaro,**

*MD, post-graduate in Cardiology, PhD, Cardiology Department, University of Foggia, Italy*

**Giulia Dellegrottaglie,**

*MD, Cardio on Line Europe S.R.L., Bari, Italy*

**Giuseppe Di Giuseppe,**

*Cardio on Line Europe S.R.L., Bari, Italy*



## ESC HEART FAILURE GUIDELINES FEATURE NEW RECOMMENDATIONS ON DEVICES, DRUGS AND DIAGNOSIS

New recommendations on devices, drugs and diagnosis in heart failure were launched at the Heart Failure Congress 2012, 19-22 May, in Belgrade, Serbia, and published in the European Heart Journal.

The ESC Guidelines for the Diagnosis and Treatment of Acute and Chronic Heart Failure 2012 were developed by the European Society of Cardiology (ESC) in collaboration with the Heart Failure Association (HFA) of the ESC. The Congress is the HFA's main annual meeting. An analysis of the most up to date clinical evidence in the field of heart failure by the ESC Guidelines task force led to several major updates since the previous ESC Guidelines were published in 2008.

In devices, left ventricular assist devices (LVADs) were hailed as a step change in the management of heart failure. LVADs are more reliable and lead to fewer complications than in 2008. Until now, LVADs have been used as a temporary measure in patients awaiting a heart transplant. But Professor John McMurray (Glasgow, UK), chairperson of the ESC

Clinical Practice Guidelines Task Force, says: "LVADs will increasingly be used as a treatment in their own right, not just as a temporary support while awaiting transplantation."

A new indication for cardiac resynchronisation therapy (CRT) in patients with mild symptoms is given in the guidelines. More evidence from new trials and further analysis of existing trials also enabled the task force to provide more clarity about the effects of CRT. It is clear that patients with left bundle branch block QRS morphology and those who are in sinus rhythm have the greatest benefit from CRT. Conversely, those who have a non-left bundle branch block QRS morphology and patients in atrial fibrillation have less certain benefit. Also in the device arena, new transcatheter valve interventions are discussed.

In pharmacological treatments, two new indications are highlighted. The guidelines stress that when attempting to reduce heart rate, the dose of beta blocker should be maximised before giving additional medications

to reduce heart rate. New evidence has extended the indication for mineralocorticoid receptor antagonists. This means that for many patients, standard therapy should include three neurohumoral antagonists – an angiotensin converting enzyme inhibitor (or angiotensin receptor blocker), a beta blocker and, if symptoms persist, now a mineralocorticoid receptor antagonist as well.

In the area of diagnostics, a new biomarker called mid-regional pro-A-type natriuretic peptide is mentioned for the first time. Professor McMurray concludes that, "These guidelines make recommendations based upon evidence for established and new diagnostic tests and therapies for heart failure. If implemented, they offer a real opportunity to improve the outcome of patients with this condition."

**To read the guidelines in full, please visit:**  
<http://www.escardio.org/guidelines-surveys/esc-guidelines/Pages/acute-chronic-heart-failure.aspx>

## ONLINE TREATMENT BENEFITS FOR PATIENTS WITH HEART DISEASE

Results of a recent study published on [bmj.com](http://bmj.com) (British Medical Journal) suggest that patients with vascular disease such as angina and heart disease can benefit from including an internet-based treatment programme on top of usual care.

Patients with vascular disease are at higher risk of suffering a further event or death. Treatment of vascular risk factors by nurse practitioners is proven to be very effective in reducing this risk although treatment goals are often not reached and it is costly and time-consuming. Researchers from the University Medical Center Utrecht in The Netherlands carried out a randomised controlled trial to assess whether including an internet-based programme would be effective in reducing vascular risk factors

in patients with the disease.

The internet-based programme included a personalised website, mail communication via the website with a nurse practitioner, self-management support, monitoring of disease control and pharmacotherapy. The study lasted 12 months and included 330 participants.

The main outcome of the study measured a relative change in the Framingham Heart score after one year. The Framingham Heart Score represents the predicted 10-years risk for coronary heart disease and is developed for patients free of vascular disease. Results show that after one year, Framingham Heart Scores had fallen 12% further among patients who took part in the internet-based pro-

gramme, compared with controls.

The authors conclude that an internet-based nurse-led vascular prevention programme, on top of usual care, may help reduce long term risk of vascular event or death. They stress that the clinical importance of this is "small and limited" but do state that this intervention would be easy to implement in clinical practice and might be useful for various groups of patients at high cardiovascular risk.

For more information, please contact Frank Visseren, Professor of Medicine, Department of Vascular Medicine, University Medical Center Utrecht, The Netherlands: [F.L.J.Visseren@umcutrecht.nl](mailto:F.L.J.Visseren@umcutrecht.nl)

Text adapted from [bmj.com](http://bmj.com).



# POCKET-SIZED ULTRASONIC STETHOSCOPES

## Bedside Diagnostics

### Accurate First Impressions Crucial

Obtaining an accurate initial diagnostic assessment is the goal of every clinician, but has particular life and cost savings in the patient who presents acutely ill or in a remote location. Perhaps due to revealing features unique to the presentation and to optimise patient throughput, our initial patient assessment is typically "front-loaded." As time and clinical stability permit, we place more effort at the first encounter in obtaining historical data, admission lab testing and imaging as compared to subsequent visits. The provisional diagnosis that emerges from this interaction is therefore often unquestioned and treatment is usually initiated, often with ensuing consultation and confirmatory testing. Early diagnostic errors could have disastrous outcomes both in patient survival and costs, by resulting in inappropriate triage, tests, treatments, or extended hospital stays.

ing auscultation and percussion in noise-filled emergency rooms or intensive care units and the minimal time for patient exam limits the use of time-honoured physical exam techniques. This evolution away from older, traditional practices may be justifiable, as evidence-based scrutiny is lacking for many of these subjective exam techniques when applied in contemporary settings.

### What Role Does Pocket-Sized Ultrasound Play?

It is against this background that pocket-sized ultrasound devices have emerged. Amidst other tools that appear simplistic in comparison, such as the sphygmometer, traditional binaural "stethoscope" and reflex hammer, the ultrasonic stethoscope ultimately fulfills its own definition by allowing us to finally "see" pathology that centuries-old methods such as percussion and auscultation had us infer

devices when compared to standard equipment are yet to be fully understood and are likely related to its accuracy during difficult ultrasound applications, including difficult windows in need of advanced image optimisation techniques or in the detection of subtle findings such as wall motion abnormalities.

### Getting a Clue to Diagnosis

Despite novelty, appeal and modest costs (less than 10,000 dollars per device), pocket-sized ultrasonography will encounter many challenges to widespread adoption. In order to generalise and standardise use, there will be the need for development of suitable imaging protocols for these smaller devices, akin to the cardiac physical exam. Prior cardiac hand-carried ultrasound studies have been biased by examining advanced imaging by cardiologists or use by highly motivated non-cardiologists and demonstrate limitations in accuracy and performance relative to the complexity of the imaging protocol employed.

The imaging protocol in the case presented, CLUE, is a prototypical application for bedside ultrasound and is well-suited for pocket-sized devices. CLUE is brief, avoids the complexity of Doppler, and provides diagnostic and prognostic information. Although CLUE will miss subtle diagnoses such as endocarditis and isolated wall motion abnormalities, the application time (less than five minutes) and training requirements are comparable to that of auscultation, making it suitable for use by all physicians who need immediate bedside data on cardiopulmonary structure and function. CLUE will increase the sensitivity of the initial evaluation for cardiopulmonary disease and, particularly in patients with unexplained dyspnea or hypotension, could result in earlier, more accurate referral for echocardiography, CT imaging, and cardiac or pulmonary consultation.

Once full-body imaging protocols have been developed for pocket-sized ultrasonography, validation of the accuracy and clinical impact of this "ultrasonic physical" upon outcome can be performed, a requirement never fulfilled by currently employed physical exam techniques.

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Physical exam skills once relied upon for immediate diagnosis have deteriorated over the years, partly supplanted by sophisticated point-of-care lab testing and imaging.

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Therefore, a more accurate "first impression" of the patient's illness could reduce time-to-diagnosis, which in turn would minimise costs and medical errors.

Physical exam skills once relied upon for immediate diagnosis have deteriorated over the years, partly supplanted by sophisticated point-of-care lab testing and imaging. In particular, exam skills using the indirect methods of percussion or auscultation for cardiopulmonary or intra-abdominal pathology have been lost or abandoned. Few physical exam findings of these internal regions, other than pulselessness and wheezing, will elicit immediate treatment without more confirmatory testing. In addition, the difficulty of perform-

ing about the lungs, heart and intra-abdominal spaces. Laptop-sized, hand-carried ultrasound platforms have existed for years and have great versatility, inspiring the bedside use of ultrasound for limited exam and procedural guidance as in the case presented.

However, much like application of an electrocardiograph, these larger, luggable devices must be found in the corner of the department and wheeled by cart to a patient's bedside that is already cluttered by personnel and equipment. The distinct advantage of the pocket-sized device is the on-the-spot immediacy and convenience of its use as part of the physical exam and not as a separate diagnostic procedure. The limitations of these



**Figure 1.** Two internal medicine residents, each with a different pocket-sized stethoscope, learn and demonstrate imaging techniques on their chief resident, during dedicated ultrasound training at our institution.

Research, coupled with consensus opinion, could define the accuracy and competency requirements necessary to train a generation of physicians in bedside ultrasound. CLUE instruction can be successfully incorporated into the formal internal medicine curriculum as it has for years at the authors' institution, despite the recent mandatory reductions in residency hours (see Figure 1).

### Implications for Standard Studies

In addition to the salutary influence on initial diagnostic impressions, limited or screening ultrasound exams may have profound consequences on referral for conventional ultrasound testing. Multiple studies have been performed to project the diagnostic and cost effects of a "limited" echocardiographic exam upon referral for a standard echocardiogram. These studies suggest that the advantage of

more accurate limited bedside exams is in the reduction of unnecessary testing of low-risk subjects. In the utilisation of echocardiography for suspected mitral valve prolapse, a limited echo screening strategy in which only abnormal limited studies would invoke referral for a comprehensive exam projected a 50 percent reduction in echo costs through the elimination of essentially normal studies.

Conversely, the high sensitivity of bedside ultrasound will increase the number of referrals for formal studies for suspected abnormalities that may be purely incidental or asymptomatic. The frequency of incidental echo abnormalities can be significant in certain populations, approaching 80 percent in elderly male inpatients. The cumulative effect on cost, missed diagnoses, and study volume will remain unknown until a screening bedside cardiac exam is formalised and minimal competency requirements are defined.

However, the overall effect of an improved bedside exam may support a laudable, cost-neutral goal of shifting conventional ultrasound resources away from a healthy normal population and towards a more ill population with unsuspected disease.

### Conclusions

Device application and novel ultrasonic exam "signs" will need to be elucidated in the coming years. Current medical practice is much more circumspect of the cost and effect of any additional diagnostic techniques, particularly those with accuracies that vary with physician skill, and will require evidence-basis for clinical application of these devices. The true determinant of the success of the ultrasonic stethoscope will be in whether it can disseminate into general medicine and not simply be a sophisticated tool for expert subspecialties. Although it seems likely that pocket ultrasound could improve any physician's immediate bedside impressions, questions remain regarding how the overall diagnostic accuracy and costs of this skill-dependent, subjective technique will integrate with the objective data of conventional laboratory and radiographic imaging. At the present time, further studies are necessary to formulate and test the accuracy of robust imaging protocols suitable for these smaller instruments.

### Authors:

**Dr. Bruce J. Kimura,**  
*Medical Director  
Cardiovascular Ultrasound  
Department of Cardiology  
Scripps Mercy Hospital  
San Diego, California*

*kimura.bruce@scrippshealth.org*

**Dr. Stan A. Amundson,**  
*MD, post-graduate in Radiology, U.O. Cardiology, Azienda Ospedaliera Policlinico, Bari, Italy*

**Luisa De Gennaro,**  
*Director  
Internal Medicine Residency*

**Dr. David Shaw,**  
*Director  
Graduate Medical Education  
Scripps Mercy Hospital  
San Diego, California*



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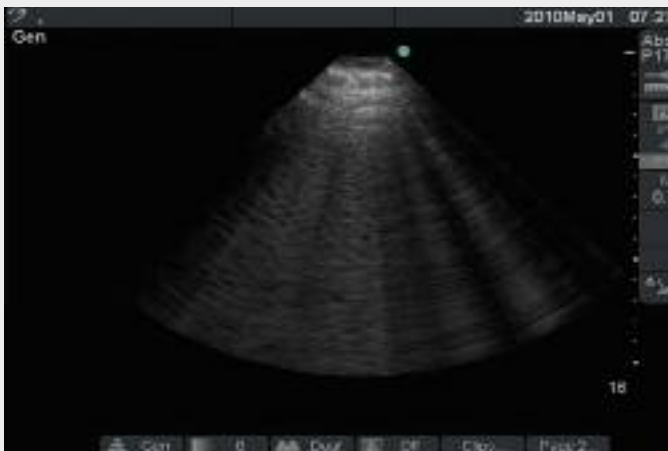
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## Case Study

Paramedics found a 50 year-old man in his apartment, disheveled and with altered mental status. Mildly hypothermic and hypotensive, he was brought into the emergency room

The subcostal view excluded a significant pericardial effusion indicative of tamponade, but demonstrated right ventricular enlargement, consistent with pulmonary hypertension. A mid-line abdominal scan showed a dilated intra-hepatic inferior vena cava, suggesting ample



**Figure 2.** Bedside apical lung view using a laptop device and a 3.5MHz cardiac transducer demonstrates the ultrasonic lung comet-tail artifact, consistent with pulmonary oedema or interstitial lung disease.

where a brief initial cardiovascular physical survey found no pulmonary rales, wheezing, cardiac gallops or murmurs. The patient was intubated for airway protection.

A three-minute cardiovascular limited ultrasound exam (CLUE) using 2D imaging of six sites was performed at the bedside using a 3MHz transducer. The parasternal long axis

central venous pressure and found an abdominal aortic aneurysm consistent with advanced atherosclerosis (see figure 3).

The patient underwent head, chest, abdominal and pelvic CT scanning, which were remarkable for subdural hygromas and a 5.5cm abdominal aortic aneurysm without signs of rupture. He was admitted to the intensive care



**Figure 3.** Bedside longitudinal view of the abdomen demonstrates an abdominal aortic aneurysm, consistent with advanced atherosclerosis..

left ventricular cardiac view demonstrated depressed LV systolic function and mild left atrial enlargement, suggesting congestive heart failure. A "four-corner" exam (two apical and two basal views) of the lung, quickly showed bilateral ultrasonic lung comet-tail artifacts (see figure 2) and pleural effusions, consistent with pulmonary oedema and chronic heart failure.

unit where a 5MHz ultrasound venous exam was used to gain jugular venous access in the neck and then exclude subsequent pneumothorax by the presence of persistent lung sliding and comet-tail artifacts. Before venous compression stockings were applied, compression of the deep veins at femoral and popliteal sites was demonstrated by using the same ultrasound transducer.

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For more information, contact

**European Society of  
Intensive Care Medicine (ESICM)**

Congress Department

Rue Belliard 19

1040 Brussels

BELGIUM

Tel: +32 (0)2 559 03 75

Fax: +32 (0)2 559 03 79

[Lisbon2012@esicm.org](mailto:Lisbon2012@esicm.org)



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# THE THERAPEUTIC BENEFITS OF SALUTOGENIC HOSPITAL DESIGN

By Alan Dilani

**While clinical practice focuses on treating illness, there is also a raft of research to suggest that the quality of built environment has a high impact on our health and wellbeing.**

Architecture and design have been influenced by industrial societies for decades, and as a result, public buildings such as airports and hospitals have often been designed to function and look like factories. Clinical practice in hospitals focuses mainly on treating illness while often neglecting a patient's psychological, social and spiritual needs. Environmental qualities that could be considered as psychosocially supportive have not been developed properly. Psychosocially supportive design stimulates and engages people, both mentally and socially, and supports an individual's sense of coherence. The basic function of psychosocially supportive design is to start a mental process by attracting human attention, which may reduce anxiety and promote positive psychological emotions. Health processes could be strengthened and promoted by implementing design that is Salutogenic i.e. that focuses on the factors that keep us well, rather than those that make us unwell. The aim of Salutogenic Design is to create an environment that stimulates the mind in order to create pleasure, creativity, satisfaction and enjoyment. There is an important relationship between an individual's health and the characteristics of the physical environment.

## Perspectives on Health

The holistic viewpoint emphasises multiple dimensions of health, including the physical, psychological, emotional, spiritual and social (Nordenfelt, 1991). From a research perspective, health can be divided into a pathogenic and salutogenic starting point. Pathogenic research focuses on explaining why certain etiological factors cause disease and how they are developed in the physiological organism (Antonovsky, 1979). The primary aim of pathogenic research is often to find medical treatments. Salutogenic research is based on identifying wellness factors that maintain and promote health, rather than investigating factors that cause disease (Antonovsky, 1991). Together, the salutogenic and the pathogenic approach offer a deeper

knowledge and understanding of health and disease. To be able to answer the salutogenic question – what is causing and maintaining healthy people? – Antonovsky (1991) developed the concept of a Sense of Coherence (SOC). It maintains that a person with a high sense of coherence chooses the most appropriate coping strategy in a stressful situation. For example, the person may decide to fight, flee or be quiet depending on what kind of stressor the individual is exposed to. Research has shown that it is possible to measure a person's sense of coherence and thereby predict an individual's health (Suominen, Helenius, Blomberg, Uutela & Koskenvuo, 2001).

The concept of sense of coherence has three vital components: (1) comprehensibility, (2) manageability and (3) meaningfulness (Antonovsky, 1991). A person with a strong sense of coherence scores high on all three components. According to Antonovsky, the term comprehensibility implies that the individual perceives the surrounding environment and what is happening in the world as coherent. If something unexpected is happening, such as an accident or personal failure, the person who understands why they are happening has a higher sense of coherence than

one who cannot. A person with a low sense of coherence perceives themselves as unlucky.

Manageability means that the individual has all the required resources necessary to cope with a given challenge or demand. This means that the individual feels that they are influencing what is happening around them and does not perceive themselves as a victim of circumstance. Antonovsky (1991), believes that a person's sense of meaningfulness is connected to his or her perception that there are important and meaningful phenomena in life. Meaningfulness is the component that motivates a person's sense of coherence.

## The Impact of Built Environment on Health and Wellbeing

There is an interaction between human health and the built environment. The physical environment is not only vital for good health, but can also be a critical stressor for the individual (Dilani, 2006). Physical elements in an organisation can contribute to stress and are therefore essential factors for increasing comfort (Dilani, 2001). Despite that, the majority of humans in the western world spend most of their time in indoor environments; there is a lack of



**Picture 1.** Wellness factors in the environment, such as daylight and nature, are evident in the radiology bunker at the Thunder Bay Regional Health Sciences Centre in Canada, designed by Farrow Partnership Architects.

knowledge about how these environments affect a person's health and wellbeing. There is a general belief that humans always adapt to the environment. Often called the theory of adaptation, this belief indicates that people become less conscious of the environment the longer they reside or work in that given environment (Carnvale, 1992). A general belief is that if one lets oneself be affected by the physical surroundings then it is a sign of weakness.

In order to create supportive physical environments it is crucial to understand an individual's fundamental needs (Heerwagen et al., 1995). It is also necessary for different professional disciplines to willingly cooperate in creating the best conditions for humans (Heerwagen et al., 1995; Lawrence, 2002). Before a zoo is built, it is common practice for architects, designers, biologists, landscape architects, animal psychologists and building specialists to collaborate in creating an environment that optimizes the living conditions for the animals (Heerwagen et al., 1995). Factors such as materials, vegetation and lighting are taken into consideration; animals need enough space to eat, sleep and decide when to be social or seek solitude, and even their need for control and choice have been noticed. The aim is to create an environment that will support the animal's physical, psychological and social wellbeing. Ironically, humans do not seem to make the same demands when a workplace is going to be designed.

Heerwagen et al. (1995), created a framework and guidelines for a salutogenic design, which highlighted the following factors:

- Social cohesion, both formal and informal meeting points;
- Personal control for regulating lighting, daylight, sound, temperature, and access to private rooms; and
- Restoration and relaxation with quiet rooms, soft lighting, access to nature and a good view.

Already during the nineteenth century, Florence Nightingale developed a theory of health care, which emphasised that physical elements are vital for an individual's health (SHSTF, 1989). Noise, lighting and daylight were, for example, considered as vital factors for affecting a person's mood.

During the 20th century, different researchers developed stress models that illustrate how the physical environment may affect human health and wellbeing (Levi, 1972; Kagan & Levi, 1975; Dilani, 2001; Dilani, 2006b). Levi (1972) founded the stress theory, which was later de-

veloped by Kagan and Levi (1975). The model describes how the physical environment is the foundation on which the societal organisation, structure and function is built and, in the long run, is critical to the promotion of health or disease (Dilani, 2001). The model is based on a system that points to a deeper understanding between the physical environment and different human components (Kalimo, 2005). The model is used within the field of architecture to integrate design elements with health and wellbeing.

attention does not demand any energy or effort from the person and it is activated when something exciting suddenly happens or when one does not have to focus on something in particular. Direct attention is activated as soon as a person needs to concentrate and focus on a task and simultaneously block other disturbing stimuli. After an intense period of direct attention, a person is in need of restoration; otherwise she will easily become mentally exhausted. People who have been using their

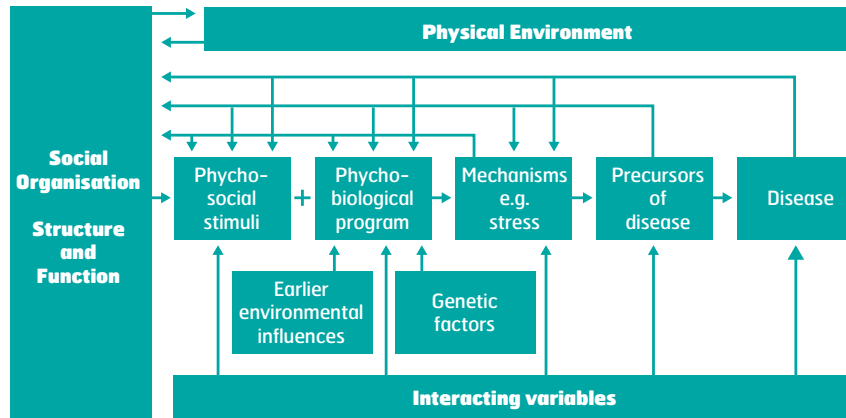


Figure 1. Theory Model for Psychosocially Mediated Disease, by L. Levi, 1972

### Nature and its Meaning for Health

Most people have some kind of relationship to nature and there are many people who greatly value diverse natural environments. There are also many people who want to get away from everyday life, during weekends and holidays, and regain their strength in relaxing and natural recreational areas. What is it that makes people feel at ease in nature? Does the natural environment affect people in different ways? Is it possible to draw any general conclusions about nature's influence on the human being?

The restorative environment should be inviting and well balanced with an aesthetic beauty that allows people to reflect (Herzog, et al. 2003). Nature offers various colours, forms and scents, which can encourage humans to forget about their everyday life (Kaplan & Kaplan, 1989; Kaplan, 1995; Herzog et al., 2003). Natural environments often offer an atmosphere where the individual's needs for harmony and compatibility are met. It is therefore very important that natural environments are accessible at the workplace. Kaplan and Kaplan have developed the Attentional Restorative Theory (ART), which identifies two attention systems – direct and indirect attention – and how they are related. Indirect

direct attention without resting often become impatient and irritated and it has been shown that a mentally exhausted person often commits so called "human errors" (ibid). A person who does not have the capacity to concentrate often becomes thoughtless, less cooperative and less competent. Therefore, in order to work efficiently, it is vital to have a well-functioning attention system and find time for restoration. The Attentional Restorative Theory (ART) has been tested and confirmed by different researchers (Herzog et al., 2003; Tennessen and Cimprich, 1995). One of the studies (Herzog et al., 2003) showed that three of the four components: Being away; extent; and compatibility, are seen as measurable indicators of how to create a restorative environment. Several studies have also confirmed that human beings perceive natural environments as more restorative than urban environments (Van den Berg, Hartig and Staats, 2007). Therefore, when human beings are tired and mentally exhausted, nature is the appropriate place for restoration. Other studies have shown that viewing nature through a window has positive health outcomes (Moore, 1981-1982; Ulrich, 1984; Leather, Beale and Lawrence, 1998; Frumkin, 2001).

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## Daylight, Sunlight, Windows and Lighting's Effect on Health

There is a great deal of research on daylight's positive effects on humans' psychological well-being (Evans, 2003). A lack of daylight can lead to both physiological and psychological difficulties (Janssen & Laike, 2006). Another researcher studied a correctional institution in Michigan and the results proved that inmates who had their windows facing the prison yard were visiting the healthcare facility more often than inmates who had windows facing the forest and farming fields (Moore, 1981-1982). Ulrich & Lundén (1984) showed that hospital patients who were staying in rooms with windows viewing nature were rehabilitated faster than patients who viewed a brick wall. Research has also shown that daylight in a classroom is necessary for the pupils to maintain a balanced hormone level (Küller & Lindsten, 1992).

Windows can also have positive health outcomes on patients (Verderber, 1986; Lawson, 2001). For example, the window can contribute to improved health by allowing fresh air and daylight to enter, by providing a view and a link to the outer world, thus satisfying a patient's or prisoner's need to view the seasonal variations (Verderber, 1986; Lawson, 2001). Another study showed that exposure to direct sunlight via windows in a workplace increased the workers' well-being and had a positive impact on their attitudes and job satisfaction (Leather et al., 1998).

Rooms without a window can affect human health and wellbeing negatively (Janssen & Laike, 2006; Küller & Lindsten, 1992; Verderber, 1986). One of the studies showed that blue collar workers who worked in rooms without windows experienced more tension and were more negative towards their physical working conditions than workers who had offices with windows (Heerwagen & Orians, 1986). Patients who are staying in rooms without windows can develop sensory deprivation and depressive reactions and exacerbate perception, cognition and attention (Verderber, 1986).

Since daylight positively impacts human physiology, it should be considered rather than artificial daylight which claims to have the same affect. According to some research, artificial daylight can positively affect peoples' cortisol levels and perhaps contribute to fewer sick days (Küller and Lindsten, 1992). Lack and Wright (1993) showed that exposure to lighting at certain times during a 24-hour period can prolong sleep and improve the quality of sleep. Energy consumption and costs can decrease if the individual has the ability to con-

trol the lighting levels, which also has positive effects on environmental resources (Moore, Carter and Slater, 2004). Furthermore, an individual's general satisfaction was higher when they had the ability to control the lighting levels themselves. Küller's (2002) conclusion suggests that lighting will become more important in the future, especially since it is becoming more common to have buildings without windows that have no access to daylight.

## Art, Healing and Well-Being

According to art historians, humans live today in a more aesthetic world, where art, fashion and design offer countless aesthetic experiences (Leder, Belke, Oeberst and Augustin, 20004). When a person observes and appreciates different visual scenes, such as a piece of art, complex cognitive and emotional processes arise (Keith, 2001). In order to understand the meaning of a painting it is important to understand its different parts before it is possible to understand the whole. During the observation of a painting and in the process of understanding it, a person can for example experience joy, participation, discomfort or interest. These emotional and cognitive responses are called aesthetic experiences and often lead to positive, satisfying and rewarding experiences for the viewer (Leder et al., 2004).

Art therapy (music, dance, painting and drama therapy) has a unique potential to reach patients with psychosomatic diseases, who are otherwise difficult to reach with traditional ther-

apeutic methods. The participants testified that the project had strengthened their self-esteem and given them a sense of belonging to a social group. This health promoting art project is considered to be cost effective. Gardner (1994) also maintains that participation in different art processes can give the individual the tools to express feelings and experiences in a way that is nonverbal.

## The Physical Environment and Productivity

When an organisation's management wants to increase productivity they often focus on employee competence and personal motivation rather than the physical environment and design (Heerwagen et al., 1995). Increased knowledge and consciousness about the relationship between improved health and increased profitability would affect how designers, architects and managers design, build and maintain buildings (Fisk, 2000). For instance, improved indoor climate can improve employee health, decrease the amount of sick days, reduce healthcare needs and increase productivity, which in turn strengthens the human capital and leads to higher company profitability. Ergonomic improvement for employees has also been proven to increase a company's profitability. For example, IBM invested 186,000 dollars in ergonomic education and implemented extended ergonomic changes, whereby they changed the design of the workplace and various working tools (Helander & Burris,



**Picture 2.** Colour, and form as landmark to facilitate orientation. Designed by BMJ Architects Glasgow-Scotland

apeutic methods (Theorell & Konarski, 1998). For example, Argyle (2003) showed how a group of people, identified as being in the risk zone for mental disease, participated in different art projects and improved their social and men-

tal wellbeing. The improvements contributed to better working positions, improved lighting, lower noise levels and better support with

» CONTINUES ON PAGE 35

# THE DEBUGIT PROJECT

By Dirk Colaert

**DebugIT stands for 'Detecting and Eliminating Bacteria Using Information Technology'. It is a European FP7 research project that has built an IT solution to monitor bacterial resistance profiles.**

Improving the quality of healthcare and patient safety are priority health policy goals globally. Despite half a century of antibiotic use, re-emerging and new infectious diseases, partially caused by the rise of antimicrobial resistance, have become important problems. This increasing prevalence of resistance results in escalating healthcare costs, increased morbidity and mortality and the (re-) emergence of potentially untreatable conditions. The DebugIT project has developed an IT-framework to allow healthcare systems to better address these emergent problems and improve their management. In the context of infectious diseases, DebugIT

- Detects patient safety related patterns and trends;
- Acquires new knowledge through advanced data mining; and
- Uses this knowledge for better decision-making on the optimal treatment for infectious diseases.

## The Problem: The Rapid Emergence of Resistance Among Pathogens, the Misuse and Overuse of Antibiotics

Although medical errors are currently under the spotlight, (re-)emerging infectious diseases are also becoming an important challenge. The rapid development of antimicrobial resistance, the spread of nosocomial and other infections are major concerns.

The impact of this phenomenon is most apparent in hospitals. However, community-based practice is not immune, due to the frequency and rapidity of patient transfers between the two sectors and citizen mobility. Hence, epidemics are a regular occurrence and may spread between continents. Examples of such epidemics are methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococci* or multiresistant tuberculosis. In addition, as a result of the efforts made in harmonising data on infections and antimicrobial resistance across Europe, it has become clear that a wide variability in preventive practices and outcomes across European countries exists, indicating considerable leeway for improvement.

## The DebugIT Response

To address the challenges of improving antibiotic therapy and reducing antimicrobial resistance, the DebugIT project makes use of data that are already routinely collected and stored in electronic Clinical Information Systems (CIS) in hospitals and primary care clinics. Today however, this occurs in widely differing systems. The DebugIT challenge was to establish the coherent and systematic exchange of a rich data set, harmonised across the DebugIT sites and their CIS systems. This data set primarily includes information about pathogens and drug treatments.

DebugIT adopts a multi-stage framework of several distinct steps:

**Collect Data:** Clinical data is aggregated from across different hospitals, countries, languages and information models, organised in a virtualised, decentralised but fully integrated Clinical Data Repository (CDR).

**Learn:** Advanced data mining techniques on multimodal, multi-source, structured and unstructured data to detect patterns, relevant for patient safety and the better treatment of infectious diseases.

**Store Knowledge:** This knowledge is stored, validated, visualised and aggregated together with pre-existing medical and biological knowledge (guidelines, regulations) in a knowledge repository to achieve a consolidated view on the required knowledge.

**Apply:** The new knowledge is applied to the monitoring of ongoing care activities and outcomes, and may help to predict future outcomes to give additional support to treatment decision on individual patients and for populations. To a lesser extent, based on the input of our Clinical Advisory Board, decision support tools apply the newly generated knowledge and help the clinician to provide improved clinical care (choice, dose and administration of antibiotics for example).

DebugIT allows healthcare providers and decision makers to take appropriate actions at various levels in the healthcare system, including policy, point-of-care, service management, and subsequently influence the future development of our health systems. Integration of DebugIT tools into existing CIS enables the recording of activities and results

and thus makes sure the necessary data are generated for a next cycle of learning. Throughout this process, DebugIT pays strong attention to privacy concerns, taking into account the various legal and ethical frameworks that must be met across Europe.

## Technical Outcomes

We have built and deployed a semantic interoperability platform accessing and aggregating data from 6 clinical sites. After applying data mining and statistical algorithms we store the results in a knowledge repository

This knowledge is visualised in a monitoring dashboard and used for decision support.

Above all, the DebugIT project is a good example of how to achieve Translational and Evidence Based Medicine.

**Translational:** Clinical information is used to support medical research and to enhance medical knowledge (bed to bench), the outcome of the research - is used to support clinical care (bench to bed).

**Evidence based:** The evidence, coming from the research is used to steer the clinical process.

Although the DebugIT project is focusing on infectious diseases, its translational framework is suitable for many other clinical problems, providing a solution to help increasing patient safety and enhancing the quality of care. This is depicted in the figure 2. (pg. 34) where a semantic interoperability platform is shown, giving applications access to different sources of information, as if they were part of one big (virtual) database. It is important to know that clinical data is not centralised (only temporarily cached). In the local site, data is accessed either on the production database, either on a copy of the production database, either on an existing or ad hoc data warehouse.

The value of the sum is more than the sum of the values: Combining multiple sources of clinical data enables application to do more than they could do with the individual sources. Combining data can reveal patterns, otherwise not visible.

In the DebugIT project we didn't have to deal with privacy issues, because we only used sample and bacterium related data. At some sites the used data warehouse was already anonymised. Other clinical applications will re-

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## {Conservationist}

Twenty years ago, this horseshoe crab would have been conch bait, and **Marcos Chavez**, an everyday fisherman. Since 1992, only Charles River requires fishermen like Marcos to hand-harvest crabs for use in our lab, where their blood is harnessed as a natural indicator of contamination in new drugs. By safely delivering donors to us and releasing them back to the sea within a day's time, Marcos has helped turn the tide on depleting populations, ensuring the future security of the horseshoe crab and its value to human health.

quire the use of an anonymisation or pseudonimisation service in the framework.

**Scientific Approach**

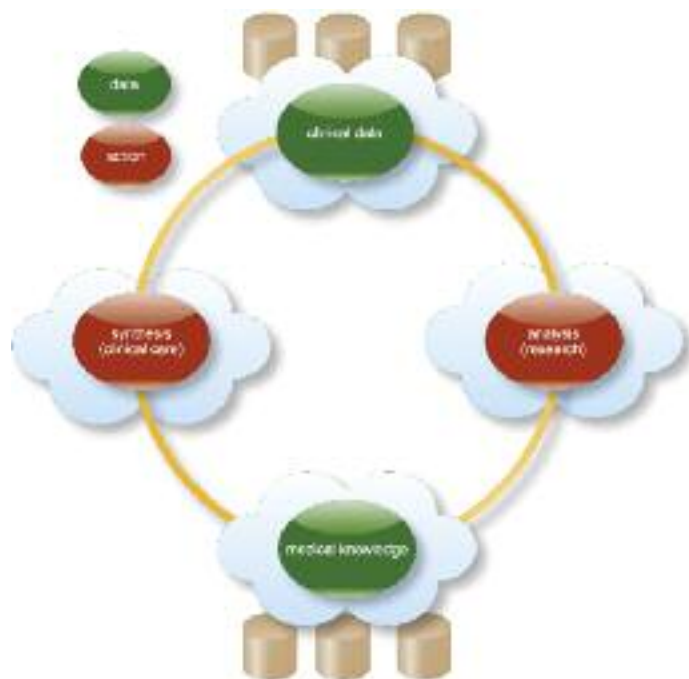
The whole scientific approach is based on the semantic web technology, which connects different sources of information in a highly formal, computer readable and ‘meaning preserving’ way. This enables smart applications to act intelligently on clinical data, across the different standards and IT systems. A crucial concept of the semantic web technology is the ontology, which is a formal description of concepts and relationships in a certain domain.

The scientific approaches and choices can be summarised as follows:

**Ontology engineering:** we followed a dual approach. We constructed a DebugIT Core Ontology (DCO), capturing the concepts of the medical domain of infectious diseases. The purpose of DCO is to describe the domain in a comprehensive and complete way. Besides DCO we have built a set of operational ontologies. These are ontologies with a domain of discourse more directed to the actual implementation and usage of the system. These ontologies formalise domains such as query building, statistics, analysis, evidence classes, etc.... We reused existing ontologies as much as possible.

**The interoperability platform** heavily counts on the sparql technology. Sparql stands for ‘Semantic protocol and RDF query language’ and means on the semantic level what SQL (Structured Query Language) means for querying re-

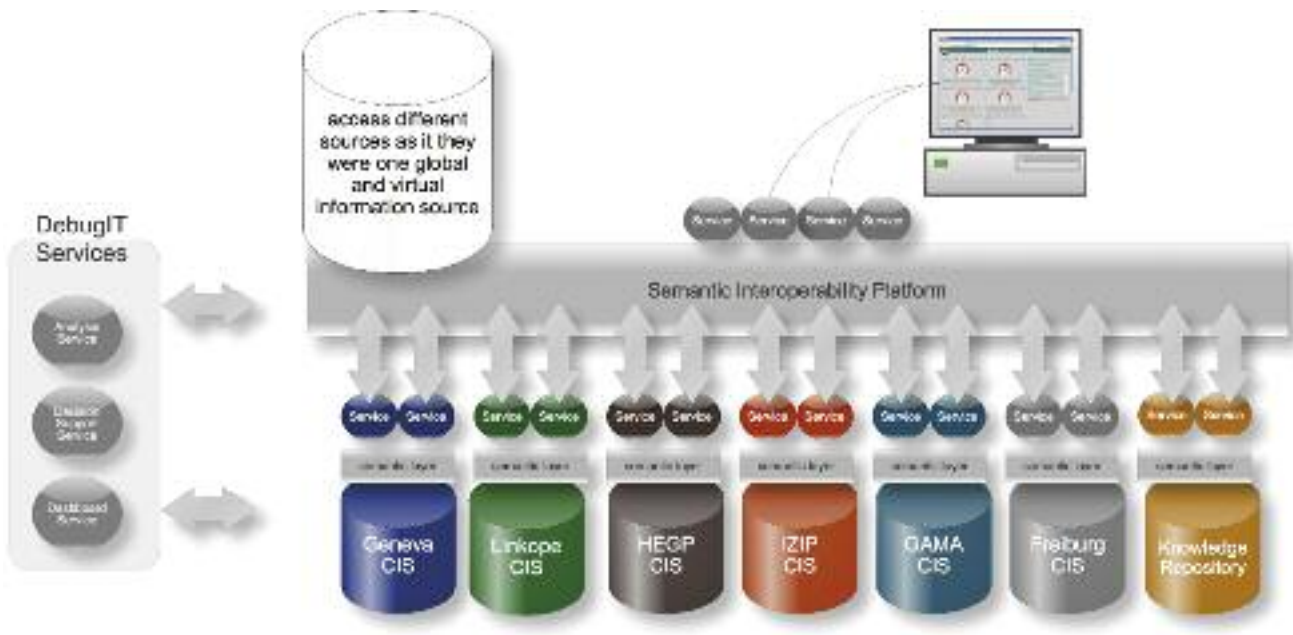
**Figure 1. Translational and evidence based medicine**



lational databases. We argue that ultimately semantic interoperability can only be achieved by formalising the clinical data and raising them up to the semantic layer as soon as possible. This is exactly what we do by building sparql endpoints on top of the individual clinical information sources. This also considerably facilitates aggregation of clinical data across clinical sites. The **decision support** uses knowledge extracted by the clinical analysis. Different approach-

es are used (Bayesian belief networks, fuzzy cognitive maps) and part of the work was making a reasoning framework that can cope with different decision support approaches. We use (and contribute to) the open source Euler reasoning engine (<http://eulersharp.sourceforge.net/>).

**Population monitoring** is build around an “i-google”-like parametrisable dashboard, where individual visualisation portlets called gadgets, show the results of sparql queries and can be



**Figure 2. The semantic interoperability platform**

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dragged to the desktop, according to each user's needs and preferences.

**Clinical Outcome and Validation**

During the project the consortium was advised by a Clinical Advisory Board, chaired by Professor Didier Pitet. At the end of 2011 research and technical development was finished and pilots have been installed. Currently, a clinical validation is ongoing, conducted by the clinical partners in the consortium. Preliminary data indicate that the results are good. Microbiologists at several sites compared the actual resistance percentages as calculated by the DebugIT system with their own calculations, based on manual collection of the data. When (small) differences were found, they could be explained by (correctable) errors in the mappings between the local and central system or by different approaches on double measurements. The DebugIT system counted two antibiograms for the same patient twice, while some manual calculations disregarded them. This is an issue that can easily be resolved and anyway would not influence trends in resistance, given the calculations are done in a consistent way over time.

Current practice in many hospitals is still to

painfully collect the data, import it in a spreadsheet and then publish the results. In reality this means that often microbiologists do it only once a year. The consortium also contacted the European Center of Disease Control (ECDC). Apparently the ECDC only publishes resistance figures once a year, based on data that are collected from pilot labs, to which physical sample are sent to be examined. While this will certainly work in some cases, this could be optimised significantly with a DebugIT-like system

The DebugIT system allows for a real- or near-time monitoring at 'the press of a button'. It can be used on a local level to monitor resistance patterns and on a hospital wide scale to compare individual departments. Once this is in place it is easy to connect the participating hospitals and monitor patterns on a regional or even bigger scale.

Because the technical framework is very generic, the same system can be extended to also query other types of data to solve problems in many different clinical contexts. For example, the system could be a powerful tool to provide decision makers with clinical and operational evidences to adapt healthcare policies. It can be a useful instrument to find eligible patients for medical research and clinical

trials. It can serve as a framework for e-health applications, sharing structured and granular data or it can be used as a source of data for epidemiological research, etc.

**Consortium**

The project is coordinated by Agfa Healthcare N.V., Belgium

**Name of the coordinating persons**

Dr. Dirk Colaert, Agfa Healthcare  
 Ir. José Verguts, Agfa Healthcare

**Technical lead**

Dr. Dirk Colaert, Agfa Healthcare  
 Clinical lead  
 Prof. Christian Lovis, Les Hôpitaux Universitaires de Genève

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heavy work routines. The project decreased sick days by 19 percent, which generated an annual profit of 68,000 dollars. In addition, the changes contributed to higher productivity and improved quality, which led to an annual profit of 7,400,000 dollars. In other words, investments and changes within the physical environment led to profits through an increase in health conditions and productivity.

**Conclusion**

The research has shown that the salutogenic perspective forms a theoretical framework for psychosocial supportive design, since it can stimulate, engage and improve an individual's sense of coherence and thereby strengthen their coping strategies and promote health. To implement psychosocially supportive design it is necessary that the whole organisation understands the meaning of a salutogenic perspective. Knowledge of which environment factors contribute to health and wellbeing can thereafter be guidelines in making political decisions.

In the process of making decisions it is important to have an interdisciplinary perspective where different individuals with different backgrounds and knowledge work together in this field – people such as psychologists, architects, landscape architects, doctors, behavioural scientists and health promoters. Fortunately it is becoming more common to use an interdisciplinary perspective as a central strategy (Barry, 2007). For example, the Internet technology sector recruits sociologists, anthropologists and psychologists who can study and explain how a product will be used in different cultural contexts. The application of an interdisciplinary approach to work may challenge existing ways of thinking and may also make research and innovation more democratic and receptive to public input.

Decision makers should take the following factors into consideration during the process of building a hospital: Good lighting; positive interior distractions; and access to daylight, nature, art, symbolic and spiritual objects. Other important factors to take into consideration are the individual's need for control over lighting, noise, indoor temper-

ature and the possibility of choosing when to seek social interaction or solitude. It is also important to create attractive and inviting spaces that promote social interaction and social support as well as creating spaces for restoration and private conversations. In order to motivate people to change their lifestyle it is necessary to offer them activities that strengthen their self-esteem and self-efficacy.

In summary, this study has shed light on factors in the physical environment that can promote health, well-being and increase productivity and profitability. Secondly, we encourage decision makers to implement salutogenic design that in turn promotes health and wellbeing.

**Author:**

Professor Alan Dilani, Ph.D.  
 Architect / Public Health  
 International Academy for Design and Health  
 Stockholm- Sweden  
[dilani@designandhealth.com](mailto:dilani@designandhealth.com)  
[www.designandhealth.com](http://www.designandhealth.com)  
[www.worldhealthdesign.com](http://www.worldhealthdesign.com)

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# THE PORTUGUESE HEALTHCARE SYSTEM: UNIVERSAL AND COMPREHENSIVE

## Introduction

Portugal is located in the south-west of Europe. The mainland has an area of 91 900 km<sup>2</sup>; the country also includes the archipelagos of Açores and Madeira. The capital of Portugal is Lisbon and the official language is Portuguese.

Population, total (000s)	10.633
Population, female (% of total)	51,6
Population, ages 0-14 (% of total)	15,2
Population, ages 15-64 (% of total)	67
Population, ages 64 and above (% of total)	17,8
Age dependency ratio (dependants to working-age population)	0,49
Birth rate, crude (per 1000 people)	9,4
Death rate, crude (per 1000 people)	9,8
Population growth (annual %)	0,1
Fertility rate, total (births per woman)	1,32
Population density (people per km2)*	113,9
Urban population (% of total)**	58,2
Education level - 9 years of school (%)***	86,5

Source: adapted from Barros P, Machado S, Simoes J. Portugal: Health system review. Health Systems in Transition, 2011, 13(4): 1-156  
\* 2008, \*\* 2006, \*\*\* 2007

**Table 1.**  
Demographic indicators (all data from 2009, except where indicated).

The total population has seen a 5% increase over the last decade. While in the 1970s only 38.8% of the population lived in urban areas, this rose to 58.2% by 2006. Most of the population is concentrated in two large metropolitan areas: Greater Lisbon (with approximately two million inhabitants) and Greater Oporto (with approximately 1.2 million). The number of births has been declining steadily since the 1970s and the average age has been steadily rising.

In terms of production and income, in 2010, to-

	Unit	2003	2004	2005	2006	2007	2008	2009	2010
<b>Gross domestic product (GDP)</b>	Bin USD curr. PPPs	202,5	207,9	224,6	242,1	256,8	265,1	266,4	272,4
<b>GDP per capita</b>	Bin USD curr. PPPs	19 392	19 796	21 294	22 870	24 206	24 957	25 055	25 609

Source: OECD Factbook statistics (doi: 10.1787/csp-prt-table-2011-1-en).

**Table 2.** Gross Domestic Product in Portugal 2003-2010

tal Gross Domestic Product was 272.4 billion USD (curr. PPPs).

In terms of health status, and beyond the crude death rate shown above, in 2009, life expectancy at birth was 79.5 years (76.5 years for males, 82.6 years for females). This result places the country just above the OECD average.

It is also the result of a continued and marked improvement over the last five decades. Both

Total expenditure on health, % gross domestic product	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Portugal</b>	2,4	5,1	5,7	9,3	9,3	9,3	9,8	10,1	10,4	10,1	10,0	10,1

Source: OECD Health Data 2011 (<http://stats.oecd.org/Index.aspx?DataSetCode=SHA>)

**Table 3.** Total expenditure on health as a percentage of GDP

sexes have seen similar improvements. Women live on average six years more. Portugal has also had over the last four decades one of the largest reductions in infant mortality rates among OECD member countries.

## The Organisation of the Healthcare System

The Portuguese healthcare system is a national health system founded in 1979. It was formed mostly based on structures already in place (hospitals and primary care centres) but not necessarily organised as an integrated set of providers.

In the last few years, reforms have seen both primary care centres and hospitals grouped both horizontally and vertically, forming in this case local health units, in order to improve management, efficiency and quality.

As is typical in Beveridge influenced systems, the Portuguese NHS and therefore its hospitals have been financed mostly with funds from general taxation. Healthcare costs have grown consistently above both the inflation rate and the increase in GDP.

Primary care and secondary care are supposed to work together in articulation. As is often the case, transition of both patients and information between the two levels is not as smooth as desired, raising issues in terms of coordination and continuity of care. More recently, a third level, long-term care, has been added to the equation. Long-term care is expected to reduce the need for longer hospital stays but beds are still insufficient.

## Financing

In 2008, the latest year available, total health spending accounted for 10.1% of GDP. This placed us, in 2009, above the OECD average of 9.5%. Portugal has also typically had a slightly higher percentage of private financing than other OECD countries. This amounted to 2,508 USD per capita, after adjusting for purchasing power parity. Comparing total health expenditure per capita with countries' GDP per capita, there seems to be a positive correlation between the two. Portugal is well within this trend.

## Human resources

Portugal currently has 3.8 physicians per 1,000 population, but this data refers to all physicians who are licensed to practice and thus includes doctors not actually practicing. In any case, this result places us above the OECD average. This has been the result of a steady increase over the last five decades.

Simultaneously, in 2009, Portugal had 5.6 nurses per 1,000 population. In this, we were below the OECD average, in spite of considerable growth in the past decade.

The country's ability to form these professionals has indeed increased significantly in the past.

We are thus slightly above the OECD average in the first case (albeit with a ratio of graduates to physicians below theirs), and the opposite is true when looking at nurses.

In terms of healthcare management, Portugal has had a post graduate course in hospital man-

60<sup>èmes</sup>

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agement for over 40 years now. Taught by the National School of Public Health (<http://www.ensp.unl.pt/>), it was for a number of years a requirement to enter hospital management; changes more recently to the legislation made this optional rather than compulsory, while simultaneously other schools started teaching health services management, mostly at the post-graduate level.

### The Portuguese Hospital System

Most hospitals and hospital beds in Portugal are public. Both numbers however have been decreasing in recent years. The number of hospitals has decreased mostly through mergers, with several hospitals forming hospital centres, under a common executive board. The number of beds has decreased mostly as part of an international trend, associated with more effective and efficient treatments and the move of a number of activities (namely surgical) to ambulatory care. In 2009, there were 2.8 acute care hospital beds per 1,000 population.

A look at the number of acute care beds suggests these were less affected than other types of beds. Occupancy rate of curative (acute) care beds has for the past decade been stable around 72%, with several experts arguing for the need to reduce the number of beds as a way to increase this rate.

The average length of stay in 2009 was 5.9 days. This too has dropped significantly over the last few decades.

### Current Concerns

As is common elsewhere in the developed, western world, Portugal faces the problems brought by an ageing population, with increased incidence

and prevalence of chronic conditions and multi-morbidity. The Ministry of Health is thus currently insisting on health promotion and disease prevention as a means to ensure the overall sustainability of the system.

Eight clinical and health promotion areas have been identified as priorities: Diabetes, HIV infection and AIDS, tobacco consumption, healthy eating, mental health, oncology, respiratory diseases, and cardio and cerebrovascular diseases.

The current government is keen on promoting actions on lifestyle changes, with special focus on diet and exercise, while reducing the consumption of tobacco, alcohol and illicit drugs. Some of these require intersectoral policies. Target populations include the young and the elderly, with healthy and active ageing as an objective.

In organisational terms, governance relies both on the national level, for policy and budgeting,

led by the WHO, for instance.

We are also currently in the process of transposing to the Portuguese legislation the directive on cross-border care; as a part of this process, the Ministry is working on the definition of referral centres to integrate European reference networks.

All actions taken by the government follow a national health plan, stretching from 2012 to 2016. The previous plan (2004-2010) was very positively reviewed by the WHO ([http://www.euro.who.int/\\_data/assets/pdf\\_file/0003/83991/E93701.pdf](http://www.euro.who.int/_data/assets/pdf_file/0003/83991/E93701.pdf)). Internally, comprehensive reviews are being undertaken in primary care, emergency services and long-term care, based on the advice of national experts.

The main current issues with the Portuguese national health system are necessarily related to the current economic crisis the country (and Europe in general) is going through, and the need

Total hospital beds, Per 1 000 population	1985	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Portugal	4	4	3,8	3,7	3,6	3,7	3,6	3,5	3,5	3,4	3,4	3,3

Source: OECD Health Data 2011 ([http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH\\_REAC](http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC))

Table 4. Hospital beds in Portugal

and also on five regional health administrations. Access to the system is still a problem in some areas, with waiting list and waiting times mostly for elective surgery, outpatient visits and diagnostic tests. The last few years however have seen a number of specific programmes to try to overcome this situation.

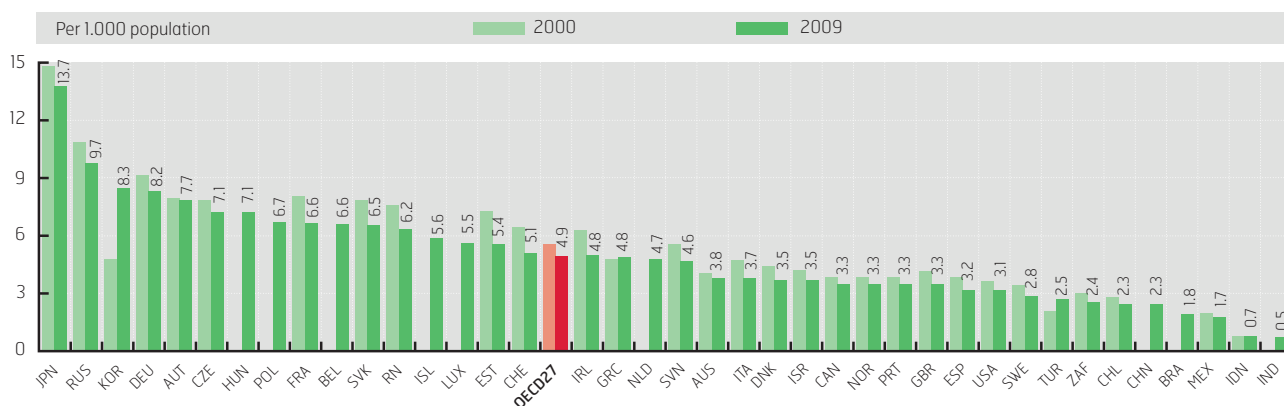
In recent years Portugal has also shown particular interest in the quality of healthcare provided. There is a national strategy for quality in healthcare approved in 2009 and the country has participated in global safety programmes

to ensure the system's sustainability. In the context of the global economic crisis, the country and the healthcare system are currently under pressure to be more efficient while ensuring access and quality. The healthcare sector is thus undergoing some reform, with specific efforts directed at hospitals. These focus around 8 axes:

#### 1. Implementing a more coherent hospital network

Specific measures include the redefinition of the network of hospitals, given the recent formation of several hospital centres, grouping hos-

Hospital beds per 1.000 population, 2000 and 2009 (or nearest year)



Source: OECD Health Data 2011; national sources for non-OECD countries.

Table 3. A comparison of hospital beds per 1,000 population

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pitals, and the existence of a number of referral networks (specialty-based) that need coherence and updating.

**2. Defining a more sustainable financing policy**  
Specific measures include the development of costing systems and improving the benchmarking efforts between hospitals.

**3. Integrating care to improve access**  
Specific measures include the improvement of referral criteria between primary care centres, hospitals and long term care.

**4. Making hospitals more efficient**  
Specific measures include implementing and monitoring clinical guidelines and increasing ambulatory surgery rates.

**5. Ensuring quality as a major trait of hospital reform**

Specific measures include reducing the rates of hospital acquired infections and the rates of cesarean sections.

**6. Investing in information systems as a sustainability factor**  
Specific measures include implementing the electronic health record and guaranteeing the validity of all information in the system.

**7. Improving Governance**  
Specific measures include celebrating management contracts with the boards and assessing board performance.

**8. Strengthening the role of citizens**  
Specific measures include making hospital benchmarking public and making patients aware of healthcare costs.

The Ministry of Health believes this to be the

only way to make the Portuguese healthcare system sustainable in the face of one of the biggest economic crises seen in recent years, while at the same time improving its effectiveness, efficiency, safety, fairness, timeliness and patient-centeredness.

**Authors:**

Paulo Alexandre Boto  
Assistant to the Secretary of State Assistant to the Minister for Health  
Fernando Leal da Costa  
Secretary of State Assistant to the Minister for Health

References available upon request, lee@my-hospital.eu

## THE PORTUGUESE ASSOCIATION OF HOSPITAL MANAGERS – APAH

The APAH (Portuguese Association of Hospital Managers) was founded in 1981, following the creation of a public career for Hospital Managers (HM).

It is important to note that specific training of the Portuguese public hospital managers began in a sustainable way in 1970 with a two years post graduate course much due to the pioneering vision of Coriolano Ferreira, its leader and founder.

Ten years later, in 1980, the Portuguese Government assigned a professional title to Hospital Managers, with a status and a prominent position in the hierarchy of our hospitals, with the creation of the Hospital Manager profession.

The natural corollary of this evolution was thus the APAH, embodying the will of its members to promote the new professional class, and simultaneously create flexibility for their functions, with dignity and prestige in an environment previously dominated exclusively by the medical profession.

The APAH developed its activity with good results. As new professionals left the Escola Nacional de Saúde Pública – ENSP (National School of Public Health) the APAH grew faster and took various initiatives with impact on critical analysis and promotion of health management services issues up until then irrelevant in Portuguese society. The APAH promoted institutional relations with the most important "players" in the health sector (professional orders, government, pharmaceutical industry,

insurance, etc...) and intensified international contacts (study tours in USA, UK or Canada, intensive training in the Mayo Clinic in the USA through an established protocol with the Calouste Gulbenkian Foundation, etc.).

The APAH quickly acquired an image of credibility, recognition and prestige, both nationally and abroad.

At this point the Board of APAH decided to integrate into the European Association of Hospital Managers (EAHM). Since 1994, the APAH has been a member, actively participating in its meetings and deliberations. Gaining a growing respect from their European peers the APAH took on increasingly important roles within the EAHM in the mid 90s and in 2002 assumed the presidency for a four-year period. APAH remains a key player in the European association today. In 1999, the APAH organised the EAHM Congress in Lisbon. This successful event included the active presence and sponsorship of His Excellency of the Republic President, Mr. Jorge Sampaio.

One of the key responsibilities and goals of the APAH has always been the defense of professional interests of its members. Between 1981 and 1988 hospital managers consolidated their positions with the emergence of a new career and a legal status in the hospital hierarchy. However, since then the situation has changed profoundly. The laws and regulations of hospital management changed, removing guarantees to hospital managers and opening the opportunity to professionals and man-

agers from other areas without training in the healthcare sector. Simultaneously there was an orchestrated process to discredit the hospital managers, their training and the ENSP through ideological disputes.

The APAH and its leaders had to develop a focused activity in defence of the profession and the status of its professionals, often assuming public positions of confrontation against the political power. This situation strengthened unity among members and encouraged a public image of independence, competence and prestige of the association and its members.

In 2002 there were significant political changes in the organisational models of hospitals and in human resource policy, which deepened the rift between the career of hospital managers (already virtually inoperative) and hospital reality. Now, the APAH faces very difficult times, unable to mobilise professionals to common causes and confronted with an inappropriate statute to the new reality.

Therefore it is time to rethink its future, re-analysing its foundations, its setting and its range, following the example of the some European countries where the associative genesis was completely different from ours, more focused on the exercise than on the training. But this requires deep reflection, sensitivity and dedication. The question is: Who is willing to face this challenge?

**Author:**

Manuel Delgado



Willy Heuschen

## « NOUS SOMMES L'EUROPE... »

Avec ce manifeste, les politiciens, les artistes et les intellectuels des pays de l'Union européenne ont appelé dans la presse européenne à « une reconstruction de l'Europe par le bas ». En réponse à la crise de l'euro et en particulier à l'effondrement des marchés du travail dans certains pays de l'Union européenne, ils ont appelé à une « année de volontariat » pour chaque citoyen européen. L'idée lancée par le président américain J.F. Kennedy d'un « Corps de la Paix » pourrait alors trouver à se réaliser en Europe. Ce serait le signe de la participation active de chacun, plutôt que de laisser aux politiciens et aux technocrates l'entière responsabilité des actes et des décisions.

Dans le contexte de la suppression du Congrès de l'AEDH à Athènes, nous avons maintes fois appelé à une action de solidarité, car nous pensons qu'ainsi seulement peut persister une « Europe sociale ». Les jeunes, en particulier, ont besoin d'une telle Europe, comme un signe d'encouragement, quand on sait qu'actuellement un Européen sur quatre de moins de 25 ans se retrouve sans travail ! C'est la raison pour laquelle le manifeste bénéficie de notre soutien. On ne peut pas se contenter uniquement de prôner de belles paroles, on se doit d'encourager la participation active de chacun. Et c'est ici que l'AEDH se considère toujours porteuse d'une responsabilité car il y a menace, s'il n'y a plus confiance dans notre structure sociale, que l'équilibre social que nous avons bâti ne survive pas. Les hôpitaux sont sans conteste un élément important pour la garantie de l'équilibre social (leur mission peut être, selon le système, plus ou moins être marquée par l'austérité ou se retrouver sous pression) et cela constitue, en particulier dans une période où on constate un appauvrissement de la population, une contribution indispensable, indépendamment des prestations effectuées pour les soins de santé. Alors, la structure sociale peut être secourue. Si ce constat est bien réel au niveau national, il devrait également se manifester au niveau de l'Union européenne.

Les systèmes de santé sont encore sous la compétence exclusive des États. Néanmoins, la mise en œuvre obligatoire de la directive sur les soins de santé transfrontaliers a marqué un signe clair de changement. Le ministre de la Santé luxembourgeois Bartholemeo a souligné dans son allocution d'ouverture à la Conférence européenne des hôpitaux (en 2011 à Düsseldorf) le champ d'application majeur de la directive. Elle assure non seulement le

droit à un remboursement pour l'utilisation des services de santé où que l'on soit en Europe, mais elle oblige également les États à la transparence quant à la qualité des services offerts.

Il va sans dire que si les ministères de la Santé s'en font une obligation, ils sont suivis de près par tous les prestataires de soins de santé et en particulier les hôpitaux. C'est ce que demande le manifeste dont il est question ci-dessus qui prône « une reconstruction de l'Europe par le bas » : une occasion est fournie aux directeurs d'hôpitaux de participer activement au processus européen pour des services de santé de haute qualité et des offres de santé transparentes. Si des normes de qualité existent pour tous les pays, on peut penser que les comparaisons, les classements des points forts et des faiblesses de chacun suivront sans attendre. Personne alors ne pourra alors refuser à un patient des résultats transparents et des informations concernant la qualité des soins de santé.

Pour l'AEDH, ce processus qui consiste à façonner par le bas n'est pas seulement une préoccupation. C'est également un objectif contraignant. Après la conférence d'ouverture de MEDICA, nous invitons tous nos membres à un autre séminaire, le 16 Novembre 2012, à Düsseldorf. En se servant d'exemples concrets pour discuter les normes de qualité, nous voulons initier un profond processus de réflexion qui se veut une invitation à un travail ultérieur au sein des associations nationales et espère faire porter le regard de chacun sur ses voisins européens. Ces suggestions, une fois retravaillées par nos membres, pourraient constituer le socle de la mise en œuvre de la directive européenne. Nous pourrions ainsi être un bon exemple de l'élaboration d'une Europe par le bas. Notre attention devrait se porter moins sur des réglementations bureaucratiques, qui sont pourtant essentielles, que sur les besoins des patients. Forts de cet engagement, il est de notre devoir, de toute façon, en tant que directeurs d'hôpitaux, de rester disponibles dans la gestion quotidienne du fonctionnement de nos établissements. À partir de maintenant, c'est un rôle qu'en tant que citoyens européens nous réaliserons en partant du bas.

**Willy Heuschen**

*Secrétaire général de l'AEDH et rédacteur en chef*



Les éditoriaux d'(*E*)Hospital sont rédigés par des membres des instances dirigeantes de l'AEDH. Les contributions publiées ici ne reflètent cependant que l'opinion de leur auteur et ne représentent en aucune façon la position officielle de l'AEDH.

## LA DIRECTIVE SUR L'APPLICATION DES DROITS DES PATIENTS EN MATIÈRE DE SOINS DE SANTÉ TRANSFRONTALIERS AU SEIN DE LA PRATIQUE HOSPITALIÈRE

En Juin 2006, le Conseil de l'Europe a publié ses conclusions sur les valeurs et les principes communs aux différents systèmes de santé de l'Union européenne. Ils ont révélé le besoin d'une initiative sur les soins de santé transfrontaliers pour assurer la clarté en ce qui concerne les droits et les prestations applicables pour les citoyens de l'Union européenne qui désirent faire effectuer un traitement à l'étranger. Mais à la fin de l'année 2006, la directive relative aux services dans le marché intérieur a été adoptée, excluant les soins de santé.

Cette approche ambiguë a continué jusqu'à l'adoption, en mars 2011, de la directive sur l'application des droits des patients en matière de soins de santé transfrontaliers qui est la première législation de l'Union européenne adressée spécifiquement aux prestations de santé. La directive a opté pour un équilibre entre les décisions de la Cour de justice de l'Union européenne (CJUE) de la dernière décennie et la compétence des États membres à gérer leurs propres systèmes de santé.

La directive vise à clarifier les droits des patients à recevoir des soins de santé dans un autre État membre et à mettre en place des mesures pour soutenir la prestation de soins de santé transfrontaliers en faveur des patients et de la gestion de ces services de santé. Elle devrait être transposée en droit national dans les États membres avant le 25 Octobre 2013.

Les États membres sont libres de décider eux-mêmes les conditions, les procédures et les critères d'ad-

missibilité à suivre pour la réception de soins de santé transfrontaliers et les remboursements. Mais la transposition de cette directive en droit national est un exercice difficile car il concerne les normes de remboursement, de qualité et de sécurité des services de soins de santé. Ainsi, la création d'un registre actuel et transparent de tous les services de soins de santé existant, de leur qualité et de leur coût est en soi un véritable défi si on considère les différences importantes existant entre les différents systèmes de santé et de sécurité sociale au sein de l'Union.

D'autre part, de nombreuses initiatives ont été prises ces dernières années dans toute l'Europe pour faire face aux différents challenges et assurer la qualité des soins au niveau national, régional et dans chaque structure hospitalière. Il est important que ces initiatives ne restent pas isolées de l'évolution européenne ; elles méritent au contraire un examen plus approfondi dans le cadre de la présente directive.

En Février, le sous-comité aux affaires européennes de l'AEDH a décidé de contribuer à ce processus de transposition de deux manières : par l'intermédiaire d'un questionnaire et d'un séminaire.

### Le questionnaire

Le questionnaire, en ciblant les directeurs d'hôpitaux, met l'accent sur la qualité des soins dans les hôpitaux à travers l'Europe. Il prend en considération différents aspects, depuis la définition de la

qualité et sa mise en œuvre jusqu'aux processus de pilotage de la qualité. L'attention est également accordée à l'information des patients.

Lancement du questionnaire le 20 Août 2012.

### Le séminaire du 16 novembre à Düsseldorf

Au cours de ce processus de transposition, les acteurs impliqués dans la gestion des hôpitaux devraient exprimer leur point de vue et contribuer à la prise de décisions. Ce séminaire vous offre cette opportunité et souhaite mener à la définition d'un consensus concernant les améliorations à apporter aux échanges d'expériences et d'informations. Le séminaire se tiendra le 16 novembre à Düsseldorf, en Allemagne. Le programme comprend les présentations de plusieurs intervenants européens, un débat, ainsi qu'une visite guidée des exposants présents à Medica.

Si vous désirez plus d'informations sur le questionnaire et le séminaire, vous pouvez consulter le site Web de l'AEDH:

<http://www.eahm.eu.org>

Vous pouvez également contacter Jos à l'adresse suivante:

[jos.vanlanduyt@eahm.eu.org](mailto:jos.vanlanduyt@eahm.eu.org)



### Le développement durable au service de la réussite financière : une offre de soins de qualité en pleine incertitude économique

Alors que le continent se voit traversé de nombreuses mesures d'austérité, nous voulons, à (E)Hospital, savoir de quelles façon les contraintes financières influencent les systèmes de santé et les hôpitaux en particulier. Qui pourrait mieux en parler que les pays les plus touchés que sont le Portugal, la Grèce, l'Espagne et l'Irlande ? Dans le premier article consacré à ce thème (un deuxième paraîtra dans un prochain numéro), (E)Hospital s'est entretenu avec des représentants de nos associations grecque et portugaise de directeurs d'hôpitaux.

Après notre conversation avec George Stathis et Victor Herdeiro, il nous est apparu clairement que les situations financière et politique difficiles qui existent en Grèce et au Portugal ont poussé les prestataires de soins de santé à réorienter leurs activités et à porter leur attention vers les patients plutôt que vers leurs intérêts professionnels. D'importantes compressions budgétaires couplées avec une hausse du nombre de patients qui utilisent les services de santé publique ont nécessité de notables changements dans les deux pays. En réalité, les deux hommes pensent que, à certains égards, l'obligation de faire face à la crise financière a conduit à des changements positifs dans le secteur de la santé. Pour la Grèce, ces changements positifs incluent la modernisation des processus et une lutte contre les pratiques illégales. Au Portugal, l'incertitude économique a mis en valeur la rationalisation et une plus grande efficacité.



### Greener hôpitaux pour la réussite économique et la durabilité

Par Roland W. Chalons-Browne

La population mondiale continue d'augmenter rapidement ainsi que grandissent. La croissance de la population mondiale est parallèle à une augmentation rapide des besoins de soins de santé. Et, plus que tout, une société vieillissante place de plus grandes exigences en matière de services médicaux. Ainsi à travers le monde, le coût des soins de santé est montée en flèche, alors que la menace posée par les maladies diverses continue à peser lourd. L'augmentation des dépenses publiques n'est pas une réponse suffisante à la hausse des coûts de prestation des services de soins de santé. Pour établir des systèmes de santé efficaces à long terme et de faire des soins de santé abordables pour tout le monde, nous avons également besoin d'innovations technologiques et financières que la fois d'améliorer la qualité des soins médicaux et aider à économiser de l'argent.



### Utilisation rationnelle de l'énergie et l'environnement: la culture pour un développement durable gagnante

Par Daniela Pedrini, Gaspare Serrazanetti, Michele De Michele, Barbara Gozzi

L'Université Hospital Authority St.Orsola-Malpighi polyclinique de Bologne avec ses 17.000 tep par an (tonnes équivalent pétrole) d'énergie consommée et plus de 35.000 tonnes de CO<sub>2</sub> émis dans l'atmosphère a été en mesure d'obtenir des résultats satisfaisants de l'économie d'énergie et de réduction des émissions grâce à la technologie appliquée. Les nouvelles technologies comprenaient

des systèmes de ventilation mécanique contrôlée avec récupération de chaleur active et une usine de co-trigénération.

Tout cela a été rendu possible grâce à un programme coordonné avec la participation de tous les travailleurs. L'approche suivie est fondée sur la mise en œuvre des actions dans le but de diffuser la culture de solutions faibles émissions de carbone pour l'efficacité énergétique et de durabilité de l'environnement à travers une participation active des utilisateurs (personnel, les intervenants externes, les utilisateurs, les visiteurs, étudiants, etc.)



### De la gestion des risques à la gestion de la sécurité des patients

Par Peter Gausmann

Les procédures de gestion des risques cliniques exigent la participation à un niveau élevé des médecins et des infirmier(e)s ainsi que des ressources financières conséquentes. Il est ainsi particulièrement important de mesurer l'effet des mesures qui ont été mises en place. Les résultats des études et des examens sur la portée de la gestion des risques cliniques montrent que six niveaux cibles peuvent être atteints. La gestion des risques cliniques renforce la sécurité des patients, soutient le développement organisationnel, sensibilise l'équipe thérapeutique en termes de risques, prend en charge la communication et la coopération inter-professionnelles, génère la confiance au niveau juridique, et fournit les conditions préalables permettant à l'institution concernée de s'assurer.

La gestion du risque clinique et de la sécurité des patients n'est plus un exercice volontaire, mais un « must-have programme » pour chaque hôpital. La sécurité des patients contribue également au développement de leur réputation dans le marché en croissance de la santé. Elle constitue également une option de gestion des affaires depuis que la mise en place d'un programme de gestion des risques rend les hôpitaux mieux assurables. Mais, avant tout cela, elle est une obligation que les prestataires de santé doivent à leurs patients. La sécurité des patients est un droit du patient et une obligation pour tous les membres du personnel.



### Télécardiologie Avec un seul concentrateur régional desservant 4 millions d'habitants

Par Natale Daniele Brunetti et al.

Un concentrateur télécardiologie fournit électrocardiogrammes analyse en temps réel pour les service d'urgence public médical et les patients privés à travers la région des Pouilles (4-million d'habitants) dans le sud de l'Italie. Une complète électrocardiogramme à 12 dérivations peuvent être enregistrées dans un couple de minutes et transmis par téléphone à un télécardiologie "hub" de l'endroit où un cardiologue envoie rapidement revenir à l'examen et de son / son rapport. Une brève consultation peuvent également être fournis s'ils sont demandés. Cinq cent mille électrocardiogrammes ont été réalisés depuis 2004, lorsque le service a commencé télécardiologie. Plusieurs études ont montré des applications potentielles d'un réseau de télécardiologie régionale en réduisant le temps de diagnostic et des erreurs médicales dans le domaine des urgences car-

dio-vasculaires. L'expérience Pouilles télécadiologie peut être considéré comme un exemple unique de synergie entre les autorités de santé publique et les entreprises privées.

### ▶ Des stéthoscopes à ultrasons de poche

Par Bruce J. Kimura et al.

L'obtention d'une évaluation précise lors de sa première prise en charge d'un patient est l'objectif de chaque clinicien, et c'est d'autant plus important et économiquement satisfaisant si le patient présente une maladie aiguë ou se trouve dans un lieu particulièrement éloigné. Les erreurs de diagnostic lors de sa première prise en charge pourraient avoir des conséquences désastreuses à la fois pour sa survie et en regard des conséquences financières non négligeables si elles entraînent le choix d'examen ou de traitements inappropriés, ou la prolongation du séjour à l'hôpital. Par conséquent, disposer d'une « première impression » plus précise de l'état du patient pourrait réduire le temps de diagnostic, ce qui aurait un impact sur les coûts. Les erreurs médicales seraient aussi moins fréquentes.

Le principal avantage d'un appareil de poche est sa proximité sur le terrain et la commodité de son utilisation pour l'examen clinique : il ne doit pas être considéré comme une procédure distincte de diagnostic. Les standards de soins sont actuellement beaucoup plus vigilants en ce qui concerne le coût et la portée des techniques de diagnostic supplémentaires – en particulier celles qui proposent des variations de précisions en fonction des compétences du médecin – et il est essentiel d'effectuer une application clinique factuelle (fondée sur des données probantes) de ces dispositifs. La réussite du stéthoscope à ultrasons dépendra en réalité de la possibilité qu'il aura d'être distribué pour un usage en médecine généraliste et de ne pas rester simplement un outil sophistiqué utilisé uniquement par les experts des sous-spécialités.

### ▶ Les avantages thérapeutiques de la conception des hôpitaux salutogène

Par Alan Dilani

Bien que la pratique clinique est axée sur le traitement des maladies, il ya aussi toute une série de recherches donnent à penser que la qualité de l'environnement de build a un fort impact sur notre santé et bien-être. La recherche a montré que la perspective salutogène constitue un cadre théorique pour la conception de soutien psychosocial, car elle peut stimuler, engager et améliorer le sentiment d'un individu de cohérence et de renforcer ainsi leurs stratégies d'adaptation et de promotion de la santé. Pour mettre en œuvre la conception psychosociale de soutien, il est nécessaire que toute l'organisation comprend le sens d'un point de vue salutogène. La connaissance des facteurs qui contribuent à la santé de l'environnement et le bien-être peut ensuite avoir des lignes directrices à prendre des décisions politiques.

Dans le processus de prise de décisions, il est important d'avoir une perspective interdisciplinaire où des individus différents avec différents milieux et de travail des connaissances ainsi que dans ce domaine, des gens comme les psychologues, architectes, paysagistes, médecins, spécialistes du comportement et promoteurs de la santé.

### ▶ Le projet DebugIT

Par Dirk Colaert

DebugIT est synonyme de «détecter et éliminer les bactéries à l'aide de la technologie de l'information». Il s'agit d'un projet de recherche européen FP7 qui a construit une solution informatique de surveiller les profils de résistance bactérienne. Améliorer la qualité des soins de santé et la sécurité des patients sont des objectifs prioritaires des politiques de santé au niveau mondial. Malgré un demi-siècle d'utilisation d'antibiotiques, ré-émergentes et les nouvelles maladies infectieuses, en partie causées par l'augmentation de la résistance aux antimicrobiens, sont devenus des problèmes importants. Cette prévalence accrue des résultats de résistance à l'escalade des coûts des soins de santé, augmentation de la morbidité et la mortalité et l'émergence de (re-) de conditions potentiellement impossibles à traiter. Le projet a développé une DebugIT IT-cadre pour permettre aux systèmes de soins de santé afin de mieux s'attaquer à ces problèmes émergents et à améliorer leur gestion. Dans le contexte des maladies infectieuses, DebugIT

- Détecte les motifs liés à la sécurité des patients et des tendances;
- l'acquisition de nouvelles connaissances grâce à l'extraction de données de pointe et
- Utilise cette connaissance pour une meilleure prise de décision sur le traitement optimal pour les maladies infectieuses.

### ▶ Focus: le Portugal



Les principaux problèmes qui se posent actuellement au système de santé national portugais sont inéluctablement liés à la crise économique qui sévit dans le pays (et en Europe en général) et à la nécessité d'assurer la viabilité du système. Dans ce contexte de crise économique mondiale, les pays et les systèmes de soins de santé sont actuellement mis à l'épreuve : ils doivent garantir l'efficacité tout en assurant l'accès aux soins et leur qualité. Des réformes ont été mises en place dans le secteur de la santé, certaines démarches spécifiques étant adressées aux hôpitaux. Elles se constituent autour de huit axes :

- mettre en place un réseau hospitalier plus cohérent ;
- définir une politique de financement plus viable ;
- intégrer les soins pour en améliorer l'accès ;
- rendre les hôpitaux plus efficaces ;
- garantir la qualité – qui doit devenir un attribut essentiel de la réforme hospitalière ;
- investir dans des systèmes informatiques – que l'on peut considérer comme un facteur de durabilité ;
- améliorer la gouvernance ;
- renforcer le rôle des citoyens.



Willy Heuschen

## WIR SIND EUROPA ...

Mit diesem Manifest riefen Politiker, Künstler und Intellektuelle der EU-Länder in der europäischen Presse zur ‚Neugründung Europas von unten‘ auf. Als eine Antwort auf die Euro-Krise und vor allem vor den einbrechenden Arbeitsmärkten, besonders in einigen EU-Staaten, plädierten sie für ein ‚Freiwilliges Jahr‘, das ein jeder verrichten sollte. So fände die von US-Präsident J.F. Kennedy lancierte Idee eines ‚Peace Corps‘ auf Europa Anwendung. Es wäre ein Zeichen der aktiven Mitgestaltung, anstelle den Politikern und Technokraten die alleinige Verantwortung zu überlassen.

Vor dem Hintergrund der Streichung des EVKD-Kongresses in Athen haben wir mehrmals zum solidarischen Handeln aufgerufen, denn nur so kann ein ‚soziales Europa‘ fortbestehen oder begründet werden. Gerade die Jugend braucht ein solches Europa, als Zeichen der Ermutigung, denn inzwischen ist jeder vierte Europäer unter 25 Jahren arbeitslos! Das Manifest findet deshalb unsere Unterstützung, weil hier nicht nur schöne Reden angepriesen, sondern Mitgestalten gefordert sind. Gerade hier sieht die EVKD sich weiterhin in der Verantwortung. Das Sozialgefüge droht ohne den flankierenden Rahmen der ‚Sozialen Sicherheit‘ aus den Fugen zu geraten. Die Krankenhäuser sind wichtige Leistungsträger zur sozialen Absicherung. Ihr Stellenwert mag in dem einen oder anderen System mehr oder minder ausgeprägt sein oder durch Sparzwänge unter Druck geraten. Tatsache ist, dass dessen ungeachtet dennoch die Leistungserbringung zur gesundheitlichen Versorgung, besonders in Zeiten einer Verarmung der Bevölkerung ein unentbehrlicher Beitrag ausmacht. So kann das Sozialgefüge gerettet werden. Diese Erkenntnis stimmt nicht nur in den jeweiligen Ländern, sondern muss sich auch auf EU-Ebene bewähren.

Bislang gehören die Gesundheitssysteme noch in die alleinige Kompetenz der Nationalstaaten. Dennoch ist mit der obligatorischen Umsetzung der Richtlinie zur grenzüberschreitenden Gesundheitsversorgung ein deutliches Zeichen der Veränderung gesetzt. Der luxemburgische Gesundheitsminister Di Bartholemeo unterstrich in seinem Eröffnungsreferat zur europäischen Krankenhauskonferenz (Düsseldorf 2011) die bedeu-

tende Tragweite der Richtlinie. Sie sichert nicht nur das Anrecht auf Kostenrückerstattung bei Inanspruchnahme gesundheitlicher Leistungen im europäischen Ausland ab, sie verpflichtet die Nationalstaaten auch die Qualität der angebotenen Leistungen offen darzulegen.

Ohne Frage, nicht nur die Gesundheitsministerien stehen dabei in der Pflicht sondern ebenfalls alle Gesundheitsanbieter und im Besonderen die Krankenhäuser. Wie im vorerwähnten Manifest zur Neugründung eines Europas von unten gefordert, bietet sich den Krankenhausdirektoren eine Gelegenheit den europäischen Prozess zur Sicherstellung von qualitativ hochstehenden und transparenten Gesundheitsangeboten mitzugestalten. Liegen die Qualitätsstandards pro Land vor, so werden Vergleiche, das Einstufen der Stärken und Schwächen wohl nicht lange auf sich warten. Niemand wird wohl einem mündigen Patienten die Einsicht in transparente Ergebnisse und Informationen verwehren können.

Diesen Prozess von unten mitzugestalten ist der EVKD nicht nur ein Anliegen, sondern eine verpflichtende Zielsetzung. Nach der Einführungskonferenz bei der MEDICA laden wir unsere Mitglieder zu einem weiteren Seminar am 16. November 2012 nach Düsseldorf ein. Anhand von konkreten Beispielen zum Umgang mit Qualitätsstandards möchten wir einen tiefgehenden Reflexionsprozess einleiten. Er soll Ansporn zur weiteren Bearbeitung in den jeweiligen Nationalverbänden sein und dabei den Blick auf den europäischen Nachbarn wecken. Mit erarbeiteten Vorschlägen wäre dann ein Einbringen unserer Mitglieder in der Umsetzung der europäischen Richtlinie möglich. Wir würden so ein gutes Beispiel für die Mitgestaltung eines Europas von unten sein. Dabei dürfte unser Augenmerk weniger den bürokratischen Regelwerken gelten, die zwar unerlässlich sind, sondern vielmehr den Patienten. In dieser Verpflichtung müssten wir als Krankenhausdirektoren ohnehin im täglichen Management der Klinikbetriebe stehen. Jetzt gilt es dies auch als Europäer von unten wahrzumachen.

**Willy Heuschen**

*EVKD Generalsekretär u. Chefredakteur*



Leitartikel in (E)Hospital werden von Führungspersonlichkeiten der EVKD verfasst. Die hier veröffentlichten Beiträge geben dennoch ausschließlich die Meinung der Autoren wieder und sind nicht als offizielle Stellungnahme der EVKD zu werten.

## IMPLEMENTIERUNG DER RICHTLINIE ZUR GRENZÜBERSCHREITENDEN GESUNDHEITSVERSORGUNG IN DIE KRANKENHAUSPRAXIS

Im Juni 2006 veröffentlichte der Europäische Rat seine Schlussfolgerungen zu den gemeinsamen Werten und Prinzipien in den Gesundheitssystemen der Europäischen Union. Diese verlangten eine Initiative bezüglich der grenzüberschreitenden Gesundheitsversorgung, um sicherzustellen, dass die Rechte und Ansprüche derjenigen EU Bürger geklärt sind, die sich im Ausland einer medizinischen Behandlung unterziehen möchten. Doch Ende 2006 wurde die Richtlinie über Dienstleistungen – unter Ausschuss der Gesundheitsversorgung.

Dieser zweideutige Ansatz setzte sich fort, bis zur Annahme der Richtlinie über die Ausübung von Patientenrechten in der grenzüberschreitenden Gesundheitsversorgung im März 2011 – die erste EU-Legislatur, die sich spezifisch auf die Gesundheitsversorgung bezieht. Es ist ein Balanceakt zwischen den Entscheidungen des Europäischen Gerichtshofs (ECJ) des letzten Jahrzehnts und den Kompetenzen der Mitgliedstaaten, ihre eigenen Gesundheitssysteme zu managen.

Die Richtlinie zielt darauf ab, Patientenrechte bezüglich Inanspruchnahme medizinischer Versorgung in einem anderen EU-Mitgliedstaat zu klären und Maßnahmen zur Förderung der grenzüberschreitenden Gesundheitsdienstleistungen einzusetzen – was sowohl Patienten als auch Managern der Gesundheitsdienstleistungen zum Vorteil gereichen sollte. Die Richtlinie soll bis zum 25. Oktober 2012 von den Mit-

gliedstaaten in innerstaatliches Recht umgesetzt werden.

Die Mitgliedstaaten haben Entscheidungsfreiheit hinsichtlich der genauen Voraussetzungen, Vorgehensweisen sowie Auswahlkriterien, die zur Inanspruchnahme von grenzüberschreitender Gesundheitsversorgung und Rückerstattung zu gelten haben. Doch die Übersetzung dieser Richtlinie in innerstaatliches Recht ist ein schwieriges Unterfangen, da es die Rückerstattung, Qualität und Sicherheitsstandards der Gesundheitsdienstleister betrifft. Auch wird es eine Herausforderung sein, ein immer aktuelles, transparentes Register aller verfügbaren Gesundheitsdienstleister, deren Qualität und Kosten aufzustellen, angesichts der doch beträchtlichen Unterschiede der verschiedenen Gesundheits- und Sozialversicherungssysteme in der EU.

Andrerseits wurden in den letzten Jahren in ganz Europa unzählige Initiativen ergriffen, um sich diesen unterschiedlichen Herausforderungen zu stellen und die hohe Qualität der medizinischen Versorgung auf regionaler, nationaler und Krankenhaus-Ebene zu gewährleisten. Es ist von immenser Bedeutung, dass sich diese Initiativen nicht von der Europäischen Evolution isolieren; ganz im Gegenteil, sie verdienen es, dass man sie im Kontext dieser Richtlinie näher betrachtet.

Im Februar entschloss sich der Unterausschuss für Europäische Angelegenheiten der EVKD, in zweierlei Hinsicht zu diesem Umsetzungsprozess beizutragen:

### Fragebogen

Der an Krankenhausmanager gerichtete Fragebogen konzentriert sich auf die Qualität der medizinischen Versorgung in Krankenhäusern in ganz Europa. Zu den angesprochenen Aspekten zählen die Definition von Qualität und deren Konkretisierung sowie die Steuerungsprozesse für Qualität. Im Fokus der Aufmerksamkeit steht zudem die Bereitstellung von Information an die Patienten. Der Fragebogen startet am 20. August.

### Seminar: 16 November, Düsseldorf

Im Rahmen des Umsetzungsprozesses sollten Akteure des Krankenhausmanagements ihre Sicht der Dinge bekannt machen und sich an den entsprechenden Aktionen beteiligen. Dieses Seminar bietet die Möglichkeit und soll den Weg zu einem Konsensus der Verbesserungen bezüglich Erfahrungswissen sowie Informationsaustausch ebnen. Das Seminar findet am 16. November in Düsseldorf statt. Auf dem Programm stehen unterschiedliche Vortragende auf Europa, eine Podiumsdiskussion sowie ein geführter Besuch der Aussteller der Medica.

Mehr Information über den Fragebogen und das Seminar finden Sie auf der EVKD Website unter:

<http://www.eahm.eu.org>

Für weitere Informationen steht Jos Vanlanduyt unter [jos.vanlanduyt@eahm.eu.org](mailto:jos.vanlanduyt@eahm.eu.org) gerne zur Verfügung.

### ▶ **Nachhaltigkeit des finanziellen Erfolgs: Hochwertige medizinische Versorgung in Zeiten wirtschaftlicher Unsicherheit**

Sparmaßnahmen fegen über unseren Kontinent hinweg. Wir von (E)Hospital möchten wissen, wie finanzielle Einsparungen die Gesundheitssysteme beeinflussen, vor allem Krankenhäuser. Und wer könnte darüber aussagekräftigere Erklärungen abgeben als die am meisten betroffenen Länder: Portugal, Griechenland, Spanien und Irland. Im ersten Teil einer zweiteiligen Serie sprach (E)Hospital mit Vertretern unserer griechischen und portugiesischen Krankenhausmanager-V Verbände.

Nach dem Gespräch mit George Stathis und Victor Herdeiro war klar, dass die schwierigen finanziellen und politischen Situationen in sowohl Griechenland als auch Portugal die Gesundheitsdienste dazu gezwungen haben, sich auf Patienten statt auf professionelle Interessen zu konzentrieren. Erhebliche Budgeteinschnitte zusammen mit einer steigenden Zahl von Patienten, die das öffentliche Gesundheitssystem in Anspruch nehmen, haben zu wesentlichen Änderungen in beiden Ländern geführt. Tatsächlich ist es die Meinung beider Experten, dass es im Angesicht der finanziellen Krise zu positiven Veränderungen im Gesundheitssektor gekommen ist. Für Griechenland sind die positiven Veränderungen unter anderem die Modernisierung von Vorgängen und ein Eindämmen illegaler Praktiken. In Portugal hat die wirtschaftliche Instabilität zu einer Förderung von Rationalismus und erhöhter Effizienz geführt.

### ▶ **Grünere Krankenhäuser für wirtschaftlichen Erfolg und Nachhaltigkeit** Von Roland W. Chalons-Browne

Die Bevölkerung wächst und altert rasch, und zwar weltweit. Dieses globale Bevölkerungswachstum bedingt gleichzeitig einen rasch ansteigenden Bedarf für Gesundheitsversorgung. Und mehr als alles andere stellt eine alternde Bevölkerung auch größere Anforderungen an die medizinischen Leistungen. Daher explodieren die Gesundheitskosten überall auf der Welt, während die Gefahren aufgrund verschiedener Krankheiten nach wie vor eine große Rolle spielen. Um langfristig effektive Gesundheitssysteme zu etablieren und die Gesundheitsversorgung für jeden leistbar zu erhalten, brauchen wir zusätzliche technologische und finanzielle Innovationen, die sowohl die Qualität der Gesundheitsversorgung verbessern als auch kostensparend sind.

### ▶ **Rationelle Nutzung von Energie und Umwelt: Kultur einer erfolgreichen Nachhaltigkeit** Von Daniela Pedrini, Gaspare Serrazanetti, Michele De Michele, Barbara Gozzi

Die Geschäftsleitung des Universitätsspitals der St. Orsola-Malpighi Polyklinik in Bologna erreichte dank gut eingesetzter Technik befriedigende Ergebnisse des Energiesparens und der Ausstoßverminderung (die Klinik verbraucht 17.000 TOE Energie pro Jahr [TOE: Tonnen Rohöleinheiten] und bläst 35.000 Tonnen CO<sub>2</sub> in die Erdatmosphäre). Zu den eingesetzten neuen Technologien zählen

Systeme einer kontrollierten mechanischen Ventilation mit aktiver Wärmerückgewinnung und eine Kraft-Wärme-Kälte-Anlage. Ein koordiniertes Programm unter der Teilnahme aller Angestellten ermöglichte diese Ergebnisse. Der verfolgte Ansatz basierte auf der Implementierung verschiedener Aktionen, um eine Kultur klimafreundlicher Lösungen für Energieeffizienz und für nachhaltige Umweltpraktiken mittels einer aktiven Beteiligung der Konsumenten zu fördern (Angestellte, externe Interessensgruppe, Benutzer, Gäste, Studenten etc).

### ▶ **Von Risikomanagement zu Management der Patientensicherheit** Von Peter Gausmann

Prozeduren des klinischen Risikomanagements („clinical risk management“, cRM) erfordern eine aktive Beteiligung von Ärzten und Pflegepersonal auf hohem Niveau, sowie beträchtliche finanzielle Ressourcen. In diesem Kontext ist es von besonderer Bedeutung, die Auswirkungen der entsprechenden Maßnahmen zu messen. Die Ergebnisse von Studien und Untersuchungen über die Effekte von cRM zeigen, dass das Erreichen von sechs Zielwerten möglich ist. cRM fördert die Patientensicherheit sowie die organisatorische Entwicklung, es sensibilisiert das Behandlungsteam hinsichtlich Risiken, unterstützt die interdisziplinäre Kommunikation und Kooperation, schafft rechtliche Sicherheit und liefert die Voraussetzungen für die Versicherbarkeit der jeweiligen Einrichtung.

Das Management klinischer Risiken und Patientensicherheit ist sicher keine freiwillige Übung, es ist ganz im Gegenteil ein „must-have“-Programm für jedes Krankenhaus. Die Patientensicherheit steuert zudem zur „Markenentwicklung“ im wachsenden Markt der Gesundheitsversorgung bei, und es ist eine Option des betriebswirtschaftlichen Managements, da Krankenhäuser mit einem etablierten Risikomanagement-Programm besser versicherbar sind. An vorderster Stelle steht jedoch die Tatsache, dass es die Leistungsanbieter den Patienten schlicht und einfach schuldig sind. Patientensicherheit ist ein Patientenrecht sowie die Obligation aller Angestellten.

### ▶ **Telekardiologie: ein einziges lokales Zentrum für 4 Millionen Einwohner** Von Natale Daniele Brunetti et al.

Ein telekardiologisches Zentrum liefert die EKG-Analyse in Echtzeit für öffentliche medizinische Notfalldienste und Privatpatienten in der gesamten Puglia-Region (4 Millionen Einwohner) im Süden Italiens. Ein vollständiges 12-Kanal-EKG kann innerhalb weniger Minuten aufgezeichnet und über Telefon dem telekardiologischen Zentrum übermittelt werden, von wo aus der Kardiologe seine Untersuchungsergebnisse und seinen Bericht schickt. Bei Nachfrage kann auch eine kurze Konsultation durchgeführt werden. Seit 2004, dem Zeitpunkt des Beginns des telekardiologischen Services, wurden 500.000 EKGs durchgeführt. Mehrere Studien haben die potentiellen Vorteile eines regionalen telekardiologischen Netzwerks nachgewiesen, vor allem hinsichtlich der Verminderung der Zeit bis zur Diagnose sowie der Senkung der Rate medizinischer Kunstfehler im Bereich kardiovaskulärer Notfälle. Das Puglia Telekardiologie Projekt kann somit als



einzigartiges Beispiel für die Synergie zwischen Gesundheitsbehörden und Privatwirtschaft angesehen werden.

### ▶ **Ultraschall-Stethoskope im Taschenformat: der Wert von „Bedside Skills“**

Von Bruce J. Kimura et al.

Eine akkurate anfängliche Diagnostik ist das Ziel jedes Kliniklers, hat jedoch vor allem auch Auswirkungen auf den Patienten, der sich akut krank oder in einer abgelegenen Gegend vorstellt – Auswirkungen sowohl gesundheitlicher als auch finanzieller Natur. Diagnostische Fehler in der Frühphase der Betreuung können katastrophale Folgen haben, sowohl hinsichtlich Überleben als auch der Kosten, da sie zu falscher Triage, Tests, Behandlungen oder verlängertem stationären Aufenthalt führen könnten. Ein genauere „erster Eindruck“ der Krankheit des Patienten könnte daher die Zeit-zur-Diagnose vermindern, was wiederum Kosten und ärztliche Kunstfehler minimieren würde.

Der offensichtliche Vorteil des Geräts im Taschenformat ist sein unmittelbarer, gebrauchsfreundlicher Einsatz vor Ort – es ist damit Teil der körperlichen Untersuchung und kein separates diagnostisches Verfahren. Aktuell wird die Kosten-Nutzen-Beziehung jedes zusätzlichen diagnostischen Verfahrens in der medizinischen Praxis sehr viel zurückhaltender als noch früher eingestuft. Und dies gilt vor allem für Geräte, deren Genauigkeit vom ärztlichen Können abhängt. Es wird daher eine Evidenz-Basis für die Anwendung in der Klinik gefordert. Der wirklich entscheidende Erfolgsfaktor des Ultraschall-Stethoskops wird darin bestehen, ob die Allgemeinmedizin das neue Gerät aufnimmt – und es nicht einfach als hochentwickeltes Werkzeug für Experten von Subfachrichtungen endet.

### ▶ **Der therapeutische Nutzen eines salutogenen Krankenhausdesigns**

Von Alan Dilani

Während die klinische Praxis ihren Fokus auf die Behandlung von Krankheiten legt, gibt es auch eine Fülle an Forschungsergebnissen, die darauf hinweisen, dass die Qualität der bebauten Umwelt einen großen Einfluss auf unserer Gesundheit und unser Wohlbefinden hat. Diese Forschung hat gezeigt, dass die salutogene Perspektive den theoretischen Rahmen für einen psychosozial ausgerichtetes Design darstellt, da diese das Kohärenzgefühl eines Individuums stimuliert, fördert und verbessert und auch die Coping-Strategien der Person stärken und ihre Gesundheit fördern kann. Um ein psychosozial ausgerichtetes Design zu implementieren, ist es notwendig, dass die gesamte Organisation die Bedeutung einer salutogenen Perspektive versteht. Nachfolgend kann das Wissen darüber, welche Umweltfaktoren zu Gesundheit und Wohlbefinden beitragen, zur Richtlinie für politische Entscheidungen werden.

Wichtig für den Entscheidungsprozess ist die multidisziplinäre Perspektive, wobei unterschiedliche Personen mit den verschiedensten Hintergründen und Erkenntnissen auf diesem Gebiet zusammenarbeiten, etwa Psychologen, Architekten, Landschaftsplaner, Ärzte, Verhaltensforscher und andere Förderer der Gesundheit.

### ▶ **Das DebugIT Projekt**

Von Dirk Colaert

DebugIT ist die Abkürzung für „Detecting and Eliminating Bacteria Using Information Technology“ – also das Aufspüren und Eliminieren von Bakterien mittels Informationstechnologie. Es ist ein Europäisches FP 7 Forschungsprojekt, das für die Überwachung bakterieller Resistenzprofile eine IT-Lösung erstellt hat.

Weltweit richten sich gesundheitspolitische Maßnahmen auf die Verbesserung der Qualität der Gesundheitsversorgung und der Patientensicherheit. Trotz eines halben Jahrhunderts des Antibiotika-Einsatzes sind neu auftretende und neue infektiöse Erkrankungen – teilweise verursacht durch den Anstieg antimikrobieller Resistenzen – zu wichtigen Problemen geworden. Die steigende Prävalenz der Resistenzen führt zu eskalierenden Gesundheitskosten, erhöhter Morbidität und Mortalität und dem (Neu)auftreten potentiell nicht mehr behandelbarer Krankheiten. Das DebugIT Projekt hat einen IT-Rahmen erstellt, um es Gesundheitssystemen zu erlauben, diese auftretenden Probleme anzusprechen und deren Management zu verbessern. Im Kontext infektiöser Erkrankungen lauten die Aufgaben von DebugIT:

- Feststellung von Mustern und Trends, die die Patientensicherheit betreffen
- Gewinnung neuer Erkenntnisse durch intelligente Datenanalyse
- Neu gewonnene Erkenntnisse für bessere Entscheidungsprozesse für die optimale Behandlung infektiöser Erkrankungen einzusetzen.

### ▶ **Fokus: Portugal**

Das nationale Gesundheitssystem Portugals sieht sich derzeit mit einigen Problemen konfrontiert, die in direktem Zusammenhang mit der aktuellen Wirtschaftskrise in Portugal sowie ganz Europa stehen. Ein Hauptproblem ist die Sicherstellung der Zukunftsfähigkeit dieses Systems. Im Kontext der globalen Wirtschaftskrise sehen sich das Land und sein Gesundheitssystem unter Druck, für höhere Effizienz zu sorgen und gleichzeitig den Zugang für alle sowie die hohe Qualität zu erhalten. Der Gesundheitssektor wird daher derzeit einigen Reformen unterzogen, wobei auf die Krankenhäuser besondere Bemühungen gerichtet sind. Dieser Fokus weist acht Punkte auf:

- Implementierung eines besser abgestimmten Krankenhausnetzwerks
- Definition einer zukunftsfähigen Finanzpolitik
- Integration der Betreuung zur Verbesserung des Zugangs
- Höhere Effizienz der Krankenhäuser
- Sicherstellung der Qualität als Hauptpunkt der Krankenhausreform
- Investition in Informationssysteme als Nachhaltigkeitsfaktor
- Stärkung der Rolle der Bürger und Bürgerinnen

## October

**Telemedicare 2012**.....1-2

Desio, Italy  
www.iitm.eu

**European MedTech Forum**.....10-12

Brussels, Belgium  
www.medtechforum.eu

**Management in Radiology (MIR) Annual Scientific Meeting**.....11-12

Milan, Italy  
www.mir-online.org

**World Health Summit 2012**.....21-24

Berlin, Germany  
www.worldhealthsummit.org

**Public Health - 21st International Medical Exhibition**.....23-26

Kiev, Ukraine  
http://en.publichealth.com.ua

**European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE)**.....24-26

Edinburgh, Scotland  
http://ecdc.europa.eu/en/ESCAIDE

## November

**Medica 2012**.....14-17

Dusseldorf, Germany  
www.medica-tradefair.com

**EAHM Seminar**.....16

Dusseldorf, Germany  
www.eahm.eu.org

**The Global Healthcare Summit**.....29-30

London, England  
www.economistconferences.co.uk

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- ▶ Safety
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- ▶ Oncology
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## Correspondents

## AUSTRIA

*Wilhelm Strmsek* - wilhelm.strmsek@wienkav.at

## BELGIUM

*Jean-Pierre Vandenvondelen* - jpvvd@skynet.be

## BULGARIA

*Nina Muskurova* - nina@veda.bg

## CROATIA

*Mile Klepo* - upuz@zg.htnet.hr

*Ivan Lukovnjak* - trauma-zg@zg.tel.hr

## FINLAND

*Alpo Rajaniemi* - Alpo.Rajaniemi@tyks.fi

## FRANCE

*Cédric Arcos* - c.arcos@fhf.fr

*Michel Hédoine* - direction@teppe.org

## GERMANY

*Peter Asché* - pasche@ukaachen.de

*Heinz Kölling* - koellking@diako-online.de

## GREAT BRITAIN

*Susan Hodgetts* - s.hodgetts@ihm.org.uk

## GREECE

*George J. Stathis* - gstathis@eemmy.gr

## HUNGARY

*Lajos Ari* - egve@mail.datanet.hu

*Erwin Kövesi* - kovesi.ervin@eum.hu

## ICELAND

*Björn Astmundsson* - Bjorna@Reykjalundur.is

## IRELAND

*Ann Marie O'Grady* - annmarieogrady@beaumont.ie

## ITALY

*Dr. Gianfranco Finzi* - anmido.segreteria@gmail.com

## LITHUANIA

*Rimantas Sagdavičius* - adneda@iti.lt

*Stasys Gendvilis* - stasys.gendvilis@takas.lt

## NETHERLANDS

*Jan Aghina* - info@nrvzd.nl

## NORWAY

*Erik Normann* - erik.normann@ahus.no

## POLAND

*Mieczysław Pasowicz* - m.pasowicz@szpitalipz.krakow.pl

## PORTUGAL

*Manuel Delgado* - mmdelgado@hccabral.min-saude.pt

## SLOVAKIA

*Juraj Gemes* - jgemes@nsppb.sk

## SLOVENIA

*Janez Remskar* - janez.remskar@zzs.si

*Rudi Turk* - rudi.turk@sb-mb.si

## SPAIN

*Mariano Guerrero* - mariano.guerrero@sedisa.net

## SWITZERLAND

*Andreas Gattiker* - andreas.gattiker@gzo.ch

## TURKEY

*Yasar Yildirim* - yyildirim@hisarhospital.com

**(E)Hospital Editorial Secretariat**

166, Agias Filaxeos

SOFIA Tower, CY-3083, Limassol, Cyprus

+357/25/822133

+32/ 2/ 286 8500

e-mail: office@hospital.be

homepage: www.myhospital.eu

**Publishers**

*Christian Marolt* - c@marolt.com

*Willy Heuschen*

**Communications Directors**

*Luiza Kudelka* - luiza@myhospital.eu

*Katya Mitreva* - katya@myhospital.eu

**Art Director**

*Tassos Kostis* - art1@mindbyte.eu

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