



The SESTI project
D6.2 Workshop papers (4/4)

Major trends, challenges and emerging issues in Health

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Authors: Effie Amanatidou (MIOIR), Maurits Butter (TNO), Vicente Carabias (JRC-IPTS), Miriam Leis (TNO), Petra Schaper-Rinkel (AIT), Victor van Rij (minOCW), Brian Warrington (MCST)
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Project partners:

- TNO Institute for Applied Research
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- JRC - Institute for Prospective Technological Studies
- AIT Austrian Institute for Technology
- Manchester University [MIOIR]
- Maltese Council for Science and Technology



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The SESTI project

The SESTI project, funded by the seventh Framework Programme, aims at the development of an approach by which weak signals can be identified and addressed by the policy arena in an early stage. This will be done by using different approaches to identify weak signals (weak signals scanning), but also by contextualizing them and initiating discussions within the policy arena. The last element is important to establish an approach that will have optimal usage to the policy arena. To enhance the quality of the comparison of the different weak signal scanning approaches, the content domain will be limited by the signals that are precursors to changes in the research and innovation system (European, national, regional).



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Introduction

The present document was prepared to support the SESTI workshop on emerging issues in and relevant for Health science and technology with potentially high impact on policy-making in Europe. It complements the deliverable D5.1.4 (Paper on emerging issues Major trends, challenges and emerging issues in Health). The objective of the present document is to present an indicative snapshot of the literature on health state-of-the-art and future evolutions as well as on the associated policy issues surrounding the specific field. The overall aim is to establish a common understanding about the main elements characterizing the area of health, in combination with D5.1, so as to trigger discussions on the topic.

Health and social services are set to become increasingly important commodities as European society grows older. But a growing demand for services that are provided in many Member States by the public sector is creating unprecedented pressures on health systems. Despite differences in political approaches and institutional frameworks health sector in Europe in all European Union (EU) face similar challenges, notably the need to adjust to demographic ageing and to changing employment and family patterns. At issue is the increasing level of resources devoured by health and social care systems year on year. Moreover, the prospect of social and demographic changes anticipated over the coming 20 years leaves many in despair as to how existing systems will cope.

Naturally, a brief overview would not be possible to cover all these different aspects, perspectives, and peculiarities at the same degree of detail. Nor would it be desirable for the purposes of the SESTI workshop, as it would touch upon a wide number of issues only superficially. Thus, the present overview mainly tries to present adequately the major cross-cutting challenges and issues governing all the areas of health policy and research without going into much detail. It is in this wider context that the policy implications of any new emerging issues and associated early warning signals have to be considered.

Beginning with a brief overview of the European healthcare sector, this report goes on to examine some of the trends and issues that are driving developments and reforms in the health sector in Europe. The report takes a closer look at some of those issues and drivers of change that are likely to have significant implications for the future of health. Given the variety of drivers at play, it is rather difficult to be precise in imagining what these services may look like in 10-15 years time. Therefore, a set of scenarios will be presented compiled from respected sources. The report will then identify a set of emerging issues and related early weak signals in line with the objectives of the SESTI project. The report is rounded off with an account of some of the policy measures being implemented by the EU and Member States in addressing several of the issues addressed as important for the future of the sector. In the annex you find the workshop agenda, participants and list of abbreviations.



1. EU Health policy context - Major trends, challenges and issues

The healthcare sector refers primarily to those services provided by hospitals, general practitioners and community clinics in the prevention, diagnosis, and treatment of illness. It is a major activity in the European countries which consumes significant fractions of GDP and accounts for the employment of millions of people. It is also a very complicated sector composed of not just of healthcare service providers, but also funders (both public and private) and consumers (patients). In addition, important economic sectors are associated with healthcare services, most notably pharmaceuticals and medical equipment suppliers.

There are marked differences between EU countries on the way that healthcare is funded and delivered. European Commission discerned two main models:

1. Countries that offer a national health service free at the point of delivery (the Nordic countries, the UK and Ireland), where expenditure is funded mainly through general taxation
2. Countries in which there is an insurance-based system, usually the other Member States, where contributions are levied specifically for access to healthcare and where people are reimbursed for the services they purchase (CEC, 2002, p.41)

Though these systems may be different, all are subject to similar pressures such as rising costs and ageing population. In virtually all countries, healthcare spending as a proportion of GDP is on an upward track.

In Europe, countries have faced increasing pressure on health service budgets over the years, not only because of an ageing population, but equally importantly because of growing level of real income and advances in know-how which have expanded the demand for treatment. While technology and automation have the potential to lower costs, those downward pressures are more than offset by the impact of an aging society, health consumerism and medical breakthroughs.

Trends and drivers of change affecting the healthcare sector are diverse. The most significant ones are:

- Demographic and societal change
- Rising expectations and consumerism
- Health informatics and telemedicine
- New medical technologies, and
- Spiralling costs of healthcare provision

Demographic and societal change: We live in ageing societies. But this is not just a matter of an ageing population – it also concerns the ageing of the workforce and “elder ageing”, i.e. the rapid increase in the number of people aged 80 and over. This phenomenon is described as “triple ageing”. The implications of triple ageing for health and social services are



profound. For example, it is estimated that healthcare costs for 65-75 year olds are 2.5 times greater than those for people under 65, while the costs for those over 75 are estimated to be 4.5 times greater (Coomans, 1999, p. 14).

The doomsayers predict fiscal catastrophe, with too few people in the workforce to cover the costs of pensions, healthcare, and long-term care for the elderly – known as the demographic dependency ratio. In this scenario, even intergenerational solidarity is under threat. Optimists, on the other hand, argue that technological advances will result in healthier elderly populations, the possibility of more home-based caring (a less expensive alternative to institutional care), and an overall increase in the productivity of the economy that will generate resources to fund increasing levels of health and social care.

An ageing society also has implications for recruitment to health and social services jobs. These sectors must compete with others for a shrinking pool of talent and young recruits. Many European countries are already experiencing acute shortages of doctors, nurses, and social workers. This situation has intensified the recruitment of migrant workers within the healthcare sector in Europe. Nevertheless, it is certain that Europe will witness an increase in the age-profile of the professional workforce in the health and social service sector over the next decades.

Rising expectations and consumerism: The term “consumer patient” reflects the notion that people are increasingly expecting to receive the health services they require at an affordable price. Linked to developments in information and communication technologies (ICT), patients are increasingly informed about healthcare services. This reduces their dependence on professional “gatekeepers”. The number and influence of vocal patient groups is likely to increase and the trend towards internationalising health interest groups is set to grow. For example, in 1998, the International Alliance of Patient Organizations was formed (www.patientsorganizations.org), bringing together 40 patient groups from across the world. Such developments mean that patients are now better informed about their conditions and are less deferential to healthcare professionals.

Health informatics and telemedicine: It is already apparent that ICTs are changing the face of healthcare. For example, the Internet already offers society the opportunity to become better informed on health issues. This could eventually result in major changes in the relationship between doctor and patient. But ICT systems are also set to revolutionise information sharing between health professionals, e.g. through the development of seamless electronic patient records. It is widely anticipated that clinicians will have access to ICT-mediated information and decision support at the point of care. In turn, changing patterns of information sharing and new patient/doctor relationships will bring some fundamental changes to health organisations and the working relationships of health personnel. They will also bring various security concerns onto the health agenda. The security of health information is likely to be provided by a range of procedures and technologies, such as smart cards or biological identifiers.



Another area where ICTs are anticipated to have a major impact is in the remote delivery of health and care services, i.e. telemedicine. This is expected to lead to improvements in the speed and cost of health and social care services as well as an expected increase in the quality of patient care. Other applications of ICTs include “telesurgery”, defined as remote surgery via telepresence and haptic (touch) feedback. In the near future, doctors will be able to perform and complete medical operations remotely from anywhere in the world with the help of high-speed data lines and advanced robotics.

New medical technologies: The desire to cut health costs, extend life and increase quality of life is often cited as a key driver for technology developments in health. In recent years and for the foreseeable future, genomics and the new biotechnologies have become important focus areas for health innovation, followed closely by nanotechnologies and robotics. Many believe that these new technologies could totally revolutionise healthcare, despite concerns about spiralling costs and ethical issues. Genomics is expected to open markets for diagnostic testing, preventive medicines, follow-up treatments and even support services such as lifestyle counselling. However, many of the more exciting developments in the area are not expected to be routine until after 2015. The earliest gains are likely to come from the use of genetic information to predict the effectiveness and side effects of drug therapies. Hence developments in pharmacogenetics may be the first to deliver real therapeutic benefit. Taking a more pessimistic view, it is possible that the costs for such treatments, required to allow pharmaceutical companies to recoup research and development costs, would adversely affect their use in some healthcare systems.

As well as genomics, there is a wide body of research in the biotechnology area that could lead to profound changes in healthcare. Some of the technologies being developed include biomaterials and tissue generation, biosensors and bioinformatics. Biomaterials and tissue generation are potentially very significant. It is anticipated that those with heart disease may have the option of cardiac vessel regenerative tissue implants, thereby replacing clogged arteries without bypass surgery or angioplasty. Effective preventive strategies could reduce demand but technological and other changes may result in the increased use of services. For example, the uncoupling of mortality and morbidity seen in coronary heart disease and stroke is likely to result in multiple episodes of intense usage of healthcare services (OST, 2001, p. 10).

Spiralling costs of healthcare provision: When the UK National Health Service was founded in the 1940s, politicians and the medical profession believed that it would become progressively cheaper to run as the national population became healthier. In fact, the reverse occurred. The growth in demand, which is projected to accelerate over the coming 10-20 years, has focused attention in all countries on ways of limiting expenditure without reducing the quality of services or their accessibility. Some believe that the situation will call for radical solutions that could threaten the commitment of Member States to universal availability of a high level of health and social welfare. Indeed, many national healthcare





funders are already trying to define the core elements that will be covered by tax or social insurance funding. If they are unwilling or unable to fund certain therapies, individuals will have to pay for these themselves. Clearly, not everyone will be able to meet these co-payment costs, so socio-economic inequalities could translate into health divides between the haves and have-nots.

Given the uncertainty surrounding the way the trends and drivers are likely to play out over the next 10-15 years a number of scenarios that attention to alternative plausible futures. Saritas and Keenan (2004) reviewed six existing scenarios¹ that explicitly address the healthcare sector. The healthcare scenarios they selected have their origins in four countries – Germany, Sweden, the UK, and the USA – as well as Europe more generally.

Looking at the scenarios, there is high level of agreement on the issues important for the future of health. These issues have a high level of certainty and are therefore considered to constitute a “baseline” situation common to all visions. These include:

- an ageing society and ageing workforce;
- increasing life expectancy;
- changing family forms and an increase in single-person households;
- new disease threats linked to, for example, an ageing society (more chronic and degenerative diseases), environmental change (skin cancers, tropical diseases, etc.), growing antibiotic resistance, and modern living (addictions, obesity, depression, etc.);
- growing health awareness and consumerism;
- growing ubiquity and power of ICTs;
- an increased understanding and medical
- exploitation of genomics and other
- biomolecular fields; and
- continuing (and increasing) politicisation of health and social care

In addition to the baseline situation factors, there are several indicators around which there are variable degrees of uncertainty. Saritas and Keenan (2004) identified nine such indicators:

1. Health status of the population: life expectancy; morbidity rates, especially among the elderly; health divides and health tiering.
2. Lifestyles and values: individualism vs collectivism; standing of expert knowledge; consumption; intergenerational harmony and/or ageism; lifestyle drugs.
3. Health and social care funding regimes: dependency ratios; public vs private/market provision; cost containment measures; co-payments and self-rationing; incentives (e.g. reduced insurance payments) to encourage self-care.

¹ Health and Care in 2022 (WHO Europe), The Wanless Review of the UK NHS (HM Treasury), The Madingley Scenarios (UK NHS), Health and Healthcare 2010 (The Institute of Future), Futur (Federal Research Ministry – BMBF), and Teknisk Framsyn Health Panel Report (Vinnova).



4. Prevention and self-care: health promotion and prevention initiatives; engagement with health and self-care; expansion of the concept of “health” to a broader “wellness” in body and mind; impacts on health divides.
5. Growing and changing demand on services: health-seeking behaviour; consumerism, e.g. direct-to-customer advertising by the pharmaceutical industry; organisation and activities of patient groups; responsiveness of health and social care systems to new demands, e.g. ageing populations, and opportunities, e.g. new technologies; productivity and use of resources.
6. Widespread use of ICTs: clinical support; remote diagnostics and therapies; performance monitoring and evidence-based interventions; health and social care budgeting; widespread access to information; self and planned care programmes; security and privacy; costs and savings.
7. Genomics and biotechnology: genetic testing and pharmacogenetics; tissue engineering; biosensors; security and privacy; ethical concerns; costs and savings.
8. Primary and community care: integration of health and social care – whole systems approach; institutional reform and/or replacement; variety of health and social care providers; role of hospitals; specialists in primary and community care; home care v institutional care; internationalisation of healthcare provision.
9. Employment organisation and workforce skills: supply of health and social care personnel; professionalisation of traditional care-giving roles; labour conditions and relations; workforce skills mix; training and skills for new technologies; emergence of new roles and positions.



2. New emerging issues and related early warning signals

The SESTI project searches in a systematic way for new emerging issues that may be influential on the future research and innovation agenda in relation to policy agenda. The search uses different approaches as internet scanning, surveys, wiki, twitter and text mining (which are globally described in a Methodological Report “*SESTI Deliverable 3.1: Scanning for early recognition of emerging issues; dealing with the unexpected*” and a first report on Methods and Approaches “*SESTI Deliverable 3.2 (1) Methods and approaches used in scanning the environment for weak signals and emerging issues*” where also the search frame for the scanning of relevant emerging health issues is given). The search delivered an enormous amount of small and larger potential new issues for health research and policy which were assessed on their potential impact and plausibility.

After synthesis of the most impact rich and plausible **issues for health**, the SESTI team has selected the following issues:

1. Deepening the gap between health services? Diversity in medicine
2. Happy aging? Mental health in ageing society
3. Obesity: The global epidemic marches on
4. Is prevention better than cure? Re-prioritising health research for an ageing society
5. Personalised medicine: Luxury good for few?

These five issues are described in the appendix of the background paper D5.1.4 and will be discussed during the workshop on 30 November 2010. The issues descriptions are a selection from the systematic (scan) search to websites and articles, logs and so on, that claim new challenges, approaches, discoveries, breakthroughs and ideas on health policy and research. The descriptions give a short summary that outline their novelty, their potential impact, their research (or factual) basis, their controversies, their conflicts or coherence of interests and their emotional or ethical aspects which together make the issues candidate as potential emerging issue with “great” impact.

During the workshop we will discuss the issue descriptions to improve the descriptions and to assess the different aspects in a more inter subjective setting with electronic voting. Finally we will discuss their implications for health policy and research in relation to the first chapter and the ways the issues can be monitored further and brought forward to the policy arena.

3. Associated implications for Health policy and research

This is a selection of some related implications on health policy and research triggered from the emerging issues identified and analysed in the previous section.

European national policy-makers broadly agree on the core objectives that their health care systems should pursue. The list is strikingly straightforward: universal access for all citizens, effective care for better health outcomes, efficient use of resources, high-quality services and responsiveness to patient concerns. It is a formula that resonates across the political spectrum and which, in various, sometimes inventive configurations, has played a role in most recent European national election campaigns (Mossialos *et al.*, 2002).

Health and social service provision are mostly the concern of national (and in some cases, regional) governments, with little responsibility traditionally residing at the European level. This is changing, however, as recognised by Article 152 of the Amsterdam Treaty, which states that “A high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities”. This means that proposals in other key areas of community activity (internal market, social affairs, research and development, agriculture, trade and development policy, environment, etc.) should actively promote health protection. The Commission’s communication of 1999 (European Commission, 1999) had already called on Member States to:

- Contribute to improve the efficiency and effectiveness of health systems so that they achieve their objectives within available resources. To this end, ensure that medical knowledge and technology are used in the most effective way possible and strengthen cooperation between Member States on evaluation of policies and techniques.
- Ensure access for all to high quality health services and reduce health inequalities.
- Strengthen support for long-term care of frail elderly people by, inter alia, providing appropriate care facilities and reviewing social protection cover of care and carers.
- Focus on illness prevention and health protection as the best way to tackle health problems, reduce costs and promote healthier lifestyles.

Accordingly, reform programmes have been introduced by Member States, aimed at increasing the efficiency of resource use and the cost effectiveness of the care provided. These include:

- Improving the information available on the cost of treatment of different ailments to ensure that the cost factor is included in determining and rationalising healthcare services. One example is a new database recently established by the Ministry of Social Affairs in Belgium: this database contains medical and financial information on the use of services of various kinds across the country (the consumption and cost of drugs, the number and duration of hospital stays, etc.). This will enable comparative



data to be grouped by 600 different types of pathology, encouraging hospitals and practitioners to examine their own costs in relation to others and to look for ways of reducing them (CEC, 2002, p. 42). Similar initiatives have been implemented in most Member States.

- Introducing market mechanisms as a means of increasing efficiency. Such measures include the clearer demarcation between supply and demand and the contractualisation of services.
- Taking direct action to reduce expenditure on pharmaceuticals, both by encouraging the use of generic drugs and by restricting or prohibiting the use of expensive branded pharmaceuticals (CEC, 2002, p. 43).
- Devolving responsibility to the regional and local levels and, in some cases, to individual hospitals or general practitioners. This shift to primary care focus is underpinned by a belief that health and social services need to be more responsive to local needs and that better coordination can be achieved between needs and resources at this micro-level.
- Increasing the development of home-based services to support older people in their own homes rather than through – often more expensive – institutional care
- Tackling health divides and health tiering through targeted measures that address health determinants, such as diet, smoking, stress, and poverty. For example, in the UK, the government has established scores of Health Action Zones in the most deprived areas of the country in order to tackle the determinants of poor health.
- Developing an adequate supply of appropriate categories of personnel with the requisite skills. The development of these skills increasingly involves changes in the way in which training is delivered, in curricula, in educational funding, and governance of health professions, with implications that go beyond the healthcare system to affect higher education and research.



4. Discussion themes and areas of reflection

This report has sought to draw together information on key trends, drivers, emerging issues and related early signals affecting the health sector. In this section we aim to provide a set of discussion theme and some areas of reflection.

Comprehensiveness of major trends and challenges - possible R&D and policy answers like prevention or mitigation

Novelty / importance / soundness of emerging issues and associated weak signals - plausibility, desirability, changeability, time horizon of emerging issues

- Deepening the gap between health services? Diversity in medicine
- Happy aging? Mental health in the aging society
- Obesity: The global epidemic marches on
- Is prevention better than cure? Re-prioritising health research for an aging society
- Personalized medicine: luxury good for few?

Identification of knowledge gaps, needs for deeper or further monitoring and scanning, further study and research



In D5.1.4 background material with regards to these emerging issues is given, aiming to answer the question if the different dimensions of the issue are increasingly discussed in science.

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Annex I: Workshop Agenda

www.sesti.info 	<p>Scanning for Emerging Science and Technology Issues The SESTI project is funded under the European FP7 and researches the application of weak signals and emerging issues for improving the anticipatory intelligence of the European Commission and the EU Member States on future developments and issues</p> <p>Health Workshop Agenda</p>	
Meeting	Workshop	
Date	November 30, 2010	
Place	University Foundation, rue d'Egmont 11 – 1000, Brussels	
Start / Close	10.00-16.30	

Health: Weak Signals and Emerging Issues for European Policy

“The workshop deals with scanning emerging issues in and relevant for Health science and technology with potentially high impact on policy-making in Europe”

Block 1: Introduction to the workshop and to scanning emerging issues

10:00	Introduction to the workshop (5 minutes), IPTS -Agenda and chairing; Mind mapping support; Webcam, twitter, rapporteur;
10:05	Tour de table (10 minutes) -The name and the organisation
10:15	Introduction to Blue sky research in FP7 Perla Srour-Gandon, Research in the economic, social sciences and humanities – Prospective, European Commission, DG RTD
10:25	Introduction to the SESTI project and methodology issues (10 minutes) Maurits Butter, TNO
10:35	Present Background: A sketch of major trends, challenges and issues on energy (re. background document) Effie Amanitoudou, Ozcan Saritas
11:00	Discussion to validate the sketch
11:20	Presentation on a selection of 5 Emerging Issues in the area of Health (the connected observed signals and signals to be watched for in near future) (Petra Schaper-Rinkel, Victor van Rij)
11:50	First discussion to cover also other issues coming from the participants Voting on the issue

Block 2: Emerging issues in the area of Health in the context of Health policy and research

12:30	Working lunch
13:30	Discussion on impacts, evidence base, plausibility, desirability (emotional – interest aspects) , changeability (possible R&D and policy answers like prevention mitigation) of separate issues (20 minutes for each issue)
	+ Voting on these aspects for each issues





Block 3: Implications on policy and scanning activities

15:30	Discussion on the interaction of issues with each other and with the issues that are already on the policy radar – associated implications for policy and research in the area of Health (coordination needs, content challenges, etc.) in setting the agenda for discussion with policy makers.
16:00	Identification of knowledge gaps, needs for deeper or further monitoring and scanning, further study and research.
16:30	Wrap up and conclusion IPTs

Annex II: Workshop Participants

<p>www.sesti.info</p> 	<p>Scanning for Emerging Science and Technology Issues The SESTI project is funded under the European FP7 and researches the application of of weak signals and emerging issues for improving the anticipatory intelligence of the European Commission and the EU Member States on future developments and issues</p> <p>Workshop on Health Issues List of Participants</p>	
<p>Meeting</p>	<p>SESTI Workshop</p>	
<p>Date</p>	<p>November 30, 2010 – 10:00-17:00</p>	
<p>Place</p>	<p>University Foundation, rue d'Egmont 11 – 1000, Brussels</p>	
<p>Present</p>	<p>Project Partners: Fabiana Scapolo, DG JRC (Chair) Vicente Carabias, JRC-IPTS (Rapporteur) Miriam Leis, TNO (twittering, mindmapping) Petra Schaper-Rinkel, AIT Brian Warrington, MCST (Rapporteur) Victor van Rij, MinOCW Ozcan Saritas, MIOIR</p> <p>Experts and Policy-makers: Isabel de la Mata Barranco, DG SANCO Mathilde Reynardi, DG SANCO Anne-Katrin Bock, DG JRC Spela Majcen, DG RTD . SSH Teresa Corral, Ministry of Science and Innovation, Spain Janet Mifsud, University of Malta Niels Boye, AAL Central Management Unit Edouard Debonneuil, Head of R&D at AXA Global Life Alexander Tietz, Advisor to the European Parliament Miklos Gyoerffi, Science and Technology Options Assessment – STOA at European Parliament</p>	
<p>Absent</p>	<p>Maurits Butter, TNO Didier Coeurnelle, MEP</p>	



SESTI consortium

Overall project management, WIKI and textmining

Maurits Butter, Miriam Leis, Christine Balch (TNO)

P.O.Box 6030

NL-2600 JA Delft

The Netherlands

☎: +31 152 695423

✉: maurits.butter@tno.nl

✉: miriam.Leis@tno.nl

✉: christine.balch@tno.nl

Contact for issue processing

Petra Schaper-Rinkel, Matthias Weber, Joachim Klerx (AIT)

Donau-City-Straße 1 |

A-1220 Vienna

Austria

☎: +43 50550

✉: Petra.Schaper-Rinkel@ait.ac.at

Contact for scanning emerging issues

Victor van Rij (min OCW)

Knowledge directorate (IPC 5200)

P.O.Box 16375

2500 BJ den Haag

The Netherlands

☎: +31 70 4122036

✉: v.vanrij@minocw.nl

Contact for policy workshops

Vicente Carabias, Cristiano Cagnin, Mark Boden, Karel Haegeman,

Totti Könnölä (JRC-IPTS)

Edificio Expo, C/Inca Garcilaso, 3

41092 Seville, Spain

☎: +34 954 488 488

✉: vicente.carabias-barcelo@ec.europa.eu

Contact for dissemination

Jennifer Cassingena-Harper, Brian Warrington (MCST)

Villa Bighi,

Bighi,

MT-Kalkara CSP 12,

Malta

☎: +356 21 241176

✉: jennifer.harper@mcst.org.mt