Electronic patient record systems: Vision, good practice, benefits

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empirica

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“Old” health policy objectives

• “It is not our job to teach people what to do, but ... to help them to become the kind of people who will know what to do”

• “Comprehensive programs, such as those directed to bring maximum benefit to persons with chronic diseases ..., require the coordination of the efforts of many individuals and agencies.”

• “The home care program clearly demonstrates the importance of the close integration of clinical, public health, and other services if the need of chronic disease patients are to be met to a reasonable degree.”


• “Hard facts facing” Public Health:
  - “Rising expectations & demands for healthcare
  - Rising costs of healthcare, especially hospital care
  - Demands for involvement of the consumer
  - The acceptability, availability & accessibility of healthcare, including ... a more convenient portal of entry into the system”

## Vision: “New” Model of Healthcare

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Traditional model of healthcare</th>
<th>New model of healthcare</th>
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<tbody>
<tr>
<td>Health philosophy</td>
<td><em>Disease centred cure</em></td>
<td><em>Citizen centred and wellness focused</em></td>
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<tr>
<td>Data &amp; knowledge sharing</td>
<td><em>Fragmented, proprietary</em></td>
<td><em>Integrated, distributed, shared, continuous update</em></td>
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<tr>
<td>Interactions</td>
<td><em>Episodic, on demand</em></td>
<td><em>Continuously, autonomous</em></td>
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<td>Care giver</td>
<td><em>Healthcare professional</em></td>
<td><em>Citizen, informal carers, community, healthcare professional</em></td>
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<tr>
<td>Care receiver</td>
<td><em>Patient</em></td>
<td><em>All citizens (independent of social, mental, physical capacities)</em></td>
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<tr>
<td>Entry into health system</td>
<td><em>Disease triggered</em></td>
<td><em>Choice</em></td>
</tr>
<tr>
<td>Consultation delivery process</td>
<td><em>Linear (cottage industry type)</em></td>
<td><em>Ubiquitous, seamless, collaborative</em></td>
</tr>
<tr>
<td>Consultation receiver location</td>
<td><em>Hospital, GP office</em></td>
<td><em>Home, community-based</em></td>
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</table>

Source: www. www.scenarios4health.eu
Key elements of the “new” model of healthcare

- Impetus on health, not on sick care
- Focusing on the idiosyncrasies of the individual citizen (personalised)
- Support & help at the point of need (home, mobility, community, abroad, ...)
- Meeting new challenges (chronic diseases, ageing population, ...)
- If in need of healthcare, supply of collaborative, integrated, seamless services across all health value system actors (including LT and social care)
- Support for optimal communication, sharing of data, access to latest knowledge

*EHealth tools and systems have the potential to finally help us to realise this vision*
Defining the electronic health record (EHR)

An **EHR** has been defined as

“digitally stored health care information about an individual's lifetime with the purpose of supporting continuity of care, education and research, and ensuring confidentiality at all times”

An **EHR system** includes:

- longitudinal collection of electronic health information for and about persons, where health information is defined as information pertaining to the health of an individual or healthcare provided to an individual;
- immediate electronic access to person- and population-level information by authorized, and only authorized, users;
- provision of knowledge and decision-support that enhance the quality, safety, and efficiency of patient care; and
- support of efficient processes for health care delivery

Reality check I: empirical evidence

Rofecoxib (Vioxx) Story

- Kaiser Permanente EHR (2003 data)
  - 2.3 million person-year case follow up
  - 8143 serious CAD: 2,210 deaths (27.1%)
  - 3x increased risk versus other NSAIDS
- Sept 2004 voluntary withdrawal
- Feb 2005 FDA official withdrawal
- 4% prescribing versus 40% 2 years ahead

Source: Kendall Ho, UBC Faculty of Medicine, 2007
Reality check I: empirical evidence - Regenstrief Institute Medical Record System

- Founded in 1968: “Healthcare was believed to be inefficient and to benefit from industrial efficiency techniques and computer automation”
- System of 5m patient records integrated across Indiana, USA
- In the summer of 2006, suddenly a highly unusual local increase in the no. of patients treated for food poisoning was noticed
- Within 24 hours, it could be traced to a local supermarket - which was then temporarily closed

Source: oral communication, May 2007, from Marc Overhage, Director of Medical Informatics, Regenstrief Institute, Inc.; Indianapolis, Indiana, USA
Reality check I: empirical evidence - Scientific review studies

- “It Ain’t Necessarily So: The Electronic Health Record And The Unlikely Prospect Of Reducing Health Care Costs - Much of the literature on EHRs fails to support the primary rationales for using them.”
  
  Health Affairs V25, No. 4 (2006)

- “Additional research utilizing broader perspectives and multidisciplinary techniques will be needed before a better understanding of RoI from health IT [EHRs, CPOE, CDSS] is achieved”

- “To date, HIT [health information technology] has been mostly the realm of enthusiasts. Practitioners have generally regarded EHRs as costly, cumbersome, and offering little help for tasks at hand.”

- “Prospective electronic medical record (EMR) purchasers can find relatively little hard evidence these systems will deliver promised or expected benefits.”

  J o Healthcare Information Management V21 (2006)
REALITY CHECK I: EXAMPLES OF NEW FP7 PATIENT SAFETY PROJECTS

**DEBUGIT Project:** will use information from Clinical Information Systems across EU through the ‘view’ of a virtualized, fully integrated Clinical Data Repository. It will setup a generic basis for large clinical research projects based on the *secondary use of raw clinical data* not generated by expensive randomized clinical trials, providing a common, extensible and shareable knowledge repository about *infectious diseases* and beyond, and real time decision support and monitoring. *Time frame: 2008 to 2011*

**ALERT Project:** Design, development and validation of a computerised system that exploits *data from electronic health records (GP-based) and biomedical databases* for the early detection of adverse drug reactions. *Time frame: 2008 to 2011*

*Source: Ilias Iakovidis, ICT for Health, DG INFSO, EC, WHIT Oct 23, 2007*
Reality check II: member state examples
- England, UK -

• **Expected benefits** from electronic patient record (EPR) systems:
  – speed up clinical communication
  – reduce the number of errors
  – assist doctors in diagnosis and treatment
  – more control for patients of their own healthcare
  – improve the quality of healthcare audit and research

• However, increasing access to data through EPR systems also brings *new risks* to the privacy and security of health records.

• In England, implementing EPR systems is one of the main aims of the *10-year National Programme for Information Technology (NPfIT)*, launched in 2002
England, UK

- The main plank is the NHS Care Records Service (NCRS) which will create *two separate EPR systems*.
  - a national Summary Care Record (SCR), containing basic information
  - local Detailed Care Records (DCRs), containing more comprehensive clinical information

- NCRS will also include a Secondary Uses Service (SUS) which will provide access to aggregated data for management, research and other 'secondary' purposes

- Trial use of HealthSpace for patients to record their key health information, and be able to view full audit trails, showing who has accessed their SCR

  - [http://www.publications.parliament.uk/pa/cm200607/cmselect/cmhealth/422/42203.htm](http://www.publications.parliament.uk/pa/cm200607/cmselect/cmhealth/422/42203.htm)
The Dutch Approach

Status Quo nationwide EHR

Ellen Maat MA MPA

Head Program Unit for Health IT
Ministry of Health, Welfare and Sport
Objective EHR program

The ultimate objective is a national “future proof” EHR system to support the integrated care of patients across and between health care providers.
Basic Assumptions Infrastructure

- Medical data will remain in local systems
- No central database
- National Switch Point with corresponding technical, communication and content standards
- Composition of virtual record by switch point
- No smart card with medical data
Basic Assumptions Applications

• Incremental development of EHR
• Start with electronic medication record and patient summary for locum GP
• New applications via Platform and Steering Committee
## Status Quo: Facilitate

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<th>2006</th>
<th>2007</th>
<th>2008</th>
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<td><strong>AORTA Infrastructure</strong></td>
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<tr>
<td>- National Switch Point</td>
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<tr>
<td>- Unique Identification Register (UZI-register)</td>
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<td>- Care Sector Message Service</td>
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<td>- Well Managed Care System</td>
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<td><strong>ID system</strong></td>
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<td>X</td>
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<tr>
<td>- Citizen Service Number</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>- Unique Care Provider Identification (UZI-card)</td>
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<td><strong>Financial Incentives</strong></td>
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<td>- AORTA Infrastructure</td>
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<tr>
<td>- Proof of Concept</td>
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<td>- Contribution pilot regions</td>
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<tr>
<td>- Business Case</td>
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Status Quo: Obligate

- Legislation Citizen Service Number
  - Passed by House of Representatives
  - Awaiting discussion by Senate
  - Date of commencement January 2008

- Legislation on EHR
  - Draft text submitted to advisory bodies
  - Forwarding to Parliament October 2007
  - Date of commencement January 2009
IT & Innovation: future steps…

- Incremental strategy
- Platform to identify desired developments
- Decision and monitoring by Steering Committee

- New applications:
  - e-Lab
  - e-Emergency Data Set
  - e-Pathology Record
  - e-Children’s Record
France: Dossier Médical Personnel (DMP)

- Stop of introduction of the DMP in Nov. 2007
- The economic and legal viability of the model of hosting (medical data) is not sufficiently proven, with a serious risk of misuse
- The current organisation should be completely rethought and the current call for proposals for hosting stopped
- The DMP portal is based on a centralised architecture (which seems to be regarded as a serious risk)
- Healthcare professionals need incentives to indeed make use of DMPs if they don’t want to (of 380,000 DMPs created, only 14% were used even once)

Source: MISSION INTERMINISTÉRIELLE de REVUE de PROJET sur le DOSSIER MÉDICAL PERSONNEL (DMP), Paris, Paris, le 8 novembre 2007
**EHR deployment in Finland**

**General practitioners** work in health care centres (270). The number of gPs using electronic patient records is high.

18/21 **Hospital Districts** of Finland have EPR: The use of EHR covers evenly the departments of conservative, operative, and psychiatric treatment.

- **2005**: EHR in 95.6% of health centres. The main way of recording patient data in 99.4% of them.
- **2003**: EHR in 93.6% of health care centres.
EHR and Patient Summaries in Finland

From Dr. J Komulainen
University of Kuopio 1.2. 2006

STAKES National Research and Development Centre for Welfare and Health

HSWP, Nov. 19 – 20, 2007, Luxembourg
Estimated cumulative benefit by 2008: ~ € 1.4 bil.
IZIP - Internetový Přístup Ke Zdravotním Informacím Pacienta
The national Electronic Health Record system in the Czech Republic

Electronic Patient’s Health Account / File

- Specialist II
- Specialist I
- General practitioner
- Pharmacy
- Lab
- Emergency
- Hospital

Client - Patient

Cross border care
Patients mobility
Interoperability
25% of Health Care Institutions in CZ Participate in the System IZIP (Sept. 05)

- 7,011 health care institutions in the Czech Republic participate in the system
  - 6,664 Out-patient offices
    - 2,948 GPs
    - 3,716 specialists
  - 220 pharmacies
  - 77 labs
  - 50 hospitals
Medical Records Represent the Value

Figures to Sep. 05

Interoperable interfaces for direct data export from majority of information systems used in:
- hospitals
- labs
- pharmacies
- out-patient offices

EP, Brussels, October 2005
EU study and publication 2006

- Proven (not "average" performing) eHealth applications - no analysis of failures
- All sites show a positive economic impact of eHealth services
- eHealth needs a medium-term perspective
  - Year 4 - first year that annual benefits exceed costs, on average
  - Year 5 - first year that cumulative benefits exceed cumulative costs, on average
- Given the ‘right’ pragmatic approach, context and change process, eHealth solutions can be successfully implemented
- Key health policy message: eHealth can support more, better, and safer healthcare, within available resources
Conclusions: Success factors

- A vision, combined with a (highly) flexible (i.e. pragmatic, not a fixed) longer-term strategy
- Effective clinical leadership
- A step-by-step process approach that enables risk to be managed
- Effective ventures are a series of investments with an underlying eHealth dynamic
Conclusions: Success factors

• Effective applications meet concrete health(care) needs (i.e. not technology-driven)

• Successful applications are driven by multidisciplinary teams, with multidisciplinary people

• Strong focus on change management needs and resources

• Clinical research can offer firm foundations for benefits realisation (outcomes)
Conclusions

• Underestimation of technology risks combined with inflexible L-T visions and insufficient benefit/cost analyses may explain the discrepancy between ICT-driven policy promises and the mushrooming problems faced by some large-scale nationwide eHealth infrastructure implementation programmes

• *Improved* future technology and investment analysis methods will make strategic choices more explicit, and benefit policy makers and healthcare provision decision makers alike, as well as tax payers and citizens
Thank you for your attention

Further information:

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http://www.empirica.com