Konferenz “Telemonitoring in Gesundheits- und Sozialsystemen – Eine eHealth-Lösung mit Zukunft”, München

eHealth-Entwicklungen international – Stand und Perspektiven/
International eHealth developments

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&
European Observatory on Health Systems and Policies
$ 19 Mrd. für eHealth im US-Konjunkturpaket

Increasing HIT through the Economic Stimulus Bill

Country: USA
Partner Institute: Johns Hopkins Bloomberg School of Public Health, Department of Health Policy and Management
Survey no.: (13) 2009
Author(s): Holzer, Jessica and Gerard Anderson
Health Policy Issues: System Organisation/Integration, HR Training/Capacities, Funding / Pooling, Quality Improvement, New Technology, Remuneration / Payment, Hole Private Sector

Current Process Stages

<table>
<thead>
<tr>
<th>Idea</th>
<th>Pilot</th>
<th>Policy Paper</th>
<th>Legislation</th>
<th>Implementation</th>
<th>Evaluation</th>
<th>Change</th>
</tr>
</thead>
</table>

1. Abstract

The American Recovery and Reinvestment Act of 2009 provides US$19.2 billion to support expansion of health information technology in ambulatory care settings. Such an investment in HIT is unprecedented, and has the potential to significantly change the health IT infrastructure in the US, particularly coverage of electronic medical records. Support has been strong among many stakeholders, including physicians and insurance companies, increasing the chances of the program’s success.

2. Purpose of health policy or idea

The purpose of the Health Information Technology (health IT) expansion in the Economic Stimulus is to establish a nationwide health IT infrastructure capable of connecting providers and patients through compatible, standardized electronic health record (EHR) systems. The Stimulus Bill provides incentives for new adopters of EHR from 2011 to 2014. After 2015, providers who are non-meaningful users of EHR (a term yet to be defined) or non-users of EHR will see their reimbursements from the government decreased by 1% per year until 2018. After 2018, if less than 75% of
Electronic Health Records in Ambulatory Care — A National Survey of Physicians

Catherine M. DesRoches, Dr.P.H., Eric G. Campbell, Ph.D., Sowmya R. Rao, Ph.D.,
Karen Donelan, Sc.D., Timothy G. Ferris, M.D., M.P.H., Ashish Jha, M.D., M.P.H.,
Rainu Kaushal, M.D., M.P.H., Douglas E. Levy, Ph.D., Sara Rosenbaum, J.D.,
Alexandra F. Shields, Ph.D., and David Blumenthal, M.D., M.P.P.

BACKGROUND

Electronic health records have the potential to improve the delivery of health care services. However, in the United States, physicians have been slow to adopt such systems. This study assessed physicians’ adoption of outpatient electronic health records, their satisfaction with such systems, the perceived effect of the systems on the quality of care, and the perceived barriers to adoption.

METHODS

In late 2007 and early 2008, we conducted a national survey of 2758 physicians, which represented a response rate of 62%. Using a definition for electronic health records that was based on expert consensus, we determined the proportion of physicians who were using such records in an office setting and the relationship between adoption and the characteristics of individual physicians and their practices.

RESULTS

Four percent of physicians reported having an extensive, fully functional electronic records system, and 13% reported having a basic system. In multivariate analyses, primary care physicians and those practicing in large groups, in hospitals or medical centers, and in the western region of the United States were more likely to use electronic health records. Physicians reported positive effects of these systems on several dimensions of quality of care and high levels of satisfaction. Financial barriers were perceived as being the most important barrier to adoption.

4% „full“ + 13% „basic“
Use of Electronic Health Records in U.S. Hospitals


ABSTRACT

BACKGROUND
Despite a consensus that the use of health information technology should lead to more efficient, safer, and higher quality care, there are no reliable estimates of the prevalence of adoption of electronic health records in U.S. hospitals.

METHODS
We surveyed all acute care hospitals that are members of the American Hospital Association for the presence of specific electronic record functionalities. Using a definition of electronic health records based on expert consensus, we determined the proportion of hospitals that had such systems in their clinical areas. We also examined the relationship of adoption to specific hospital characteristics and factors that were reported to be barriers to or facilitators of adoption.

RESULTS
On the basis of responses from 63.1% of hospitals surveyed, only 1.5% of U.S. hospitals have a comprehensive electronic records system (i.e., present in all clinical units), and an additional 7.6% have a basic system (i.e., present in at least one clinical unit). Computerized provider-order entry for medications has been implemented in only 17% of hospitals. Larger hospitals, those located in urban areas, and reaching hospitals were more likely to have electronic-records systems. Respondents cited cap-

1.5% „comprehensive“ + 7.6% „basic“
Physicians’ Use of Electronic Medical Records

International Comparison, 2006

Percent of physicians using electronic medical records

<table>
<thead>
<tr>
<th>Country</th>
<th>2001</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>17</td>
<td>28</td>
</tr>
<tr>
<td>NETH</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>NZ</td>
<td>92</td>
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<tr>
<td>UK</td>
<td></td>
<td>79</td>
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<tr>
<td>AUS</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>GER</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>CAN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AUS=Australia; CAN=Canada; GER=Germany; NETH=Netherlands; NZ=New Zealand; UK=United Kingdom; US=United States.

Data: 2001 and 2006 Commonwealth Fund International Health Policy Surveys.
Source: Commonwealth Fund National Scorecard on U.S. Health System Performance, 2008
Primary Care Practices with Advanced Information Capacity, 2006

Percent reporting 7 or more out of 14 functions*

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ</td>
<td>87</td>
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<tr>
<td>UK</td>
<td>83</td>
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<tr>
<td>AUS</td>
<td>72</td>
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<tr>
<td>NET</td>
<td>59</td>
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<tr>
<td>GER</td>
<td>32</td>
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<tr>
<td>US</td>
<td>19</td>
</tr>
<tr>
<td>CAN</td>
<td>8</td>
</tr>
</tbody>
</table>

*Count of 14: EMR, EMR access other doctors, outside office, patients, test.no use electronic ordering tests, prescriptions, access test results, access hospital records; computer for reminders, Rx alerts, prompt tests results; easy to list diagnosis, medications, patients due for care.

Source: 2006 Commonwealth Fund International Health Policy Survey of Primary Care Physicians
On the other hand, there are eHealth world-leaders …

**Information Technology**

Kaiser Permanente is making a multibillion dollar investment in KP HealthConnect, a secure nationwide electronic data system that is:

- More than just an electronic record
- A highly sophisticated information management and delivery system
- A programwide system that integrates the clinical record with appointments, registration, and billing
- A complete health care business system that will enhance the quality of patient care
Expanded Online Access for Members

www.kp.org
Member Web Portal

- Access medical record
- Make/change appointments
- Send email to doctor
- Check lab results
- Access health Information
- Review eligibility & benefits
- Account summary

<table>
<thead>
<tr>
<th>Care Delivery Core</th>
</tr>
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<tbody>
<tr>
<td><strong>Scope of KP HealthConnect Suite</strong></td>
</tr>
<tr>
<td><strong>Outpatient</strong></td>
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<tr>
<td>Scheduling</td>
</tr>
<tr>
<td>Registration</td>
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<tr>
<td>Clinicals</td>
</tr>
<tr>
<td>Billing</td>
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</tbody>
</table>
KP’s e-care Evolution

» E-Health Management: including blood pressure, blood glucose, respiratory peak flow, weight measurement, “virtual care” using video and audio cast, and online health assessments

» E-mail your doctor
» View lab test results online
» Refill prescriptions online
» Schedule/cancel appointment online
» Select a physician online
» View your health record

» Drug/health encyclopedia
» Healthwise Handbook
» Facility/staff directory
» Link to other Web sites
Systematic Review: Impact of Health Information Technology on Quality, Efficiency, and Costs of Medical Care

Basit Chaudhry, MD; Jerome Wang, MD; Shinya Wu, PhD; Margaret Maglione, MPP; Walter Mojica, MD; Elizabeth Roth, MA; Sally C. Morton, PhD; and Paul G. Shekelle, MD, PhD

Background: Experts consider health information technology key to improving efficiency and quality of health care.

Purpose: To systematically review evidence on the effect of health information technology on quality, efficiency, and costs of health care.

Data Sources: The authors systematically searched the English-language literature indexed in MEDLINE (1995 to January 2004), the Cochrane Central Register of Controlled Trials, the Cochrane Database of Abstracts of Reviews of Effects, and the Periodical Abstracts Database. We also added studies identified by experts up to April 2005.

Study Selection: Descriptive and comparative studies and systematic reviews of health information technology.

Data Extraction: Two reviewers independently extracted information on system capabilities, design, effects on quality, system acquisition, implementation context, and costs.

Data Synthesis: 257 studies met the inclusion criteria. Most studies addressed decision support systems or electronic health records.

Approximately 25% of the studies were from 4 academic institutions that implemented internally developed systems; only 9 studies evaluated multifunctional, commercially developed systems. Three major benefits on quality were demonstrated: increased adherence to guideline-based care, enhanced surveillance and monitoring, and decreased medication errors. The primary domain of improvement was preventive health. The major efficiency benefit shown was decreased utilization of care. Data on another efficiency measure, time utilization, were mixed. Empirical cost data were limited.

Limitations: Available quantitative research was limited and was done by a small number of institutions. Systems were heterogeneous and sometimes incompletely described. Available financial and contextual data were limited.

Conclusions: Four benchmark institutions have demonstrated the efficacy of health information technologies in improving quality and efficiency. Whether and how other institutions can achieve similar benefits, and at what costs, are unclear.
Resolutions WHO EB115.R20 (2005) -

Urges the Members States to:

- develop a national eHealth strategy, including legal and infrastructure frameworks, and public-private partnerships,
- mobilize multisectorial collaboration,
- establish national eHealth centers and networks of excellence etc.
eHealth strategy in Switzerland

Positions and Influences at a glance

„Health strategy, not eHealth strategy required“ strongly opposed

1 Federal Council, Federal Office of Public Health, Conference of cantonal health ministers
2 santesuisse
3 Swiss hospital association (Hplus)
4 Physician Association (FMH)

HealthPolicyMonitor www.hpm.org
Netherlands: national infrastructure for data exchange between electronic medical records

>50% of physicians opposed to have their own linked EMR
Figure 3.5 Primary care as a hub of coordination: networking within the community served and with outside partners

- Specialized care
  - TB control centre
  - Community mental health unit
- Emergency department
  - Referral for multi-drug resistance
- Hospital
  - Referral for complications
- Maternity
  - Consultant support
  - Traffic accident
  - Placenta praevia
  - Hernia
  - Training centre
- Surgery
  - Liaison community health worker
- Diagnostic services
  - CT Scan
  - Diagnostic support
  - Cytology lab
  - Pap smears
  - Environmental health lab
  - Waste disposal inspection
  - Mammography
  - Specialized prevention services
  - Cancer screening centre
- Primary-care team: continuous, comprehensive, person-centred care
  - Self-help group
- Social services
  - Other
  - Alcoholism
  - Gender violence
  - Alcoholics anonymous
  - Women's shelter
- NGOs
GP attitudes towards ICT use in healthcare

ICT improves the quality of healthcare services

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GP perception of ICT use in healthcare

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GPs’ access to computer in practices (in %, EU countries 2007)

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GPs’ access to internet in practices (in %, EU countries 2007)

Internet access

Random samples of 6,789 GPs in 29 countries

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GPs’ access to broadband in practices (in %, EU countries 2007)

Access to broadband in practices

Random samples of 6,789 GPs in 29 countries

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
IT use by GPs: storage of administrative patient data (in %, EU 2007)

Random samples of 6,789 GPs in 29 countries

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
IT use by GPs: storage of medical patient data (in %, EU 2007)

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GPs routinely using a computer during consultation (in %, EU countries 2007)

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
Towards eHealth Deployment: Step 2
Connecting providers: Message, EMR, HP tools, online services
GP connectivity: to other GPs in %, 2007.

Access to electronic systems of other health actors: GPs

Random samples of 6,789 GPs in 29 countries

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GP connectivity: to specialists (in %, 2007)

Random samples of 6,789 GPs in 29 countries

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GP connectivity to hospitals in %, 2007

Hospitals

Random samples of 6,789 GPs in 29 countries

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GPs: Electronic exchange of patient data by purpose (in %, EU 2007)

- Lab results from laboratories: 40%
- Admin data to reimbursers: 15%
- Medical data to care providers / professionals: 11%
- Admin data to other care providers: 10%
- Prescription to pharmacy: 6%
- Medical data cross border: 0.7%

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
# GPs: Electronic exchange of patient data by purpose (selected countries in %)

<table>
<thead>
<tr>
<th></th>
<th>Lab results from laboratories</th>
<th>Admin data to reimbursers</th>
<th>Medical data to care providers / professionals</th>
<th>Admin data to other care providers</th>
<th>Prescription to pharmacies</th>
<th>Medical data cross border</th>
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<tbody>
<tr>
<td>EU27</td>
<td>40</td>
<td>15</td>
<td>10</td>
<td>10</td>
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<td>1</td>
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<tr>
<td>BE</td>
<td>73</td>
<td>3</td>
<td>13</td>
<td>13</td>
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<td>1</td>
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<tr>
<td>BG</td>
<td>5</td>
<td>10</td>
<td>3</td>
<td>6</td>
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<td>63</td>
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<td>3</td>
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<td>45</td>
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<td>28</td>
<td>71</td>
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<tr>
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<td>55</td>
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<td>13</td>
<td>16</td>
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<td>32</td>
<td>5</td>
<td>0</td>
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</table>

**Source:** empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
Readiness – use gap (example in %, 2007)

Readiness-Use Gap: Internet connection vs. transfer of medical data to other carers

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
GPs: ePrescribing (in %, 2007)

Random samples of 6,789 GPs in 29 countries

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
<table>
<thead>
<tr>
<th>Country</th>
<th>Electronic storage of individual patient data</th>
<th>Electronic storage of administrative patient data</th>
<th>Computer use in consultation</th>
<th>Electronic transfer of patient data</th>
<th>Average index score</th>
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<tbody>
<tr>
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<td>3.7</td>
<td>3.3</td>
<td>2.3</td>
<td>2.0</td>
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<tr>
<td>EU27+2</td>
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<td>3.7</td>
<td>3.3</td>
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<td>4.7</td>
<td>3.1</td>
<td>4.2</td>
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<td>BE</td>
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<td>3.8</td>
<td>2.5</td>
<td>3.7</td>
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<td>3.6</td>
<td>3.2</td>
<td>3.2</td>
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<tr>
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<td>3.0</td>
<td>4.7</td>
<td>3.6</td>
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<td>4.6</td>
<td>3.2</td>
<td>3.8</td>
<td>0.6</td>
</tr>
</tbody>
</table>

"Frontrunners"<br>

"Followers"

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
Denmark Leads the Way In eHealth: An Example of High Performance

- 98% of primary care physicians totally electronic health records and e-prescribing.
- Paid for e-mail with patients.
- All prescriptions, lab and imaging tests, specialist consult reports, hospital discharge letters flow through a single electronic portal accessible to patients, physicians, and home health nurses.
- Specialist payment depends upon filing information in the electronic portal.
MedCom - The Danish Health Data Network

Messages/蒙τν

GP’s with EDI: 2120 = 100%
Specialists with EDI: 765 = 94%
Hospitals with EDI: 63 = 100%
Pharmacies with EDI: 322 = 100%
Doctors on Call: 5 = 100%
Health Insurance: 5 = 100%

102 messages/min

But even frontrunners can do better: comparing the application of Health IT in primary care in Denmark and Andalucía/Spain

- “… Particulary notable is the reality that the Danish primary care physicians office have “Electronic Medical Records” while in Andalucía, the primary care physicians share a common record which, when secondary care is fully integrated, will indeed be an “Electronic Health Record …”

Protti D, Johansen Ib, Perez-Torres F. Comparing the application of Health information Technology in primary care in Denmark and Andalucía, Spain. International Journal of Medical Informatics 2009;78:270-283
Towards eHealth Deployment: Step 3
Connecting individuals with providers/
Patient-centred Health Information

- Pharmacy
- Health Centre
- GP
- Hospital
- Emergency
- Secure Networks
- Mobile, Wireless & Broadband
- Region 1
- Region 2
- Region 3
- Home
- Mobile PC
- Wireless & Broadband
- Region 1
- Mobility
GPs: telemonitoring routinely (in %, 2007)

Source: empirica: ICT and eHealth use among GPs in Europe 2007, Bonn April 2008
New Zealand: introduction of patient-centred electronic health record

Positions

very supportive

very strong

strongly opposed

Influence

none

Information technology companies

District Health Boards

Ministry of Health

General practitioners

Independent Practitioners Association Council

Minister of Health

HealthPolicyMonitor www.hpm.org
Estland: Nationales Gesundheitsinformationssystem – Patientenorientiertes Monitoring von der Wiege bis zur Bahre

Die Kernaspekte des nationalen Gesundheitsinformationssystems

- eine digitale Krankenakte – alle lebenswichtigen Informationen zentral gespeichert
- eine digitale Bilddatenbank – zentral zugänglich für alle Leistungserbringer
- eine digitale Blutdatenbank
- Verschreibungen – elektronisches Rezept
- Terminverwaltung für die Patienten

Ab 2013 soll die Teilnahme am System für alle Leistungserbringer verpflichtend sein.

Das System bietet Vorteile für alle Beteiligten …

- mehr Informationsmöglichkeiten für Patienten über ihren Gesundheitszustand
- bessere Koordination zwischen Leistungserbringern
- erhöhte Effizienz der Gesundheitsversorgung
- weniger Bürokratie für Leistungsanbieter

… aber steht noch Herausforderungen gegenüber

- zeit- und kostenintensive regelmäßige Aktualisierung der Daten
- ungesicherte Finanzierung auf lange Sicht
- rechtlicher Rahmen für Umgang mit Patientendaten muss noch verabschiedet werden

Breite Unterstützung für die eHealth-Initiative

- Technische Innovationen stehen in Estland hoch auf der politischen Tagesordnung. Der 1,4-Millionen-Einwohner-Staat hat bereits ein ausgebautes eGovernment-System.
- Die Menschen in Estland erwarten weitere Innovationen im eHealth-Bereich und stehen diesen Entwicklungen sehr aufgeschlossen gegenüber.
- Die wesentlichen Stakeholder im estnischen Gesundheitssystem (Sozialministerium, Krankenkasse und Ärzteorganisationen) stehen hinter dem Ansatz.
Zusammenfassung

• eHealth-Entwicklung in Ländern sehr unterschiedlich (führend: DK), insbesondere zwischen Leistungsanbietern oft und mit Patienten fast immer wenig entwickelt
• eHealth muss (Haus-)Ärzte einbeziehen
• Gesundheitssystemstrategien, die eHealth beinhalten, vermutlich erfolgreicher als reine eHealth-Strategien
• Patientenbezo genene Datensammlung bleibt überall Herausforderung
Präsentation, Literatur zum Thema etc. auf:
www.mig.tu-berlin.de

Email: mig@tu-berlin.de