

## MedCom, Denmark – Danish Health Data Network

The history of MedCom - the Danish Healthcare Data Network (DHDN) - goes back to the late 1980s, when interest in electronic communication among healthcare providers grew. It is a long-term project that enables effective data transfer between several actors of the health service, including stakeholders of the community-based social care system. This national network allows fast information flow in form of reliable data exchange of EDIFACT or XML-based messages among the respective software systems of the participating healthcare providers.

Agreements on interface specifications as well as certification of software compliance with agreed upon standards and syntax allow for optimal interoperability. Data transfer begins at the point of care for patients and General Practitioners (GPs). From there, services that citizens may need access to include pharmacists, diagnostic services and specialist consultation at hospitals, referral to and discharge from a hospital, and transfer to home care and residential care services. Effective access to these by citizens depends on efficient exchange of messages between health and social care providers and other actors.

The Danish Centre for Health Telematics plays a core role in achieving and expanding these communications through a process which has been implemented as a set of projects that develop national data standards and take advantage of new information and communications technology in healthcare. It started formally in 1994 and so far has had five main phases:

- MedCom I — pioneer spirit and professionalism — 1995 - 1996
- MedCom II — implementation and consolidation — 1997 - 1999
- MedCom III — quality services and diffusion — 2000 - 2001
- MedCom IV — adopt Internet and web based technologies — 2002 - 2005
- MedCom V — realisation of “ Good Web Service”— 2006 - 2007

Electronic data interchange (EDI) is used for the messaging process, including:

- GP referrals to hospitals
- GP prescriptions
- GP requests for diagnostic tests
- Test reports
- Discharge letters to GPs
- Notifications of discharges to community and home care services
- Reimbursements.

The focus of the economic assessment of this unique nationwide eHealth system has been on the direct impacts from improved message exchange. Benefits for citizens are derived from faster, more reliable and more efficient communication between healthcare and social care professionals. GPs' benefits include costs savings on secretarial and clerical services in preparing and sending information to other healthcare services. Pharmacists can receive prescriptions directly and electronically from GPs, a faster and more reliable process than paper prescriptions transferred by hand.

By receiving prompt notification of transfers to their domain, social services benefit from earlier preparation and information about patients discharged from hospital, and so earlier, and more effective, care provision. This is a rare example of active efforts to improve cooperation between the healthcare and community and social care systems.

Hospitals and diagnostic services receive and send information that is more consistent, and so can be more efficient and responsive. They can also be more confident about the reliable data standards included in their eHealth applications.

Due to interoperability assured by certified software, sender and receiver can upload respectively download the messages into their own electronic record systems.

All this has started to operate already in 1994 using mainly electronic data interchange (EDI) and its associated tools. The system generates considerable net economic benefits estimated to exceed € 75m on an annual basis by 2008. About 80% of the total annual costs, estimated to be in



the order of € 50m, are investment in ICT and organisational change. The main impact of the application is effective and efficient communication between health- and social care professionals. This translates to over 95% of the direct gains going to care providers.

**Core impact:**

- Enables healthcare partners to communicate more effectively and reliably for improved quality of services
- Offers significant efficiencies in communication processes and record keeping, thus reducing administrative overhead
- Improves communication between healthcare, community care and social care systems.

**Main beneficiaries:**

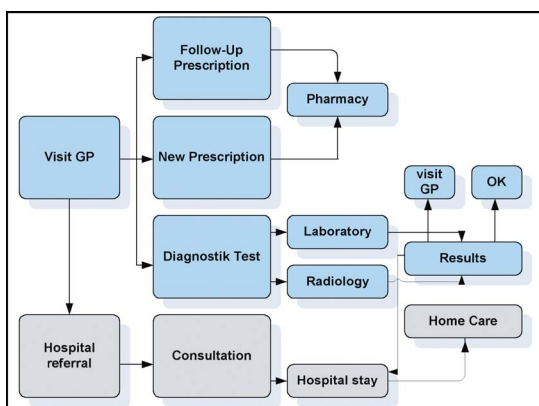
- Healthcare providers, especially general practitioners, benefit from effective and efficient data transfer and reduced administration costs
- Social services benefit from earlier communication by being better prepared to receive patients transferred to them from hospital
- Citizens benefit from more efficient and better quality health and social services that can be provided with faster and more reliable communications between healthcare professionals.

**Lessons learned:**

- Long term goals should be defined from the outset, but need to be regularly reviewed and adapted as user needs and technology change

[www.MedCom.dk](http://www.MedCom.dk)  
[www.ehealth-impact.org/case\\_studies/index\\_en.htm](http://www.ehealth-impact.org/case_studies/index_en.htm)

**FIGURE: AN ILLUSTRATION OF THE HEALTHCARE PROCESS SUPPORTED BY THE DHDN**



- A step-wise process allows for inevitable mistakes and failures to be corrected faster and at lower costs
- Setting data standards and specifications is a prerequisite for successful nationwide eHealth services
- Effective consensus, teamwork and collaboration with stakeholders is essential for success
- Regular involvement and exchange with software industry, including certification of software, is a key factor for assuring interoperability of electronic systems
- Sustainable eHealth is a series of continuous investments over time
- A permanent infrastructure organisation (national centre of competence) with sufficient in-house expertise is a critical resource for such a national system.

**Economic results:**

- First year of annual net benefit, i.e. when annual benefits exceed annual costs: 1997, year 3
- Estimated annual net benefit for the year 2008: approximately € 80 million
- First year of cumulative net benefit: 1999, year 5
- Estimated cumulative benefit by 2008: approximately € 1.4 billion
- Cumulative investment costs, including operating expenditure, by 2008: approximately € 725 million
- Estimated productivity gain, measured in decrease in cost per message transaction: 97%
- Distribution of benefits to 2008: Citizens – 2%; HPOs – 98%

**CHART: PRESENT VALUES OF ESTIMATED ANNUAL COSTS AND BENEFITS - 1994 TO 2008, in € 000s**

