Sundhetsportalen och nationell patientöversikt i Danmark
Stefan Ohlsson, Healthcare Cluster Unit Executive, Nordic
stefan.ohlsson@se.ibm.com
Agenda

• Basic introduction of the Danish National eHealth Portal
• Architecture & examples of functionality
• National Patient Repository in Denmark
• International strategy
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Danish e-Health Strategy 2003-2007

• Contribute directly to the *improvement of quality*, service and coherence in patient care
• Ensure *better communication* between all parties in the health care service
• Contribute to the *fast and safe access* of the individual citizen and/or patient to his own health record as well as to information concerning service and quality of health care
• Be instrumental to *better administration and management* of the health care service
• Ensure *coordination* with the political goals concerning digitalisation of the public sector in Denmark

• National IT strategy available on: www.sst.dk
Initiatives based on strategy

• Infrastructure
  - Standardization
  - Health Data Network (VANS > Internet)
  - Security: PKI based on CPR (Central National Register)
• Electronic Patient Records
• Telemedicine
• Cross sectorial communication
• Shared care
• *Danish e-Health Portal: www.sundhed.dk*
The Owners

Owners is the complete Danish health sector

- Danish Association of Regions
- Copenhagen Municipal Authority
- Frederiksberg Municipal Authority
- General Practitioners Organisation
- Ministry of Health
- Copenhagen Hospital Cooperation
- Danish Medicine Agency
- National Board of Health
- Danish Pharmaceutical Association

Having an Health Portal offices with 17 employees
General Manager: Morten Elbæk Petersen
www.sundhed.dk

Information providers:
- Counties and Hospitals
- National Board of Health
- Ministry of Health
- Danish Medicines Agency
- Other

Professional users:
- General practitioners
- Hospital physicians
- Nurses
- Dentists
- Home care staff
- Therapists
- Laboratory staff

General information

Communication

Specific information

Citizens:
- Patients
- Relatives
- Information seekers
- Chronically ill

Data sources:
- EPR
- MedCOM
- Medicine Profile
- National registers
- Other
The ehealth approach

Co-operation
- eReferrals
- eConsultation
- Access to HR
- Work on same HR

Security, privacy and confidentiality ✓

The healthcare challenge

Optimize work routines
- eBooking
- eConsultation
- Healthcare Yellow pages
- Support choice of healthcare organization
- eRenewal of medicine prescription
- Update own information

Use the patients capacity
- Shared Care
- Track own medical history
- Track own medicine use
- Treatment information

More patients

Fewer physicians

Higher healthcare costs

The right treatment
- Decision support
- Medical history
- Adverse drug reaction
- CAVE Registration
- Access lab results

Prevent illness
- Disease Information
- Medicine information

Take action in time
- Track medicine use
- Test yourself
Total 3 mio. unique visitors hits in December 2006
Examples of benefits

Electronic donor registration
• 2/3 of all registrations are now carried out electronic on sundhed.dk
• There has been a 40% increase in the registration

E-mail-consultation with the general practitioner
• An increase of 144% for e-mail-consultations in the period January-November 2006 (compared to the year before) to a total of 410,968.
• A tripling of e-mail-consultations in a year = a total of 194,675 in 2005 compared to 2004
• The number of GP’s with e-services is almost four times bigger compared to December 2003 – resulting in a 48% coverage in December 2006
• 87% has a digital signatur (December 2006)
• 61% of the Danish population wishes to communicate electronic with their GP’s (Survey on awareness 2006)

The citizens access to own medical history
• More than 4,000,000 page views since the launch in September 2005
• A tripling of registered users in a month (digital signature users)
• 25,000 orders of the digital signature in little over a month
Awards

- **EU-award 2004**: e-health, along with MedCom
- **Top of the web 2005** by The Ministry of Science, Technology and Innovation and The National IT and Tele Agency
- **E-commerce award 2006** by The Danish eBusiness Association and The Danish IT Industry Association
- **The digitalization award 2006**: by among others The Digital Taskforce, The Ministry of Science, Technology and Innovation and The Danish IT Industry Association
- **Computer World award 2007**
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High level architecture

Content Management System

- Editors
- Editors handbook (HTML)
- Document Template
- XML/NITF
- Other
- Local CMS

Editors

Preview

Approve

Publish

IBM Websphere Portal

Guest
Citizens
Physicians
Pharmacies
Other

Handling digital certificates, network and database encryption – TIM/TAM

>180 Healthcare portlets

Search engine

J2EE Java

IBM WAS

Web Service

External system

Citizen Medical Thesaurus

IBM DB2

Citizen Medical Thesaurus

Automated meta tagging

WebSphere Portal

>180 Healthcare portlets

IBM Websphere Portal
Den direkte adgang til sundhedsvæsenet

Torben Hagen Britze logget på 15.01.2005 kl. 11:34

Forside/ Min personlige forside/ Velkommen til Min sundhed.dk

Velkommen til Min sundhed.dk

Som borgere kan du desigere din egen forsise på sundhed.dk. Nogle borgere vil allerede nu kunne benytte tjenester, der indeholder sundhedsdata - elektroniske oplysninger om din kontakt med sundhedsvæsenet. Læs mere Om min sundhed.dk og dine muligheder her.

GENVEJER

- Ventebizer
- Frit opholdsvalg
- Patientvelkøring
- Find lægemidler
- Sysdemeters
- Test din selv

Mine favoritlinks

Opret bruger på sundhed.dk

Find adresse

Sundhedsområde:
- Allo områder
Amt:
- Århus Amt
**Lab test results**

**Lab result for patient with CPR number: 010-490-4939**

**Laboratory: Århus Amts laboratorier**

<table>
<thead>
<tr>
<th>Date</th>
<th>Glucose</th>
<th>Hemoglobin</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.06.2003</td>
<td>4.9</td>
<td>10.1</td>
</tr>
<tr>
<td>08:30</td>
<td>12:09</td>
<td>9.9</td>
</tr>
<tr>
<td>08:30</td>
<td>12:09</td>
<td>9.9</td>
</tr>
<tr>
<td>08:30</td>
<td>12:09</td>
<td>9.9</td>
</tr>
</tbody>
</table>

Results with **frød** text suggest that the value is critical in the reference range.

**Commentary**

12.06.2003 - **Andre analyser** - B-Hemoglobin, laboratoriemålt stofk.
**F19.1** Previsitskommentar: Hemocue

12.06.2003 - **Andre analyser** - B-Hemoglobin, praksismålt stofk.
**F19.1** Previsitskommentar: Hemocue
Consent Management
Simple consent

Citizens log of access to his data

Advanced consent

Mine samtykker

<table>
<thead>
<tr>
<th>Retnighed</th>
<th>Gælder for</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicinprofil</td>
<td>Apotek 2</td>
<td>Deaktivet</td>
</tr>
<tr>
<td>Medicinprofil</td>
<td>Apotek 3</td>
<td>Aktivt</td>
</tr>
<tr>
<td>Medicinprofil</td>
<td>Apotek 1</td>
<td>Aktivt</td>
</tr>
</tbody>
</table>
### Prescription Medicine

<table>
<thead>
<tr>
<th>Date</th>
<th>Lægemiddelnavn</th>
<th>Form</th>
<th>Styrke</th>
<th>ATC gruppe</th>
<th>Indikation</th>
<th>Dosering</th>
<th>D.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-09-2004</td>
<td>Adorin</td>
<td>Tablett</td>
<td>20 mg</td>
<td>Clopamid - C03BA03</td>
<td>Vandrødende</td>
<td>1/2 tablet daglig</td>
<td></td>
</tr>
<tr>
<td>02-09-2004</td>
<td>Adorin</td>
<td>Tablett</td>
<td>10 mg</td>
<td>Clopamid - C03BA03</td>
<td>Vandrødende</td>
<td>1/2 tablet daglig</td>
<td></td>
</tr>
<tr>
<td>01-09-2004</td>
<td>Gavisyl Comp.</td>
<td>Tablett</td>
<td>4 mg/3 l</td>
<td>Pethidipin</td>
<td>Vandrødende</td>
<td>1/2 tablet daglig</td>
<td></td>
</tr>
<tr>
<td>01-09-2004</td>
<td>Nutrilis Retard</td>
<td>Depottabletter</td>
<td>5 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29-08-2004</td>
<td>Dylinal</td>
<td>Tablett</td>
<td>1.75 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28-08-2004</td>
<td>Hapaguccin</td>
<td>Tablett</td>
<td>1.75 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-08-2004</td>
<td>Antipsil</td>
<td>Tablett</td>
<td>1 g</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06-08-2004</td>
<td>Isotau</td>
<td>Kappler, kårde</td>
<td>150 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01-09-2004</td>
<td>Nissa</td>
<td>Kappler</td>
<td>300 mg</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>08-08-2004</td>
<td>Inovane</td>
<td>Tablett</td>
<td>7.5 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Compliance

- **Warning:** Drug hypersensitivity
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# Acquire Patient Data from EPR in other Hospitals (SUP)

<table>
<thead>
<tr>
<th>CPR-nr.: 090130-OFF5</th>
<th>DS: [ ]</th>
<th>Patient Data: Femmer, Frederik. Femvejen 55, st tv, 8800 Viborg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Diagnosis: D1639</td>
<td>Infartus cerebri uden specifikation</td>
<td>KS: 7601041</td>
</tr>
<tr>
<td>Kilde (system): B-DATA-EJ (PAS)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Interventions/Hændelsonoversigt, omvendt kronologisk**

<table>
<thead>
<tr>
<th>Notat</th>
<th>Konstidt: 07.12.2001 13:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod. af afd.: 7601041 VIBORG-KJELLERUP SYGEHUS MEDICIN AFDM., FAX 89273484</td>
<td></td>
</tr>
<tr>
<td>Afdeling:</td>
<td>Institution: VIBORG-KJELLERUP SYGEHUS</td>
</tr>
<tr>
<td>Resultat:</td>
<td>B-hæmolglobin: Værdi: 6.5 Enhed: mmol/l - Unormalt resultat</td>
</tr>
</tbody>
</table>

**P-Preveresultat**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod. af afd.: 7605050 Afdeling: Institution: VIBORG-KJELLERUP SYGEHUS</td>
<td></td>
</tr>
<tr>
<td>Resultat:</td>
<td>P-Thyrotropin(TSH): Værdi: 0.23 Enhed: mU/l - Unormalt resultat</td>
</tr>
</tbody>
</table>

**P-Preveresultat**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod. af afd.: 7605050 Afdeling: Institution: VIBORG-KJELLERUP SYGEHUS</td>
<td></td>
</tr>
<tr>
<td>Resultat:</td>
<td>P-Thyrotropin(tot.): Værdi: 1.1 Enhed: nmol/l</td>
</tr>
</tbody>
</table>

**P-Preveresultat**

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod. af afd.: 7605050 Afdeling: Institution: VIBORG-KJELLERUP SYGEHUS</td>
<td></td>
</tr>
<tr>
<td>Resultat:</td>
<td>P-Thyroxin(fre): Værdi: 24 Enhed: pmol/l - Unormalt resultat</td>
</tr>
</tbody>
</table>

**Medicinordination**

<table>
<thead>
<tr>
<th>Fre: 06.12.2001 15:19</th>
<th>Sep.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ord. afd.: 76010432 VIBORG-KJELLERUP SYGEHUS M2 MEDICIN AFDM. SENGEAFS., KJ.</td>
<td></td>
</tr>
<tr>
<td>Preparation: McConorty brusetabletter 200 mg Type: p.N. Enhedsdosis: MG</td>
<td></td>
</tr>
</tbody>
</table>
National Patient Repository in Denmark: SUP / eJournal

• SUP means "Standardised Use of Patientdata" and was establish in 1999 by 2 Danish counties

• Main purpose to share EPR in health care eco system

• In 2002, after proof-of-concept, SUP was included in the National Danish IT-strategy

• Today: 2,3 million Danish citizens in SUP with 137 million events registered.

• County of Viborg: Also access for approx. 200.000 citizens opened 20. Dec 2006
The actual implementation of SUP is flexible and scalable.

Data merged from different hospitals:
- IBM Patient Record System
- OPUS (CSC Scandihealth)
- EPJ (WM-data)
- FPAS (Fyns Amt)

Now extracting from: IBM Patient Record System, OPUS (CSC Scandihealth), EPJ (WM-data) & FPAS (Fyns Amt)
Example: An activities overview is presented in the SUP web

- 'Drug Prescriptions'
- 'Test results'
- 'Clinical Notes'
Example: The SUP web application shows “Clinical Note details”
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The Health Portal & SUP are strategic IBM components - March 2007: 20,000 hour project in the US

- Based on a number of IHE profiles (XDS, ATNA, PIX, PDQ)
- 3rd party interfacing to HIE through Eclipse OHF open source libraries and HL7 message streams

**IHE Interfaces**

**HL7 MLLP**

**Hospital**

**RxHub**

**Labcorp**

**Quest**

**SureScripts**

**HCN**

**HL7 Gateway**

**HL7 CDA**

**HIE**

**PIX PDQ**

**XDS Registry**

**XDS Repository**

**Acure Portal**

**SUP Data**

**OHF Bridge**

**Doc Consumer**

**Doc Source**

**Converter/Map from HL7 CDA to SUP Schema**

**Allscripts**

**EMR Lite**

**3rd party interfacing to HIE through Eclipse OHF open source libraries and HL7 message streams**

**Converter/Map from HL7 CDA to SUP Schema**
Thank you for listening!

Trondheim