e-health in Norway

AEMH Conference
“E-health in hospitalcare in 2017”
Luxembourg, May 2017
Eirik Nikolai Arnesen MD, Special Advisor, The Norwegian Medical Association
About me

• Cand.med. 2001
  University of Oslo
• 5 years clinical practice in orthopedic trauma and anesthesiology
• 10 years experience in e-health
  – 5 years at Rikshospitalet: EHR, CPOE, booking, results follow up...
  – 4 years at Directorate of health: Summary care record, One citizen - one record...
• Specializing in public health

eirik.arnesen@legeforeningen.no
THE DIGITAL DOCTOR

Hope, Hype, and Harm at the Dawn of Medicine’s Computer Age

ROBERT WACHTER
Our network

• The ICT-committee
  • Advisory to the central board of the Medical Association.
  • Voluntary work.

• The reference group for EMRs
  • Unformal (virtual) network with good climate for sharing and discussions.
  • Voluntary work.
  • Chaired by Susanne Prösch
    (similar to the NHS CCIO Network)

http://www.refepj.no/
## Topics

- Governance
- Information architecture and information exchange
- Privacy regulations
- The future
The Government aims to ensure that everyone, irrespective of their personal finances and where they live, has access to good health and care services of equal standard.

**GOVERNANCE:**

Ministry of health and care services issues laws and regulations and own the regional health authorities.

Directorate of health executes political decisions, advise political leadership and the health sector and oversees laws.

4 regional health authorities responsible for specialist care. They govern 22 trusts with approximately 70 hospitals.

428 municipalities responsible for primary care defined as GPs, home care and services, long term care, rehabilitation and public and preventive health.

Area 385 000 square km
Population density 13,26 inhab/square km

**Population**
5 MILLION

**Health pros pr 1000 inhabitant**
3,2 DOCTORS
12,9 NURSES

**Expenditure on health**
9.4 % OF GDP

**Life Expectancy**
81,5 years

**GP is a gatekeeper to specialized care**

**Public funding**
85 %

Source: OECD 2010
Governance model for the Norwegian Health care services
Norway was early adopters of e-health, but...

...only 1 hospital at HIMSS Emram stage 5 – all others stage 2/3

Each GP Office, municipality and hospital has their own local EMR. Almost no cloud hosting/SaaS
Topics

- Governance
- Information architecture and information exchange
- Privacy regulations
- The future
Direct messaging – well established for years

Standardized electronic messages:

- Referrals
- Discharge summaries
- Requisitions and test results
- Nursing reports between hospitals and home care/nursing homes
- Dialogue-based messaging between hospitals and GPs
- Electronic prescriptions
National infrastructure

- Some hospital regions on a consolidated database/EPR across hospitals
  - Locally no or small degree of freedom, focus on governance
- E-prescription fully rolled out (except nursing homes)
- Summary Care Record sharing «alert information» and medications for all inhabitants
- National Patient portal – different services regionally
International comparison of content in summary care records in a master thesis

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Source: Based on information obtained by mail from contact persons working in organisations responsible for each SCR and f analyses of following resources (Bønnum, D. & Magnusson C., 2013; Direktoratet for eHelse, 2016; DMP, 2016; eHealth and Care, 2016; Greenhalgh et al., 2013; Healthcare Improvement Scotland, 2016; Helsedirektoratet, 2016; HSCIC, 2015; HSCIC, 2016ab; Hyppönen et al., 2015; Inera, 2015; Inera, 2016ab; Kanta, 2016ab; NHS24, 2016ab; Northern Ireland Direct, 2015ab; Raasikainen, 2013; Sandhaug, 2015ab; Tieto, 2016;...).
Hypersensitivity

Complications in anesthesia

Alert medical conditions

Ongoing treatment and implants

Contagious
Must be alerted because it might kill or harm the patient if not known.

Must be easy to find.

Diagnosis
- Addison
- Bleeder
- Marfan

Implants
- Heart valve replacement
- Cerebral shunt

Medications
- Anticoagulants
- Chemo

Rest of the medical record

Alert

Practical and useful

Summary care record without alerts

SCR contain info registered from patient

Alert information exists

International Patient Summary Workshop, European Commission, Brussels February 2017
Terms for alerting a medical condition

– The diagnose **shall not be easy to discover** with ordinary examinations and tests
– The diagnose **might cause severe danger if not known** because of either:
  1. Severly affected level of consciousness
  2. Affected respiration or risk of hypoxia
  3. Severe risk of bleeding
  4. Risk of circulation failure
  5. Risk of problem during anaesthesia
  6. Risk of severe complication during surgery
  7. Risk of life threatening complication if medication is changed

International Patient Summary Workshop, European Commission, Brussels February 2017
Current list of conditions meeting these terms

- Amyloidose
- Angioödem
- Aortaaneurisme
- Bartters syndrom
- Binyrebarksvikt
- Blodgruppeantistoff påvist
- CADASIL
- Dravet syndrom
- Døvblindhet
- Ehlers-Danlos syndrom
- Fabry sykdom
- Fenylketonuri
- Feokromocytom
- Fettsyreoksydasjonsdefekt
- Fibrodysplasia ossificans progressiva
- Galaktosemi
- Gitelmans syndrom
- Gjennomgått subaraknoidalblødning
- Glycogen storage disease
- Hemofili
- Hydrocephaalus
- Hypofysesvikt
- Hypoparathyreoidisme
- Immunsyke
- Isovaleriansyreemi
- Karnitinmangel
- Lang QT-syndrom
- Loeys-Dietz syndrom
- Malign hjernetumor
- Malign hypertermi
- Maple syrup urine disease
- Marfan syndrom
- Mastocytose
- MELAS
- Metylmalonsyreemi
- Mitokondriesykdom
- Morbus Osler
- Muskeldystrofier/myopatier
- Myasthenia gravis
- Osteogenesis imperfecta
- Paraneoplastisk syndrom
- Parokysmal nokturnal hemoglobinuri
- Porfyri
- Propionsyreemi
- Pseudocholinesterasemangel
- Pulmonal hypertensjon
- Respirasjonssvik type II
- Sarkoidose
- Situs inversus
- Splenektomert
- Sturige Weber syndrom
- Svelgparese
- Trombocytopeni
- Trombofil
- Tuberos sklerose
- Ureasyklusdefekter
- Vaskulære malformasjoner i hjernen
- Wilsons sykdom
<table>
<thead>
<tr>
<th>Begrep</th>
<th>Synonyme søkeord</th>
<th>Samsvarende ICD-10 koder</th>
<th>Begrunnelse</th>
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<tbody>
<tr>
<td>Malign hypertermi</td>
<td>Ondartet hypertermi</td>
<td>T88.3 Ondartet hypertermi som skyldes anestesi</td>
<td>Malign hypertermi er en plutselig reaksjon på enkelte narkosemidler som kan være livstruende. De som har hatt malign hypertermi må unngå utløsende agens i fremtiden.</td>
</tr>
</tbody>
</table>
| Fibrodysplasia ossificans progressiva | Myositis ossificans  
Stone Man Syndrome  
FOP  
Progressiv fibrodysplasia  
Progredierende myositis ossificans | M61.1 Myositis ossificans  
progressiva/Fibrodysplasia ossificans progressiva | En bindevesykdom der skadet muskelelve omdannes til benvev i stedet for å tilheles, eksempel ved intramuskulære injeksjoner og kirurgi. Det kan være intubasjonsvansker og hjerte- og lungeproblemer. |
| Hypoparathyreoidisme       | Hypoparathyreoidisme  
Hypoparathyreoidismus | E20 Hypoparathyreoidisme  
E20.0 Idiopatisk hypoparathyreoidisme  
E20.1 Pseudohypoparathyreoidisme  
E20.8 Annen spesifisert hypoparathyreoidisme  
E20.9 Uspesifisert hypoparathyreoidisme | Mangel på parathormon, et hormon som vedlikeholder korrekt nivå av kalsium i blodet. Kalsiummangel kan blant annet gi alvorlige hjerterytmeforstyrrelser og respirasjonssvikt i tillegg til en rekke andre symptomer. |
| Marfans syndrom            | Morbus Marfan  
Marfans sykdom  
Mb Marfan          | Q87.4 Marfans syndrom | Marfans syndrom er en bindevesykdom som kan gi svekkelse i hjerteklaffer og aorta i tillegg til en rekke andre symptomer. |
E-Prescription since 2010 (pilot start)

80% of all prescriptions
Ca. 40 millions each year
Secure log in with national e-ID or Bank ID to «My Health»

Self service
- Change GP
- Ask for rescheduling
- Reimbursement of expenses

Self access to personal information
- Vaccinations
- E-prescriptions
- Summary care records
- Hospital record
Topics

• Governance
• Information architecture and information exchange
• Privacy regulations
• The future
Privacy/regulations

- **EMR:**
  - Mandated
  - Patient can ask to edit or delete information
  - A right to access the record (both paper and electronically)
  - A right to access the audit log

- **National Registries**
  - Opt in OR opt out OR mandated
  - SCR: opt out
  - E-prescriptions: mandated
  - Patient portal: opt in
    - A right to view the information
    - A right to view the audit log
Topics

• Governance
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• Privacy regulations
• The future
THE NEXT LONG TERM STRATEGY

ONE CITIZEN—ONE RECORD (2012)

✓ HEALTH CARE PROFESSIONALS SHALL HAVE EASY AND SECURE ACCESS TO PATIENT- AND USER INFORMATION

✓ CITIZENS SHALL HAVE ACCESS TO USER FRIENDLY AND SECURE HEALTH CARE SERVICES ONLINE.

✓ DATA SHOULD BE REGISTERED AUTOMATICALLY AND MADE AVAILABLE FOR QUALITY IMPROVEMENT, MONITORING, GOVERNANCE AND RESEARCH.

Different concepts was evaluated against – conclusion spring 2016

- One common solution for the primary care sector

- A vertically integrated solution for specialist care and primary care in Central Norway

- (But the project advised on a common, vertically integrated EMR for all Norway)
The Central Norway Regional Health Authority (HMN) and the City of Trondheim and all other municipalities in the Central Norway Health Region – a competition to deliver a new electronic health record solution with adjacent systems and services – for the specialist and primary health services

The candidates (in alphabetical order) that will compete in the dialogue phase are:
• Cerner Norway AS
• DCX Technology AS (prev. CSC Scandihealth AS)
• Epic Systems Corporation
• Tieto Norway AS
What's next?

- Politically concerns about state finances.
- A government organization that struggle to find their role between hospital regions.
- Focus on governance and rationalizing IT services, not better tools for clinicians?
- To much belief in the hype – welfare tech and wellbeing tech.
- Sentralized solutions – a shared aquisition for all municipalitites?
- A new registry for municipal health care – no opt out option.