Applying Standards in Cross-sector Communication for an Integrated Health Environment

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Outline

• ICT in German Health Care
• Project ByMedConnect
• Introduction of Standards
  – CCR (Continuity of Care Record)
  – ISO/CEN 13606 (EHR Communication)
• Actual Developments
ICT Situation in German Health Care

• Heterogenous information systems (>200 POS systems)

• Concurring solutions for online communication (e.g. D2D, eFA, vita-X)

• Health Telematics Platform (eGK) is just being introduced and not available yet

**Status Quo:**
No common infrastructure for online exchange of data between the service partners involved in health care
Actual Status at the GO IN Health Network

On-site meetings with various participants of GO IN
- IT-department of Hospital Ingolstadt
- Specialists (1 Dermatologist, 1 Radiologist)
- General Practitioners (3 Practices)

Workshop with practising physicians
Actual Status – Documentation and Communication

- Computer-based systems for accounting, letter writing and patient administration
  - Relevant medical information is registered electronically
- Paper-based administration of medical data
  - Doctor’s letters and reports on findings are collected in a paper-based patient record
- All GPs visited use online connections (dial-in) to get laboratory results
- Many practices are not connected to the Internet
  - ~60% coverage in DE according to a study run in 2008
Actual Status - Summary

- Electronic data exchange is generally only used for renumeration, lab-data and radiological images’ transfer
- Data registered by routine systems is available for (re-)use by ByMedConnect
- The heterogenous landscape of practice administration systems poses a challenge
- A safe network for electronic exchange of health data is needed until the German Health Telematics Platform is in place

-> The doctors will profit from an electronic communication
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ByMedConnect – Improving Communication by Linking Domains thus Fostering Integrated Healthcare in Bavaria

A project of Helmholtz Zentrum München in cooperation with the GO IN Health Network Ingolstadt

• July 2009 – July 2012
• sponsored by the Bavarian State Ministry of the Environment and Public Health
• Goals
  - Communication of relevant patient information
  - Improvement of continuity of care across institutional boundaries
  - Application and evaluation of standards for medical record communication
  - Integration of legacy systems
Communication in ByMedConnect

- General Practitioner
- Specialist
- Exchange of Patient Data
- Problems/Diagnoses
- Risks
- Medication
- ByMedConnect Dataset
- Functional Status
- Test Results
- Procedures
- Structured and by Digital Media
- GO IN Outpatient Centre
- Hospital

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ByMedConnect - Communication Network

- Secured network
- Transmission of standardised data packages according to EN 13606
  - Separation of meta and patient data
- Communication module in each institution
  - Visualization of data
  - Interaction (Selection, Edition)
  - Data Exchange
  - Integration of legacy systems
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CCR (Continuity of Care Record) as Basis for Dataset Development

- A lean and application-oriented dataset
- Summary on the relevant data of a health record
- Comprehensive dataset that is able to represent a doctor’s letter
- Health professionals were heavily involved in its development
- Already being used in a lot of applications in the USA (Google Health, Microsoft Health Vault, Keas)

-> Trigger the definition of the medical content to be transferred in ByMedConnect
  - Adaptation of the dataset to the special requirements of the regional health network

More info at: www.ccrstandard.com
CEN 13606 – Electronic Health Record Communication

The European standard specifies an „information architecture“ to deal with the heterogenous medical data world

- Reference model defines generic structures that form the „building-blocks“ of a medical record
- Archetype model is used for the design of information „patterns“ (medical concepts) that add „knowledge“ and thus enable semantic interoperability

-> Dual-model approach allows to separate systems engineering and content definition

More info at: www.en13606.org
ISO 13606: LEGO analogy

Data structures

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Benefits of using CEN/ISO 13606

Archetypes **empower the medical professionals** to define the semantics of their own information systems

Archetypes are a formal model of real clinical concepts that are standardised and **can be reused**

The definition of archetypes is an important step towards **semantic interoperable EHRs** that are

- portable (via institutional / regional boundaries)
- precise (e.g. terminology binding)
- accessible (individual queries + decision support)
- durable (life-long health record)
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Actual Developments of ByMedConnect

EHRflex – a generic archetype based medical record system
- Import of archetypes
- Data capturing and storage
- Open source project at SourceForge

Archetype Definition
- Enabling the use of the CCR within ISO 13606 based systems
- Usage of LinkEHR a tool developed by Institute IBMI at “Universidad Politécnica de Valencia”

Survey on “communication needs” within GO IN Health Network
Google Health Medication55

Medication

- Medication: test
- How to take: Oral
- How many: 2
- Strength: Cream
- How often: 2 times a day
- Start date: 2010-04-03
- End date: 2010-04-10
- Status: Currently taking this
- Comments: test
Future Tasks of ByMedConnect

Mapping of legacy data
- Metadata of archetypes allow for a precise mapping that obeys the semantics of data
- LinkEHR will be used

Development of a transformation module
- Import of legacy data
- Conversion to standardised format

Setting up a pilot implementation within the GO IN Health Network in Ingolstadt
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