A regional teletrauma network

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Supported by a grant from Iceland, Liechtenstein and Norway through the EEA Financial Mechanism
• Motivation and objectives of the project
• Results
• Summary and future work
3.4 mln inhabitants (Wielkopolska province)
35 counties
- each county operates a hospital with surgery and/or trauma-orthopedic ward
Main city: Poznan
- Poznan University of Medical Sciences (PUMS)
- reference centers
Trauma reference center:
- Division of Trauma, Burns and Plastic Surgery (PUMS)
- cooperating clinical departments
• Budget: 2.44 mln euro
• Funding: EEA Financial Mechanism + Ministry of Health/Ministry of Science and Higher Education
• End of project: April 2012
• Partners:
  • Poznan Supercomputing and Networking Center
  • Poznan University of Medical Sciences
  • Poznan University of Technology
  • 20+ hospitals from the area of the Wielkopolska province
- Improvement and standardization of communication: regional hospital ↔ university clinical department in the area of trauma
- Safety increase for patients with multiple body injuries
- Effective utilization of scarce human resources
- Increase of qualification level of the Wielkopolska hospitals personnel
Wielkopolska Center of Telemedicine platform

- Patient records
- Management of telemedical processes
- Teleconsultation platform
  - Medical Digital Library
  - LMS Platform
  - Clinical decision support
  - Educational case registry
  - Reporting

- Hospital 1
  - HIS
  - Telemedical node

- Hospital 2
  - HIS
  - Telemedical node

- Hospital N
  - HIS
  - Telemedical node

- Medical data anonymization
- Internet
  - "Always and everywhere access"
  - web browser

Advanced educational and scientific applications and services

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System will initially cover procedures in the area of trauma and, in case when hospitals are interested, radiology.

System will be used for cases in stable condition.

System realization technology will ensure possibility to model procedures from further medical domains within it: the project will indicate, which of them should be realized next (after the termination of the project) – BPM-SOA paradigm.

Access:

- from a web browser
- from Hospital Information System – pilot realization for the Eskulap system, an open access interface will be available to allow integration of other systems with WCT infrastructure

Single Sign On to integrate with Medical Digital Library services.
Medical Digital Library: assumptions

- Collection of anonymous medical data based on real medical cases
- Integration of the collected data with data originating from other sources (publications, video repositories, ...)
- Construction of educational and scientific telemedical services
  - educational registry of medical cases
  - medical e-Learning
  - clinical decision support
  - reporting to regional supervision
- Services of Medical Digital Library will complement the system for medical teleconsultations through post-processing of medical information
• 5 university hospitals with clinical wards specializing in treating various types of injuries
  – Division of Trauma, Burns and Plastic Surgery: lead consulting center
  – Other participating wards: neurosurgery, thoracic surgery, maxillofacial surgery, hand surgery, vascular surgery, colorectal surgery, digestive system surgery

• 20 partner hospitals from the area of Wielkopolska:
  – 4 integrated specialist hospitals located in big cities (Kalisz, Konin, Leszno, Pila)
  – 16 county hospitals
  – role in the network:
    • end-users of telemedical services
    • sharing local information and know-how with other network participants
• Teleconsultation process modeled for trauma

• The platform has been based on standards:
  – HL7 CDA
  – LOINC

• Telemedical nodes run OSGi-based HIS-to-Telemedical Center integration module – teleconsultation service is the first service using this concept

• February and March: 185 teleconsultations
• 17 specialists available on the teleconsultation platform
• Classification standard based on known injury classifications defined for the registry

• End of March: over 1400 cases published

• Most often registered injuries:
  • hip-joint
  • ankle and foot
  • pectoral girdle
  • forearm
  • crus
  • knee-joint
Medical e-learning

- Based on OLAT – open-source e-learning platform
- Content is constituted by High Definition multimedia videos recorded and edited by the PLATON Science Internet TV
- Content stored and streamed by the PLATON infrastructure
- 45+ multimedia courses available
• Finding electronic medical resources relevant to the current context
• Utilization of MeSH terminology for resource indexing and searching
• Automatic analysis and indexing of selected medical services (AOFoundation, Medal.org, Trauma.org, PubMed)
• Natural language processing to identify medical terms (MetaMap)

• Further services:
  • scenarios based on educational registry of cases:
    • rule detection
    • similar case search
  • automation of the process of decision making within a clinical algorithm
Due to the fact that trauma is not treated as a separate specialization in Poland reporting to the trauma regional reference center in trauma (WCT medical coordinator).

Data warehouse methods used to explore and analyze collected data.

Statistical analyses towards investigating the success rate of therapeutic methods used or detecting causal relations.

Target way of gathering data: directly from hospital systems.

Deep analysis of causal relations requires additional information: special programs for collecting needed information foreseen.
Enabling WCT telemedical services within Hospital Information Systems

WCT Telemedical Services
- Medical Teleconsultations
- Registry of Medical Cases
- Decision Support

Hospitals
- Medical Information System (HIS)
- Other Systems

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Summary

- Major result achieved: Teletrauma network in Wielkopolska established

- Challenge ahead: sustainability

- Further development:
  - remaining hospitals in the region
  - increase in the amount of available educational resources (cases, e-courses)
  - integrating concepts and developments of other projects: e.g. 3D multimedia content recorded in the operation theater (Hipermed project)
  - national teletrauma network

- other medical disciplines
Thank you for your attention!

Meet us at our stand – if you haven’t visited us yet ;-)