Imagine 2029: Our data, our health, our care – 20th anniversary of EHTEL
EHTEL 2019 Symposium

11:15 – 12:30 [S8]

Breakout A: Meaningful Data Sharing and Advancing for Interoperable Health Records

Session Chair: Janne Rasmussen, Medcom, Odense, Denmark

Towards an EHR Exchange Format: Joint Steps Member States and European Commission
Costica Dumbrava, DG CNECT - Unit H3, European Commission, Luxembourg

InteropEHRate - Supporting EHR Exchange through ‘Data in People’s Hands’
Francesco Torelli, Engineering, Rome, Italy

Smart4Health - Citizen-centred EU-EHR Exchange for Personalised Health
Afonso Duarte, Smart4Health Coordination Office, UNINOVA, Lisbon, Portugal

International Patient Summary (IPS) in Clinical Use - Lessons Learned in InteropEHRate
Stefano Dalmiani, FTGM “Gabriele Monasterio” Medical Research Foundation, Pisa, Italy

Q&A and Conclusions by the Session Chair
The Digital Transformation of Health and Care in the EU
Interoperability of EHR systems

EHTEL Symposium, Barcelona, 4 December 2019

Putting people at the centre of health and care

- Enabling secure access to health data across the EU
- Data sharing for better research and personalised healthcare
- Empowering patients with digital tools

Costica Dumbrava
Programme Officer

European Commission
DG CONNECT – Communications Networks, Content and Technology Unit H3 – eHealth, Well-being & Ageing
The Digital Transformation of Health and Care in the EU

Priorities (EC Communication):

1. Provide better access to health data for citizens
2. Pool health data for research and personalised medicine
3. Empower citizens and foster human-centred health and care through digital tools and solutions
Recommendation on a Electronic Health Record exchange format

Aims

- Support Members States in their efforts to build interoperable EHR systems, ensuring adequate protection and security of health data
- Enable citizens to access and share their health data with healthcare professionals across borders in the EU
- Supports the digital transformation of health and care in the EU by facilitating the flow of health data across borders
Recommendation on a Electronic Health Record exchange format

A framework for the further development of a European EHR exchange format

- **Principles** governing the access to and exchange of EHRs across borders
- **Common technical specifications** for the cross-border exchange of data
- **Joint Coordination Process** for the development of the European EHR format
Recommendation on a Electronic Health Record exchange format

Guiding principles

- Citizen centric by design
- Comprehensiveness and machine readability
- Data protection and confidentiality
- Consent or other lawful basis
- Auditability
- Security
- Identification and authentication
- Continuity of service

Security and Data Protection

- GDPR
- NIS Directive
- Set up National Digital Health Networks
Recommendation on a Electronic Health Record exchange format

Common technical specifications (baseline)

- **Initial set of health information domains**: patient summaries, ePrescriptions, laboratory reports, medical images and reports, and hospital discharge reports

- **Common list of interoperability specifications** (existing standards and profiles)

- **Incremental and selective approach** for adopting, refining, and maintaining the specifications of the European EHR exchange format
Recommendation on a Electronic Health Record exchange format

Joint Coordination Process

- Drivers – EC & Members states
- Purpose - oversee, develop and adopt the European EHRxF
- Resources - existing expertise and projects, pilots
- Stakeholders - wider engagement (relevant national authorities, clinicians, patients, industry)
- Integrated policy approach - GDPR, cybersecurity, European health data space
European EHR interoperability
State of play

eHealth Digital Service Infrastructure (eHDSI)

- Enables the cross-border exchange of patient data in the EU (Patient Summary and ePrescription)
- Ongoing work to expand the scope of eHDSI
- eHN investment guidelines for MS – interoperability specifications – prerequisite for procurement of health services
- DEP funding for eHDSI (Deployment & interoperability)
European EHR interoperability
State of play

Interoperability Roadmap

- Ongoing discussions with MS (eHealth Network)
- Take stock of existing projects; mobilise resources and expertise (e.g. TRILIUM II, INTEROPEHRATE)
- H2020 Coordination and Support Action (deadline for proposals 13 November 2019)- under evaluation
European EHR interoperability
State of play

Stakeholder consultations

- eHealth Stakeholder Group – new mandate
- HealthTech Roundtable
- Innovation community (EIP/AAL)
- Patients Workshop on Health Data
European EHR interoperability
State of play

Integrated approach on health data

- Data protection - GDPR
- Cybersecurity and trust: NIS Directive; Health eID
- European health data space – secure access to different kinds of health data for healthcare, research and innovation (Genomics declaration; AI & imaging)
- Funding (DEP, Horizon Europe)
Digital Europe Programme

- Health & Care: key societal sector & high impact deployment area
- 5 DEP Pillars: HPC; AI; Cybersecurity; Digital skills; Deployment and interoperability

Priorities on health (2021-2012)
- Connecting health data (eHDSI, Genomics, ERNs)
- Building trust and innovation for digital health and care
- Promoting digital skills in health and care sector
Funding opportunities digital health 2021-2027

Digital Europe Programme and Connecting Europe Facility

Horizon Europe

European Social Fund + European Globalisation Adjustment Fund

European Regional Development Fund

InvestEU Programme
THANK YOU!

Twitter: @eHealth_EU
Facebook: EU.ehealth

Subscribe to our newsletter 'eHealth, Wellbeing & Ageing' via bit.ly/eHealthinFocus
EHR EXCHANGE FOR CITIZENS

EHTEL 2019 SYMPOSIUM – DECEMBER 4TH 2019, BARCELONA

FRANCESCO TORELLI
Engineering Ingegneria Informatica SpA - R&D Lab
Who we are

Project Acronym: **InteropEHRate**
- **Type:** Research and Innovation action
- **Grant Agreement Number:** 826106
- **Budget:** €7,192,592.50

- 1st January 2019
- 30th June 2022
- 42 months

- Engineering - Ingegneria Informatica S.p.A. (Italy)
- A7 Software (Belgium)
- EHTEL - European Health Telematics Association (Belgium)
- DTCA Hygeia – Diagnostic and Therapeutic Centre of Athens (Greece)
- University of Trento (Italy)
- University of Vienna (Austria)
- EFN - European Federation of Nurses Associations (Belgium)
- FTGM - Toscana Gabriele Monasterio per la Ricerca Medica e di Sanità Pubblica (Italy)
- CHU de Liège - Centre Hospitalier Universitaire de Liège (Belgium)
- PIR - Pireaus Research Center (Greece)

- SCUBA - «Bagdasar-Arseni» Clinical Emergency Hospital of Bucharest (Romania)
- SIVECO Romania S.A. (Romania)
- Fraunhofer ISST - Institute for Software and Systems Engineering (Germany)
- ISA - Iatrikos Syllogos Athinon (Germany)
- Byte Computer S.A. (Greece)
cross-border exchange of health data
“Citizens should be central to the way in which systems are designed […]

(8) Member States should ensure that citizens are able to access and securely share their electronic health data across borders. […]

(9) Member States are encouraged to give citizens the ability to choose to whom they provide access to their electronic health data, and which health information details are shared. […]

(10) Member States should ensure that the principles […] are observed when developing solutions enabling access to, and exchange of electronic health data in the Union. […]

The refinement of the exchange format should consider the possibility offered by resource driven information models (such as Health Level Seven Fast Healthcare Interoperability Resources (HL7 FHIR®)).

[…] Data protection and confidentiality […] Consent […] Auditability […] Security […] Identification and authentication […]”
A circle of trust is built between NCP**

in the "eHealth DSI abstract space",
the only way a country can exchange with another country.

*eHDSI: The eHealth Digital Service Infrastructure (eHDSI or eHealth DSI) is the initial deployment and operation of services for cross-border health data exchange under the Connecting Europe Facility (CEF)

**NCP: National Contact Point as referred to in Article 6 of Directive 2011/24/EU

Organisations delegated by each participating Country, acting as a bidirectional way of interfacing between the existing different national functions provided by the national IT infrastructures and those provided by the common European infrastructure, created in eHDSI.

NCPeH: National Contact Point for eHealth, which may act as an organisational and technical gateway for the provision of eHealth Cross-Border Information Services.
eHDSI approach

Top-down approach
NEW CROSS-BORDER INTEROPERABILITY UNDER TESTING IN EU

With eHDSI

• Every EU country will expose NCPeH (National Contact Points for eHealth) to offer to other countries the cross border exchange of ePrescriptions and Patient Summaries

Limits

• HCPs cannot access to health data produced in foreign countries without internet
• Citizens cannot access to health data produced in foreign countries
• Citizens have no control on health data exchange
• There is limited support for translation
• Based on yet another API
InteropEHRate GOAL

To extend eHDSI Architecture to support cross-border exchange of personal health data between Citizens and health organisations
Define, validate and promote an open specification to securely store health data on personal mobile apps (S-EHRs) and exchange health data between Citizens and HCPs or Researchers of different countries using InteropEHRRate protocols.
HEALTH DATA ACCESS: TO BE

Top-down approach + Bottom-up approach
MAIN RESULTS OF InteropEHRate (IEHR)

1. InteropEHRate open specification
   Vendor independent technologies to become EU standard for Citizen Centred mobile interoperability.

2. InteropEHRate Framework
   The reference implementation of the InteropEHRate open specification.
IEHR Open specification

1. **D2D protocol** – applied to **Face to face medical visit**
   Exchange of health data without internet connection

2. **Remote protocol** – applied also to **Clinical emergency**
   Access to data available on personal cloud and NCP node

3. **Research protocol** – applied to **Research study**
   Sharing of health data for specific research studies
IEHR Open specification

1. **FHIR profiles for EHR interoperability**

2. **S-EHR conformance levels** constraints and guidelines that S-EHRs and cloud storage must fulfil.

3. **D2D protocol for healthcare exchange** among two near devices, on encrypted short range channel (Bluetooth).

4. **Remote protocol for healthcare** health data exchange between S-EHR, NCP, S-EHR Cloud;


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**Leverage**
- IHE
- HL7 FHIR
- CEN IPS

**Leverage**
- GDPR
- Security standards

**Leverage**
- eIDAS / CEF eID
- eHDSI
Improvement in data quality

• Health data provenance is certified;
• Data are structured using specific FHIR profiles that integrate existing standards;
• Data structured according to specified FHIR profiles can be reliably translated in different user languages.

Both Citizens and consumers of Citizens’ health data are guaranteed by non-repudiation.
Improvement in interoperability & patient empowerment

- **Non proprietary protocols free** Citizens, HCPs and Researchers from specific vendors.
- Citizens are **in control** of health data exchange, give/retract **specific usage consents**.
- Citizens may use (EIDAS) **same credentials** for accessing every health data source.
- With **Remote protocol**
  - Citizens may **import** their health data at distance **into their preferred (S-EHR) mobile app**.
  - HCPs may access to health data stored in Citizen’s S-EHR Cloud in **emergency**.
- With **D2D protocol** Citizens and HCPs can exchange health data without internet.
- With **Research protocol** Citizens can **share certified health data** to researchers **across Europe**.
1. **S-EHR mobile app**: prototype of mobile app fulfilling the *S-EHR conformance levels*, able to import/share data from/with EHRs and with research centres.

2. **S-EHR cloud**: prototype of optional secure cloud service, fulfilling the *S-EHR conformance levels*, for personal cloud storage.

3. **HCP App**: prototype of secure app, used by the Health Care Professionals (HCPs) to securely exchange health data with any S-EHR or S-EHR Cloud.

4. **InteropEHRate Health Services (IHS)**: prototype of Healthcare Interoperability Services, implementing *D2D and remote protocols*.

5. **InteropEHRate Research Services (IRS)**: prototype of a Research Interoperability Service, implementing *protocol for research*. 

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**INTEROPEHRATE FRAMEWORK**

**REFERENCE IMPLEMENTATION (PROTOCOLS IMPLEMENTATION & EXAMPLE APPS)**
Data schema conversion
Mapping local DB schemas to the InteropEHRate FHIR profile
Conversion of records according to the mapping

Semantic codes conversion
Mapping local terms to international codes
Conversion of codes according to the mapping

Information extraction
Extraction of codes and structured content from unformatted content (e.g. interpretation of equivalent expressions to represent the dosage of medicines)

Language translation
Presentation of coded and extracted information into the language of the user
Integration with external services for free text translation

IHT is integrated within IHS, but is also reusable independently.
## PILOTS

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<th>Pilot site</th>
<th>Country</th>
<th>Medical Visit</th>
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<th>Research</th>
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GOVERNANCE AND EVOLUTION MODEL

Cover the right requirements is not sufficient. Managing the Human Factor and put the basis for the future is fundamental for acceptance, creation and survival of an eco-system

An agile model of governance defining:

• a standardisation process
• rules to enter the eco-system
• how to manage the evolution of protocols
• strategy of collaboration with policy and legislation makers
AN EU ROADMAP FOR EHR EXCHANGE MEDIATED BY CITIZENS

1. Open specifications;
   a. FHIR based APIs covering Citizens’ requirements
   b. FHIR profiles integrating standards (also for digital consents)

2. Vendors and standardisation bodies engagement;

3. EU endorsement of open specifications;

4. EU Certification of SW products (mobile apps, services, systems);

5. EU Services (e.g. for official translation of standard terminologies);

ACHIEVEMENT: Reliable cross border exchange of health data.
THANK YOU

InteropEHRate
EHR in people’s hands across Europe

www.interopehrate.eu

InteropEHRate project is co-funded by the European Union (EU) Horizon 2020 program under Grant number 826106
Citizen-centred EU-EHR exchange for personalised health
General objective

Smart4Health will develop, test and validate a platform for the Smart4Health citizen-centred health record with integrated abilities for aggregation of data, for data sharing and for data provision/donorship to the scientific community.
Call objectives

• Topic: SC1 -DTH-08-2018 - Prototyping a European interoperable Electronic Health Record (EHR) exchange (April 2018)

• Objectives:
  o 1) Citizens’ secure access to electronic health records and the possibility to share it across borders,
  o 2) Supporting data infrastructure, to advance research, disease prevention and personalised health and care
  o 3) Facilitating feedback and interaction between patients and healthcare providers, to support prevention and citizen empowerment as well as quality and patient-centred care.
This project has received funding from the European Union’s Horizon 2020 research and innovation programme under the grant agreement No. 826117.

Project Officer:  
Dr. Saila Rinne

Coordinator: UNINOVA

Scientific coordinator: HPI

Start: 1st January 2019

End: 28th February 2023

Duration: 50 months
Smart4Health Consortium

Instituto de Desenvolvimento de Novas Tecnologias
Hasso Plattner Institute
Data4Life
HealthMetrix GmbH
University of Vienna
University Hospital Aachen
Maastricht University Hospital
Information Technology for Translational medicine

Knowledge Biz
Luxembourg Centre for Systems Biomedicine
Icahn School of Medicine at Mount Sinai
ZS-Unternehmen Gesundheit
Ospedale San Raffaele
Stiftung Höffel Doheem

EASPD
European Federation of Nurses
Região Autónoma da Madeira
Laboratoire Virtuel Européen

Smart4Health is funded by the European Commission under contract 826117
Smart4Health Concept

- Centred around the citizen and its health-related environment.

- Citizen empowerment addressed by mirroring citizens' needs, desires, preferences, norms and values around two Leitmotifs:
  
  **I am supported in managing my own health**
  
  **I can help others by donating data**
Specific objectives

• **Citizen empowerment**
  - Management of own health data
  - Citizen decision on what/whom to share health data

• **Interoperable and transnational infrastructure**
  - All citizens throughout Europe
  - Citizen with secure access to own health information

• **Data Donation for research and innovation**
  - Infrastructure supporting Citizen to donate data for research and innovation
Citizen empowerment

- European citizens are in the center stage: conceptually and methodologically
- Co-creation and co-design framework
Citizen Use Cases and Use Design Cases

**Smart4Health**

Interoperable European EHR exchange

- Testing Infrastructure
- Collecting Citizen-generated health data
- Considering Citizen populations

**CUCs**
- CUCs 1, 2
- CUCs 3 - 7
- CUC 8
## Citizen Use Cases and Use Design Cases

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<tr>
<th>Testing Infrastructure</th>
<th>Collecting Citizen-generated health data</th>
<th>Considering Citizen populations</th>
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</table>

Smart4Health is funded by the European Commission under contract 826117
Citizen Use Cases and Use Design Cases

Testing Infrastructure

Collecting Citizen-generated health data

Considering Citizen populations

Smart4Health is funded by the European Commission under contract 826117.

Citizen Use Cases and Use Design Cases...
Citizen Use Cases and Use Design Cases

• Empower citizens' data access, portability, control, sharing and provision.
• Co-create the Social Science and Humanities Framework for citizen/user.
• Engage user groups throughout the project
• Ensure attention theft avoidance.
Interoperable and transnational

• **Support to the Fast Healthcare Interoperability Resources of the HL7**

• **Using the European standards**
  - Connecting Europe Facility (CEF) Building Blocks
  - IHE (Integrating the Healthcare Enterprise) profiles
Architecture

Data sources

Data Collection

Data Ingestion

Services and Applications

Data donation
Smart4Health is funded by the European Commission under contract 826117
Smart4Health is funded by the European Commission under contract 826117

Smart4Health is coordinated by

Contacts:
Ricardo Goncalves: rg@uninova.pt
Maria Marques: mcm@uninova.pt

Building today a healthier tomorrow
INTERNATIONAL PATIENT SUMMARY (IPS) IN CLINICAL USE - LESSONS LEARNED

STEFANO DALMIANI – HEAD ICT DPT.
FTGM - “G. MONASTERIO” FOUNDATION RESEARCH HOSPITALS

EHTEL 20TH ANNIVERSARY, 3-4 DECEMBER 2019 - BARCELONA
- Cardiology
- Pediatric Cardiology
- Pulmonology
- Adult Cardiac Surgery + ICU
- Pediatric Cardiac Surgery + ICU
- Newborn ICU
- Advanced diagnostic and procedural Imaging
- Interventional Cardiology
  -(1st in Italy for PTCA volume)

- ICT Translational BioInformatics
- AI research units
- CFD Simulation and in-silico models
- Epidemiology, BioStatistics
- Clinical Research:
  - Clinical Pathophysiology
  - Experimental Surgery
  - Info-bio-nano Technology
Since early 2000 we promoted in Italy, among healthcare software developers industries, use of communication bus as a middleware and the use on this of standard protocols (HL7, DICOM) to ensure the integration of managed information into the Hospital information system.
• Integration and Display, to collect and share data and documents, representing data in different settings and for different users roles
EHR as the source of IPS content
EHR REPOSITORY

• Clinical content:
  • 115,000 in-patients EMR
  • 1,800,000 out-patients Encounters
  • 5,895,000 Clinical Reports (Visits, Instrumental examinations, etc)
  • 1,892,000 Clinical Events & Notes
  • 390,000 in-patient ePrescription (since 2014)
  • 1,358,000 eSubministration
  • 14,100,000 Observations (structured data)
  • 30,090,000 Lab results

• Used for healthcare and research
• Different levels of details, displayed when needed or requested
## DIFFERENT LEVEL OF REPRESENTATION – SUMMARY 1

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Rispetto al precedente controllo del 21.11.i.s., risolto il versamento pleurico bibasale come pure i fenomeni disventilatori ad esso associati. Non sono presenti lesioni parenchimali con carattere di focolaio in tutto radiopercepibili. Invarianti i restanti reperti in esiti di sternotomia mediana, sostituzione valvolare aortica ed aorta ascendente.
DIFFERENT LEVEL OF REPRESENTATION – DETAILS 1-2

- ECG tracing showing normal sinus rhythm with a heart rate of 71 bpm, normal PR interval (164 ms), QRS duration of 110 ms, and a QTc of 434 ms. A ventricular ectopic and a reduced R wave progression in the precordial leads are noted, with diffuse aspecific changes in the RV.

- The tracing indicates a possible atrial fibrillation with flutter or atrial tachycardia, necessitating further monitoring and intervention.
Referto: Fibrillazione atriale con risposta ventricolare media normofrequente (FC 88 bpm).
Anomalous aspecifiche diffuse della ripolarizzazione ventricolare.
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TREND CHARTS

Creatininemia
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## E-PRESCRIPTION – DOSAGE WITH MULTIPLE MOLECULES

### Prescrizione > Terapia

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### Peso: non disponibile

Data di nascita: 18.09.1935

**Principio attivo: Furosemide e farmaci risparmianti di potassio**

**Nome commerciale: Fluss* 20cpr 40mg+25mg**

**Via di somministrazione: orale**

- **Tutti i giorni**: 08:00 - 1 - 40/25 mg
- **Singola somministrazione**: 20:00 - 2/5 - 20/12,5 mg
- **Regolare**: Seleziona un orario e completa i dettagli

**da: 24.04.2015** a: **in poi**

**Registra**  **Registra + Nuova**  **Annulla**
DSS - DRUGS RISK ANALYSIS + DRUGS INTERACTIONS

INTERACTIONS

MEDIRISK

ADVERSE EFFECTS

IPS - VMR

Prescriptions

Clinical status

Numero di Interazioni

Percentuale Interazioni

Rischi Effetti Avversi
NURSE RECORD

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<tr>
<th>Cognome</th>
<th>Data di nascita</th>
<th>Letto</th>
<th>Ricerca</th>
<th>Monitoraggio</th>
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<td>38</td>
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<td>47</td>
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<td>Paolo</td>
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Sistemazione: Nessuna sistemazione selezionata

Monitoraggio: Per modificare il monitoraggio selezionare un paziente

Presenza in carico: 0 pazienti selezionati
NURSE RECORD – PRESCRIPTIONS

NUOVA TERAPIA

Invio da Dr. Giuseppe Vergani il 05.11.2019 alle ore 10:16 dall'applicazione cartella clinica.

Paziente: Carlo

Descrizione: Paracetamolo (Tachipirina), cpr. divissibili 500 mg, via: os

Somministrazione: ore 10:16

Carlo 02.05.1949 47
Petru 15.06.1984 40
Tommaso 30.07.1950 41
Angelo Cosimo 03.05.1938 42 12
Manuela 23.05.1950 44 8
Luigi 21.08.1941 46
Vincenzo 16.02.1933 37 1
Paola 29.06.1957 43
Giovanna 27.03.1927 51
Nina 05.02.1949 52
Giacomo 28.11.1958 39 7
Paolo 28.05.1963 45

Sistemazione: Nessuna sistemazione selezionata

Monitoraggio: –

Presa in carico: 0 pazienti selezionati

0 Pronti in carico
0 Rimuovi dal carico
NURSE RECORD E-SUBMINISTRATIONS

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<th>12:00</th>
<th>06.11.2019 Mer 00:00</th>
<th>12:00</th>
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<td>Omnic (Tamsulosina) cps. rigide m</td>
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<td>Folina (Acido folico) cps. molli</td>
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<td>Fosinopril id doc (Fosinopril e diuretici) cpr</td>
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Singola somministrazione

- Fisiologica da 2000 ml
Valutazione integrità della cute - Scala Braden

Data: 03.11.2019   Ore: 16.50

Indicatore e variabili

Percezione Sensoriale
Risposta alla sensazione di disagio/dolore alla pressione

Umidità
Grado di esposizione della pelle all'umidità

Attività
Grado di attività fisica

Mobilità
Capacità di cambiare e di controllare le posizioni del corpo

Nutrizione
Assunzione usuale di cibo

Frizioni e scivolamento

Punteggio: 22

Risposta: 6/6
HL7 CDA discharge summary
- Contains final diagnosis, therapy, follow-ups, etc.
- Sent to Patient EHR

HL7 CDA – Patient Summary
- Sent to DSS
in order to have a meaningful use S-EHR should be able to contain at least:

- **Patient Summary** *(Emergency Dataset)*
- ePrescriptions and eSubministrations
- Laboratory results;
- Clinical imaging and bio-signals:
  - contains DICOM images and movies;
  - contains bio-signals (e.g. SCP and Dicom waveform);
- Reports and digitally signed documents; (patients consents)
- Hospital discharge reports.
- Personal notes of the patient (wellness and activity data)
• Lesson 0: IPS is not an EHR

• Effective use of IPS involves:
  • the use of repository information cross-referenced to IPS content (data imported in EHR),
  • the update of IPS with new results coming from patient care (EHR use)
  • Use of IPS as health data container, not a document container
• **Automatic import of information into EHR**
  - *Issue: Local dictionary mismatch with international dictionary used in IPS*
  - *Issue: Data processing on the border of Medical Device systems certification*
  - *Issue: Lack of necessary specialized or structured information (e.g. in cardiology)*

• **Information Assurance, for healthcare use, to be determined**
  - *Authorship of contained information*
  - *We cannot digitally sign sections of IPS*
IPS AND EHR – LESSON LEARNED 2

• Who compile the IPS at the end of the encounter?
  • Automatic compiling seems to be the only way
  • supervised

• Local dictionary sometimes loses its attribute when information are converted into IPS (e.g. etiology of chronic heart failure).
  • Use of “free text” fields to represent the right information

• Lack of necessary specialized or structured information (e.g. in cardiology)
### iEHR Users

<table>
<thead>
<tr>
<th>Users</th>
<th>Description</th>
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<tbody>
<tr>
<td>Patients</td>
<td>Persons who travel abroad and are affected by chronic disease</td>
</tr>
<tr>
<td>Healthcare Professionals</td>
<td>Employee of Healthcare service provider (Hospital, Outpatient facility, territorial service) and Stakeholder representatives</td>
</tr>
<tr>
<td>Researchers</td>
<td>Investigators interested in, or promoting a, research protocol in clinical or social field</td>
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</table>
Different types of users, with different needs, knowledge, backgrounds, behavior, tools (apps)

- Somehow HCPs and patients needs are dependent and sometimes complementary
- Many HCP use IT tools for (part of) their daily work
- Some Patients use IT tools to manage their health (or wellness)
- IT tools of HCP and Patients are often not connected nor able to communicate something
  - Use of communication standards may foster an effective communication, but some standards are “too flexible”. We are far from a “plug>&play” paradigm in general.
SCENARIO 1 - DEVICE TO DEVICE LOCAL HR EXCHANGE
SCENARIO 2 – EMERGENCY ACCESS
SCENARIO 3 - RESEARCH PROTOCOLS
CONCLUSIONS

• Use of IPS in clinical practice is consistent for unscheduled care (in iEHR emergency encounter) but even on scheduled one
• IPS needs some extension for diagnostic imaging and signals
  • Out of IPS scope?
• IPS needs an official translation in FHIR r4
Thank you!

Stefano Dalmiani
FTGM - “G. Monasterio” Foundation Research Hospitals
Q&A time.