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National
Research
Council



Terminological resources in e-Health

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Overview



- Electronic Health Record (EHR) in Italy
- Project «Technological Architecture to support EHR»:
 1. Definition of an Italian Medical Language for prescription
 2. Definition of an encoding system for laboratory test





L@bdoc Overview



Documentation
Laboratory
(1996)

Center of
excellence in
Knowledge
Management
(2002)

URT (Unità di Ricerca
presso Terzi) del CNR -
Indexing and
classification systems
(2007)

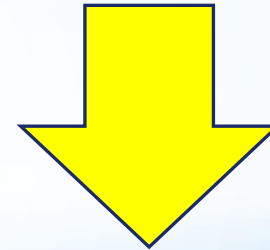
- 
- Information and knowledge organization



Italian EHR



• Definition: group of information related to the health patient, produced during a course of treatment in the public healthcare system



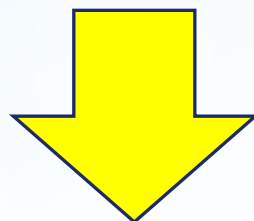
- Patient vital statistics
- Health care documents (ex. X-ray)
- Patient health history



What is doing in Italy?



E-government plan (2012) Minister of Public Administration and Innovation



- Simplifying and digitization services such as: prescription, medical certificate and etc...
- Creating an infrastructure specifically for people



Ministero della Salute



Ministero per la Pubblica Amministrazione e l'Innovazione

Project: “Technological Architecture to support Electronic Health Record”



Our task



Definition of ontological model and vocabulary to support EHR

Italian medical
language for
diagnosis
ICD9-CM*

Encoding system for
laboratory test
LOINC**

* *International Classification of Diseases 9th Revision - Clinical Modification*

** *Logical Observation Identifiers Names and Codes*



ICD9-CM



Work steps

- Collection of biomedical resources
- Comparison of ICD9-CM with a sample group of prescriptions
- Integration of ICD9- CM





Why normalize?



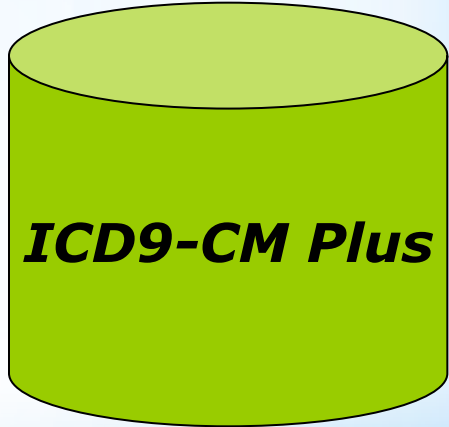
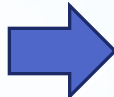
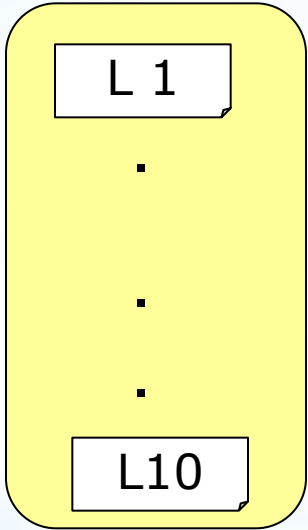
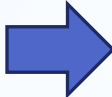
AOBO	ICD9- CM inglese	ICD9-CM italiano
IPOEMA *	<i>364.41 Hyphema</i>	<i>Cod. 364.41 Ifema</i>
OBESITA' **	<i>Cod.278 Overweight, obesity and other hyperalimntation</i>	<i>Cod. 278 Sovrappeso, obesità e altri stati di iperalimentazione</i>
	<i>Cod.278.0 Overweight and obesity</i>	<i>Cod.278.0 Sovrappeso e obesità</i>
	<i>Cod.278.00 Obesity, unspecified</i>	<i>Cod.278.00 Obesità non specificata</i>
	<i>Cod.278.01 Morbid obesity</i>	<i>Cod. 278.01 Obesità grave</i>
	<i>Cod.278.02 Overweight</i>	<i>Cod. 278.02 Sovrappeso</i>

* Ipoema e Ifema are synonyms

** Obesità does not appear alone



ICD9-CM Plus





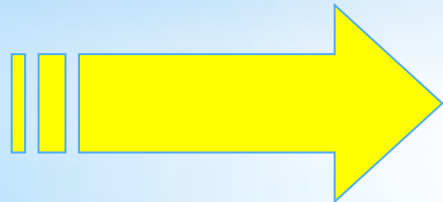
Tool



V.I.L.M.A.



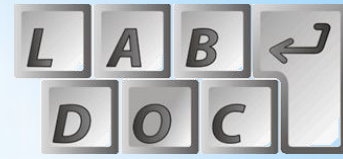
Vocabolari Italiani Lessici di Medicina e sAnità



EVENTUALI RELAZIONI				
VM	UF	BT	NT	RT
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Conclusions



- The language used by doctors is not controlled
- The Italian version of ICD9-CM does not consider the real use of the biomedical language

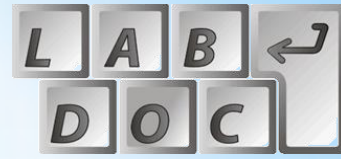
Necessity



- Revision and contextualization of the translation



LOINC



Work steps

- Encoding system for economical purposes
- Translation of LOINC parts name
- Translation of LOINC Users' Guide
- Implementation of LOINC Tool





Italian background



Nomenclatore
Tariffario
Regionale

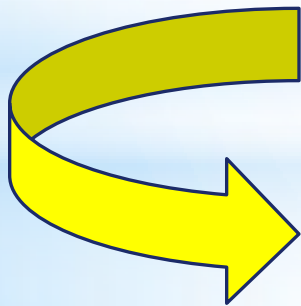


Laboratory	Internal code	Description
Lab1	1183	Citrato
Lab2	9835	Citraturia
Lab3	8519	Ammoniuria



What is LOINC?

- System for clinical data exchange
- Contains universal identifiers for clinical tests
- Each records includes:
 - ID code
 - Formal name



1. Component
2. Property
3. Time aspect
4. System
5. Scale type
6. Method type



Italian LOINC Group



- CNR
 - ITB - Unità Sanità Elettronica, Roma
 - URT - Indexing and Classification Systems, Cosenza
- Molinette Clinical Center, Torino
- Arsenà Consortium, Treviso
- Bruno Kessler Foundation, Trento
- Castelfranco Veneto Hospital, ULSS Asolo (TV)
- APSS-Trento



LOINC Translation

Part_Loinc

Part_Loinc

FORMAL_NAME
1.25H post XXX challenge

DISPLAY_NAME
1.25 hours post XXX challenge

YOUR_TRANSLATION

YOUR_SYNONYMS



Translation Rules

- Latin names

EN Saccharomyces cerevisiae

IT Saccharomyces cerevisiae

- Acronyms and abbreviations

EN CSF

IT LCS

EN DNA

IT DNA

EN BPU

IT Unità di prodotto sangue

- Order words

EN Dog epithelium

IT Epitelio cane



Translation issues



- **DIFFERENT NAME**

LOINC	Italian Translation
Coagulation thrombin induced	Tempo di trombina
	Coagulazione della trombina

- **CONTEXT DIFFERENCIES**

LOINC	Italian Translation
Borrelia hermsii	Genus of the Spirochaetaceae family, widespread mainly in the western United States and Canada.

- **WORD EQUIVALENCE**

LOINC	Italian Translation
Cat dander	Forfora gatto



Italian LOINC Tool



LOINC Italian Tool - Ver. 0.1 Beta

Inserire i dati di autenticazione

Username

Password

Tipologia utente ▼

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1. **Labs**
2. **Scientific Committee**
1. **CNR**



Results



- Translation of LOINC parts name (11,748)
- Release of Italian LOINC
 - December 2010
 - June 2011





Realization of a Documentation
center about energy efficiency
and the use of renewable
sources in building construction
in Lombardy

Mission



- Disclose project's results
- Supervise the knowledge evolution
- Organize content documents
- Answer to users information request

Future perspective



- Definition of a glossary related to the specific domain
- Realization of a Faced Theaurus



Terminology
International Network for Terminology



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Thank you for your attention!



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