

Vocabularies: Critical Software Infrastructure for Interoperability and Adoption

American Health Information
Management Association Workshop

Andrew S. Kanter, MD MPH
Intelligent Medical Objects, Inc.



Overview

- Interoperability and Role of Vocabularies
 - Where the Money is...
- The Interoperability-Adoption tug-of-war
 - Standards—reference terminologies
 - Users—interface terminologies
- Mapping from Clinical to Financial
- Managing the Madness

Interoperability

Definition:

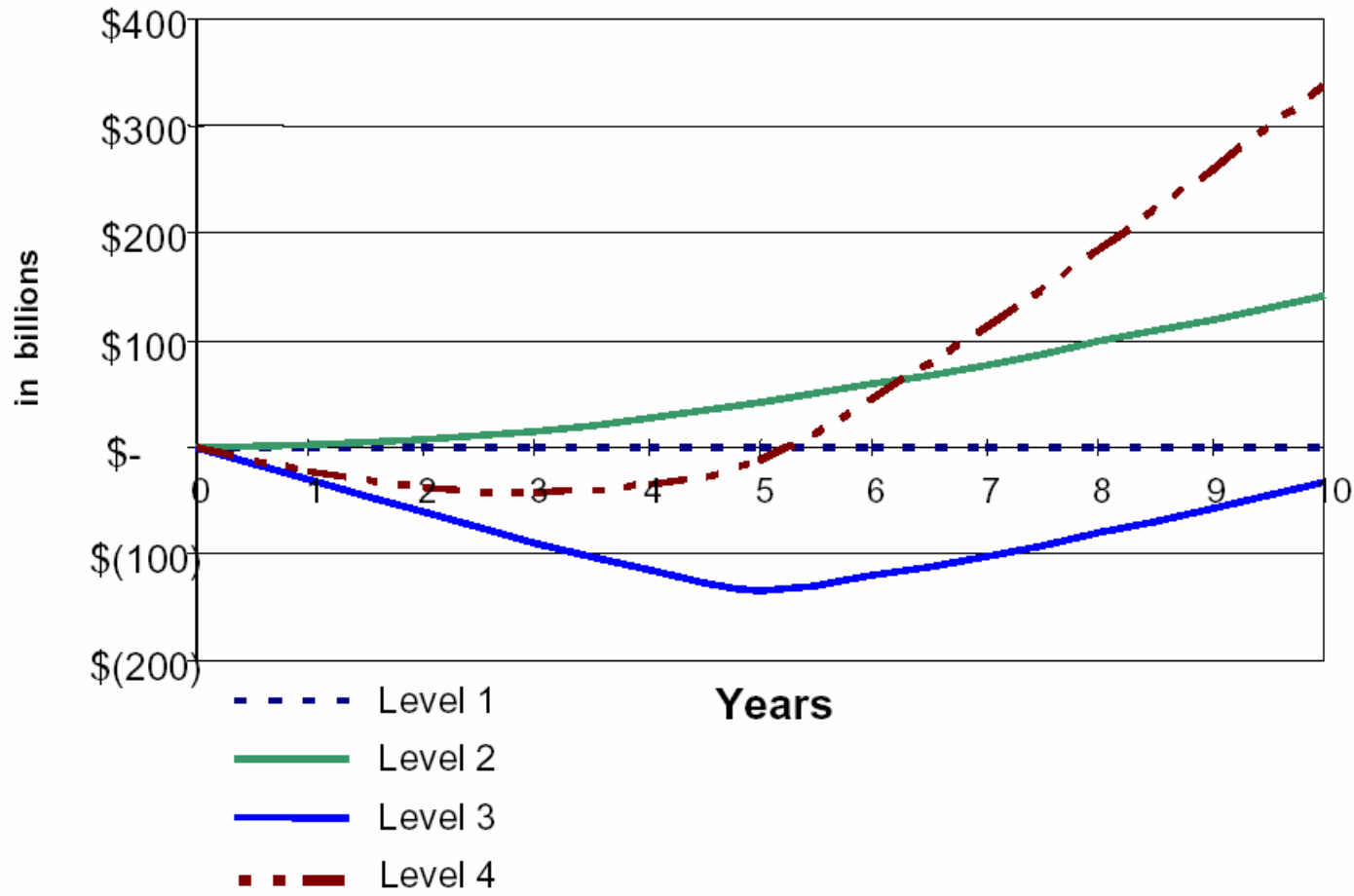
In healthcare, *interoperability* is the ability of different information technology systems and software applications to communicate, to exchange data accurately, effectively, and consistently, and to use the information that has been exchanged.

NAHIT Interoperability Definition. Adapted from the IEEE definition of interoperability, and legal definitions used by the FCC (47 CFR 51.3), in statutes regarding copyright protection (17 USC 1201), and e-government services (44 USC 3601).

HIEI National Net Cost-Benefit

	Net return over 10 yr implementation	Annual Net return after implementation
Level 2	\$141B	\$22B
Level 3	-\$34B	\$24B
Level 4	\$337B	\$78B

10-Year Cumulative Net Return by HIEI Level

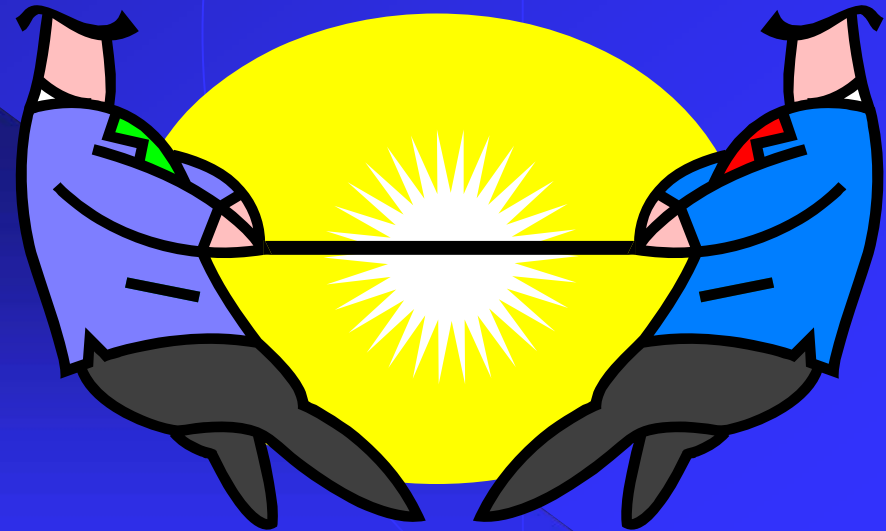


Decision-Support Examples

Interactions	Meds-Meds/Nutraceut.
Contraindication/Indic.	Medications-Problems
Monitoring	Medications-Labs
Medical Necessity	Procedures-Problems
Correct Coding Init.	Procedures-Procedures
Interactions	Social Hx-Medications

The Interoperability-Adoption Tug-of-War

- Interoperability requires standards and limited scope
- Adoption favors customization and local preferences producing broad scope



The Standard Terminology Problem

- Despite tremendous effort, there is no standard vocabulary
- Domain-specific vocabularies
- ICD-9-CM/CPT[®]/HCPCS/CDT
- Medications (FDB, Medi-Span[™], Multum[™])
- LOINC[®] for Labs
- UMLS (Unified Medical Language System)
- SNOMED[®] CT

HIPAA-dictated Vocabulary Standards

- ICD-9-CM for diseases/problems
- ICD-P/CPT™/HCPCS for procedures
- CDT for dental procedures
- NDC for medications
- DRG for inpatient hospitalizations

SNOMED- Solving the Reference Problem

- Began in 1965 as a Pathology Nomenclature
- 1998 SNOMED 3.5 had 156,000 terms in 12 different modules
- 2000 SNOMED RT w/190,000 terms and 350,000 relationships
- 2002 SNOMED CT combines with the NHS READ codes and has >800,000 terms
- 2004 SNOMED CT was added to UMLS
- 2006 SNOMED CT goes global?

The User Vocabulary Problem

- Like politics, all health care is local
- Doctors have preferences, and they use them (and want to if you let them)
- Different doctors have different preferences
- Different types of users require different vocabularies (doctors, patients, HIM, etc.)

Interface Terminology

- PHT = Personal Health Terminology™
- >160,000 disease/problem terms
- Preferred mappings from terms to ICD-9 codes (every term has a billable code) and from codes to terms
- Different mappings for coders, clinicians and patients/enrollees
- Mapped to SNOMED® CT, MeSH, UMLS
- Includes context

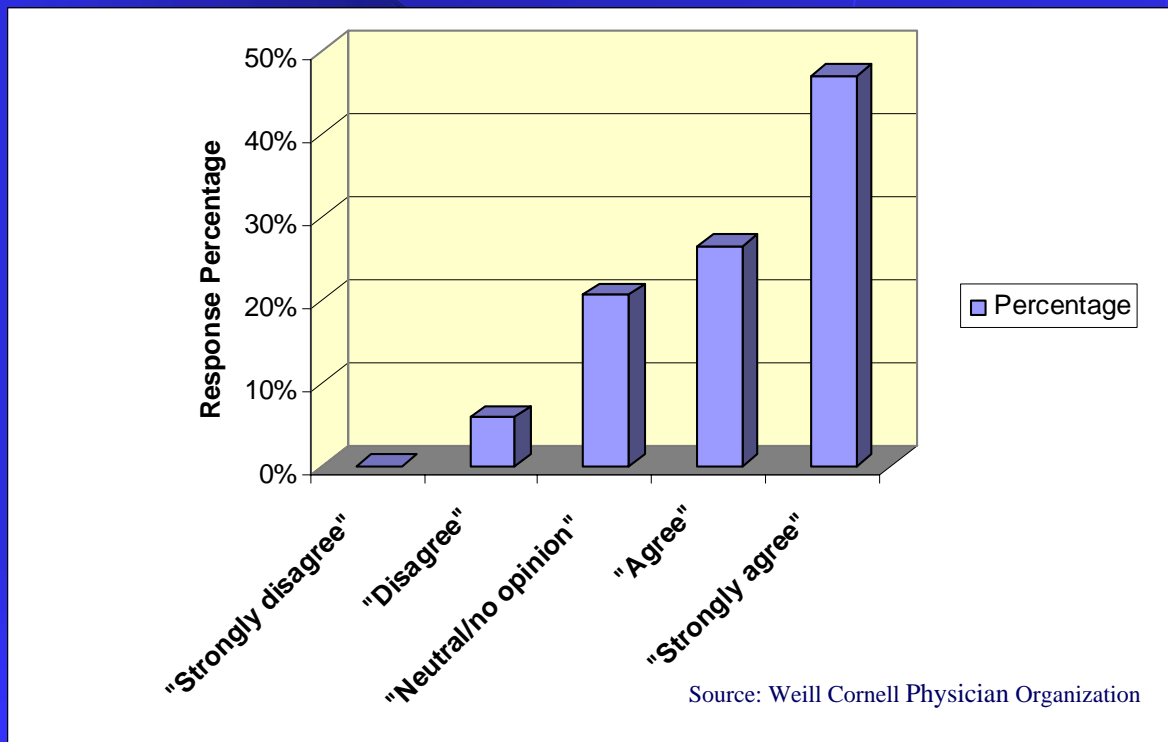
Capturing the Clinical Intent

- Synonyms that allow docs to think like docs—not like billers...
 - “Transaminitis”
 - “Athlete’s foot”
 - “SVT (Supraventricular Tachycardia)”
 - “GERD (Gastroesophageal Reflux Disease)”
 - “Crohns”
 - “UC (Ulcerative Colitis)”
 - “Heart block”
 - “Cold sore”
 - “Pink eye”

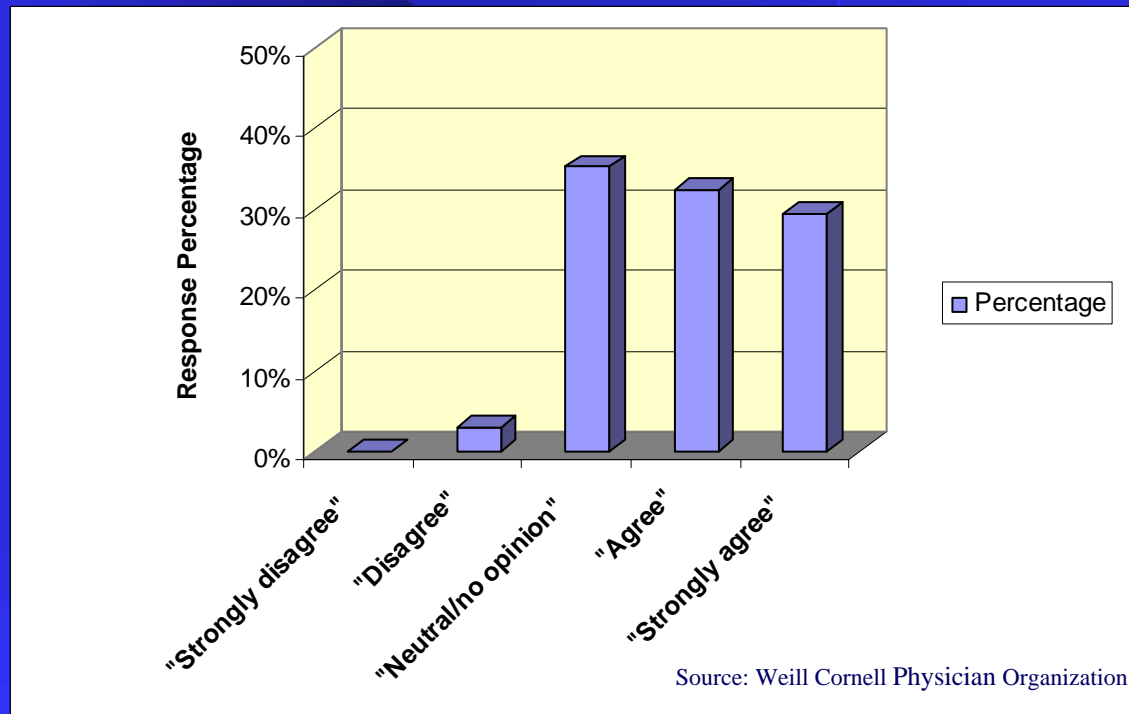
Weill/Cornell Experience

- Production since 6/04
- Integration of clinical and financial
- Improved physician acceptance
- More accurate billing (ICD-9/CPT)
- SNOMED® CT for interoperability

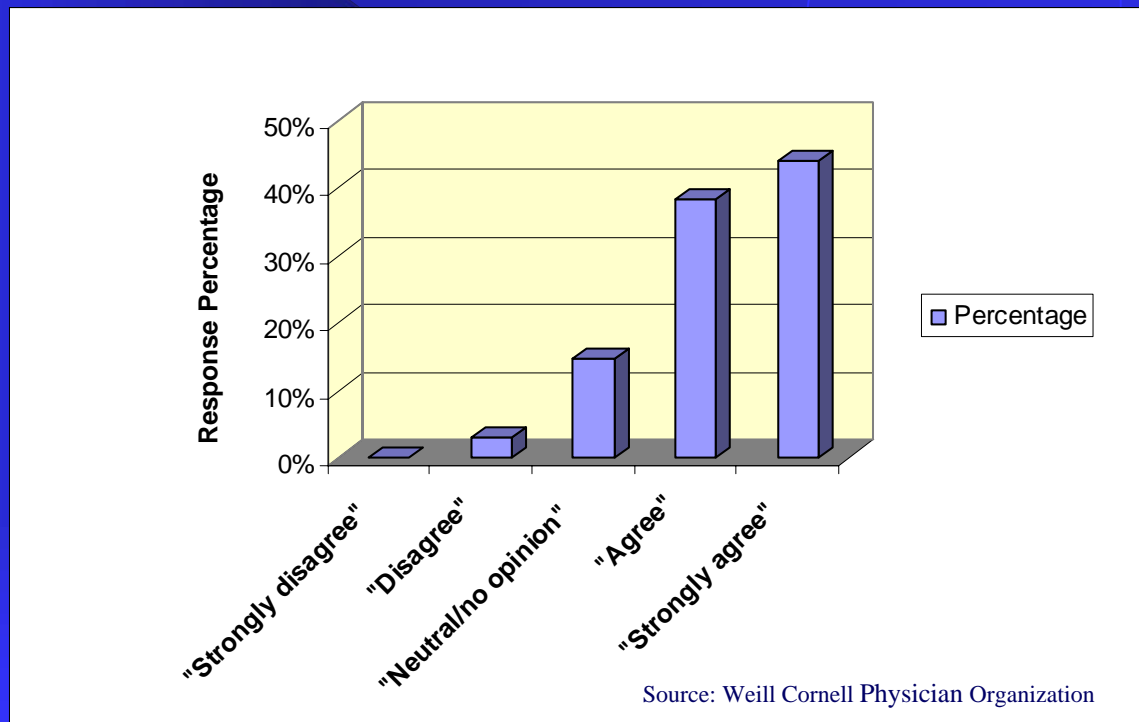
It is easier for me to find appropriate clinical terms.



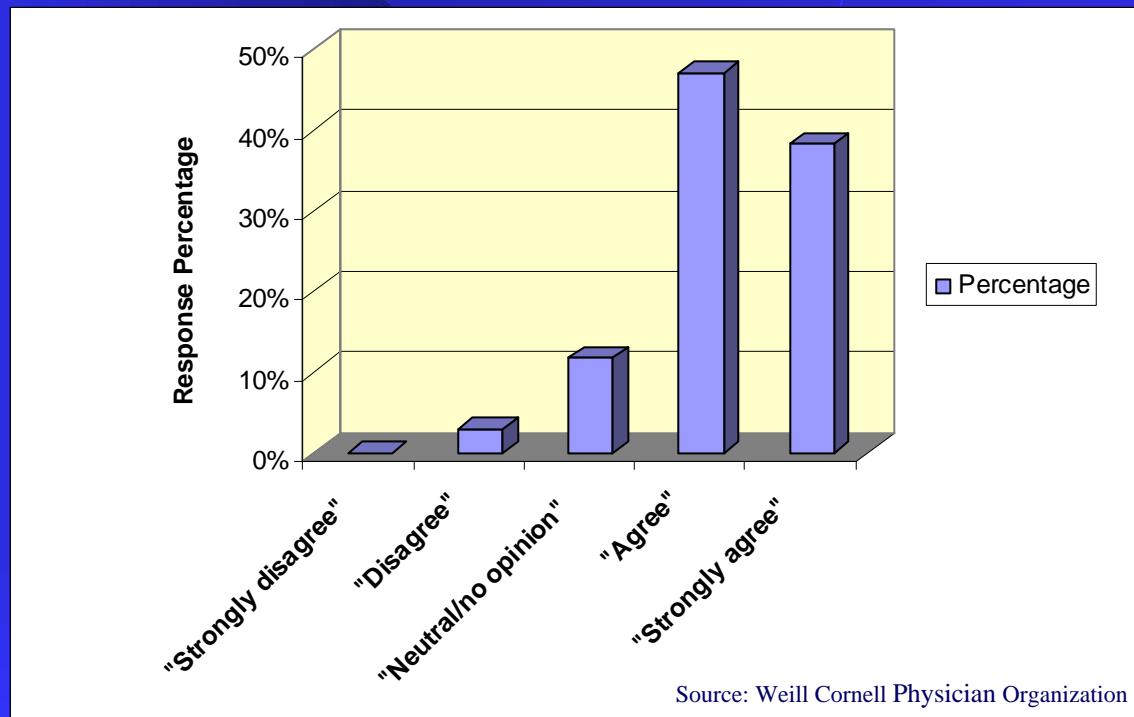
I can enter more meaningful clinical documentation (more closely describe the true clinical situation, or capture more detailed information).



I spend less time searching for and/or documenting diagnoses/problems in EpicCare.



I am more satisfied with EpicCare.



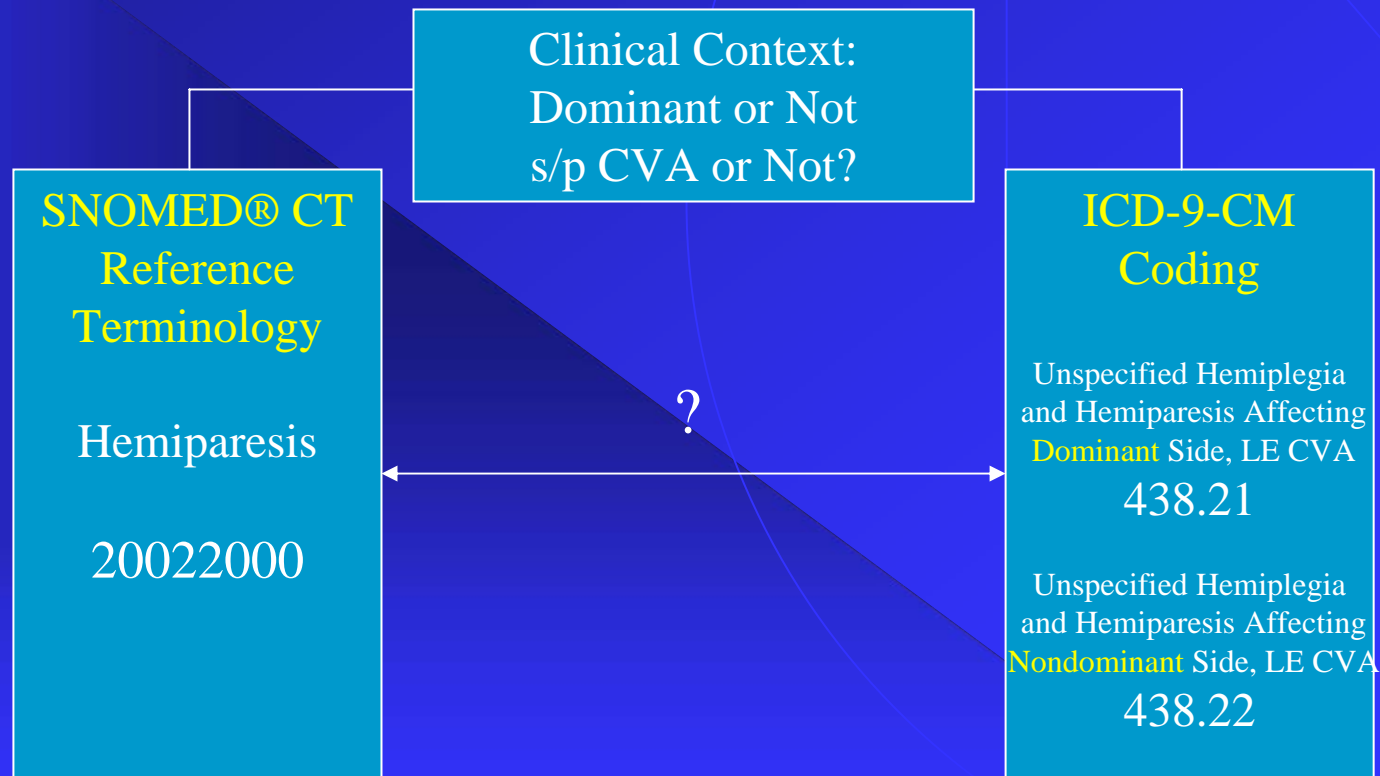
Getting from Clinical to Financial

- Not going to replace HIM professionals
- Clinical concepts do not always have all the “context” required for coding
- Even having more than one code per concept can be a problem
- Rules-based systems on the horizon but harder to implement and maintain
- Need oversight and validation for the maps

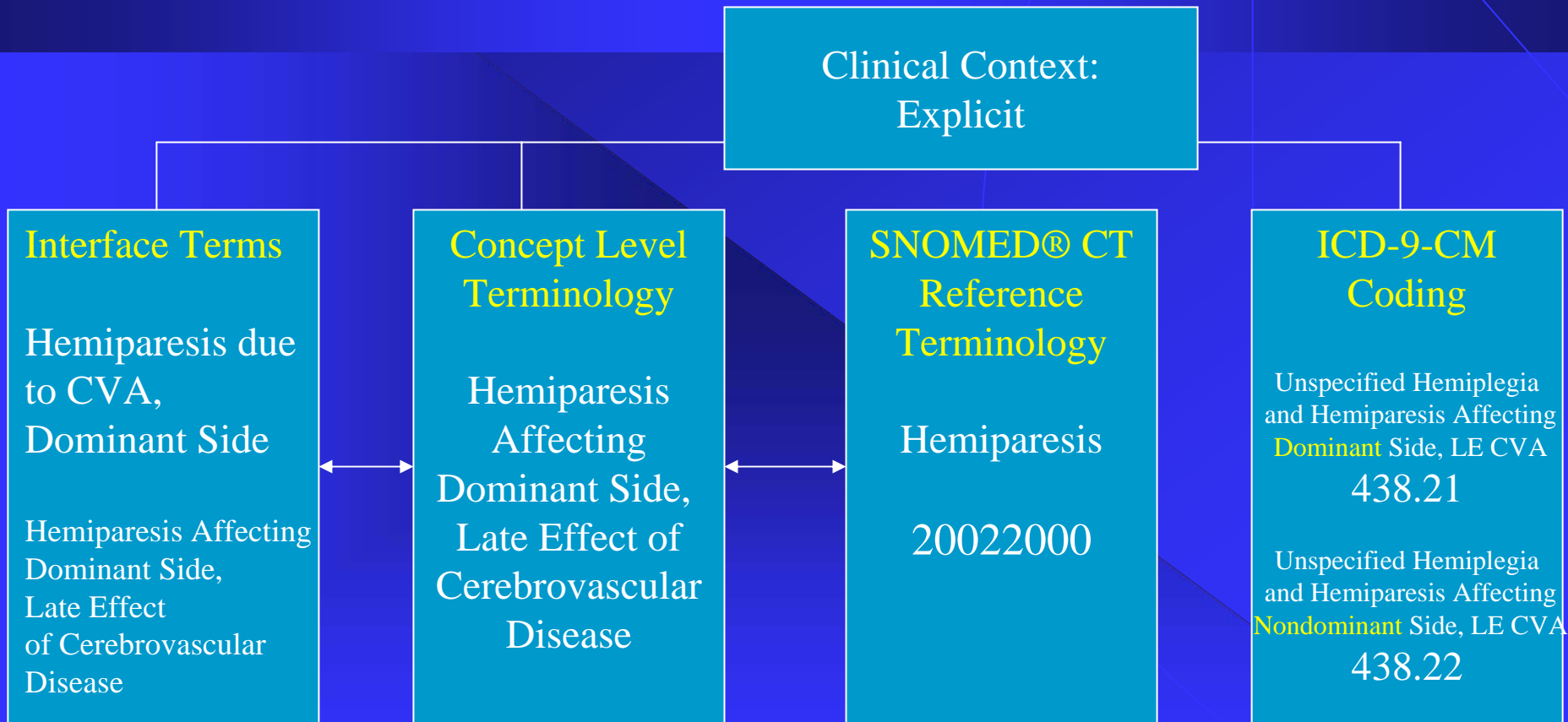
Mapping from Clinical to Financial



Mapping from Clinical to Financial



Mapping from Clinical to Financial



Managing the Madness

- Clinical users are not happy with administrative terms and have preferences
- Managing all the dictionaries is hard work
- Focus on more frequent regulatory releases means more updates and more work
- Grace periods disappearing
- Consequences of failure higher
- Outsourcing makes sense

Conclusions

- Application Interoperability ROI requires both standards and flexibility in vocabularies
- It's the data, data, data...
- Do not underestimate the work if you are going to take it on yourself
- Get ready by having a terminology strategy now

Intelligent Medical Objects, Inc.

Homepage: <http://www.e-imo.com>

Email: akanter@e-imo.com

Business Intelligence

QlikView Enterprise - [C:\QlikTech\Cornell.qvw]

File Edit View Selections Layout Settings Bookmarks Reports Object Window Help

Clear Back Forward Lock Unlock

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INTELLIGENT MEDICAL OBJECTS, INC. WEILL CORNELL PHYSICIANS INFORMATION SERVICES

697 Patients

Patient ID	Sex	Age	Count
Z797900	M		1
Z793334	M		1
Z789765	M		1
Z785076	F		1
Z784856	F		1

Medical History

Problem Name	Comments	Count
		0

Search Medical History

Assessments

Assessment	Count
	769
ABDOMINAL PAIN, UNSPECIFIED SITE	459
ABDOMINAL PAIN, EPIGASTRIC	185
ABDOMINAL PAIN, GENERALIZED	72

Search Assessments

MESH

Code	MESH Text	Count
D015746	Abdominal Pain	277
D003085	Colic	1

Search MESH Text

SNOMED CT

Concept C...	Fully Specified Name	Count
9991008	Abdominal colic (finding)	1
21522001	Abdominal pain (finding)	509

Search Name

SNOMED Descendants

Parent Name	Fully Specified Name	Count
Abdominal pain (finding)	Abdominal colic (finding)	1
	Abdominal pain (finding)	509
	Abdominal pain type (finding)	30
	Chronic abdominal pain (finding)	30

Search Snomed

ICD-9

Code	Base Text	Count
789.00	Abdominal pain, unspecified site	482
789.06	Abdominal pain, epigastric	185
789.07	Abdominal pain, generalized	72

Search Base Text



Clinical Vocabulary Mapping Methods Institute
Saturday, October 15, 2005