Interface Terminology to Facilitate the Problem List Using SNOMED CT and other Terminology Standards

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Agenda

- Introduction
- Problem list benefits and issues
- Issues facing the transformation
- EHR Implementation Issues
- Constant Change
- Questions and Discussion



Introduction

- About me medical informatician, not a terminologist
- About Adventist Health
 - One of the largest Not for profit health system
 - 44 hospitals nationwide
 - 7700 + licensed acute care beds
 - Serving 4 million patients each year in inpatient, outpatient and ER visits



Introduction

- Problem list/Meaningful use compliance
 - Current status 100% compliance rate for problem list documentation
 - Introduced CDSS/Alert for problem list documentation
 - experiences so far bitter/sweet
 - Working on improving the process, so focus is on identifying issues and challenges and general approaches



Problem List Benefits

- Clinical Documentation
- Continuity and follow-up
- Drive clinical decision-support systems
- Keep active problems highly visible
- Runs Horizontally in patient records (Document once, will be present in next visit)
- Prioritization of diagnoses and procedures
- Generate codes for reimbursement and reporting



Issues facing the Transformation

Poor Quality of Match (Sementically Ambiguous)

Excessive Pre-coordination

Achieving interoperability with Data Migration

Developing and evolving non informatics trained staff

How to map categories of concepts left out by design

How to address hierarchical ambiguity in SNOMED CT

Issue of complex compositional mapping

Not finding the right code by coding staff



Poor Quality of Match (Semantically Ambiguous)

- Ideally, all matches exact or synonymous
- Often no good matches found
- Types of matches in the literature
 - Exact
 - Inexact
 - Modeling needed
 - Classification language
 - No match found (NF)



Poor Quality of Match (Semantically Ambiguous)

- Poor quality of match Exact, Inexact, Model, Synonym, NOS, NEC, NF
- Suggested Resolutions
 - Same as map (mapped from source term to corresponding target concept)
 - If exact match does not exist, map to nearest source term
 - For inexact matches, additional relationships can be added



Excessive Pre-coordination

- Creating concepts by combining concepts with prepositional phrases such as 'with', 'without', 'without mention of'
- Suggested Resolution
 - If exact map exists, map to corresponding target concept (same as map)
 - Ignore 'without mention of'; map to generic condition
 - If an exact match does not exist, map to nearest point



Achieving interoperability with Data Migration

- How to achieve interoperability with SNOMED CT, when migrating from ICD-9
- Suggested Resolution
 - IHTSDO provides equivalence map, but not for billing purposes
 - IHTSDO rules based map exists, working with EMR Vendor to provide support



Developing and evolving non informatics trained staff

- How to develop staff/users to target SNOMED CT concepts accurately
- Suggested Resolution
 - Different approaches (in house or outsource)
 - Even if outsource, still need internal resources
 - In house, hire people with terminology experience
 - Send people to training programs from IHTSDO



How to map categories of concepts left out by design

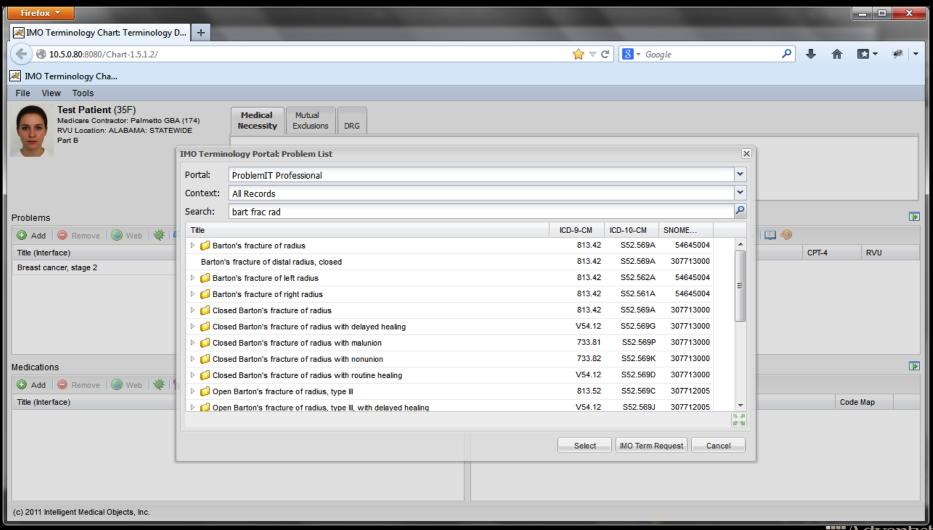
- These include qualifiers, procedures, substances, organisms and body parts
- Suggested Resolution
 - Priority on mapping diseases and findings as per 'meaningful use'
 - Use corresponding disease and problem concepts if possible
 - Use additional relationships (e.g., finding site, causative agent etc.)
 - Represent items using different areas in EHR e.g., orders, labs, medications etc.

How to address hierarchical ambiguity in SNOMED CT

- For e.g., 'Sprain' being defined as morphologic abnormality and 'sprain of ankle' descending from clinical finding
- Suggested Resolution
 - While mapping use only fully specified names, not synonyms, which include domain information (e.g., morphological abnormality, disorder, finding)
 - Mappers need to be trained about different domains

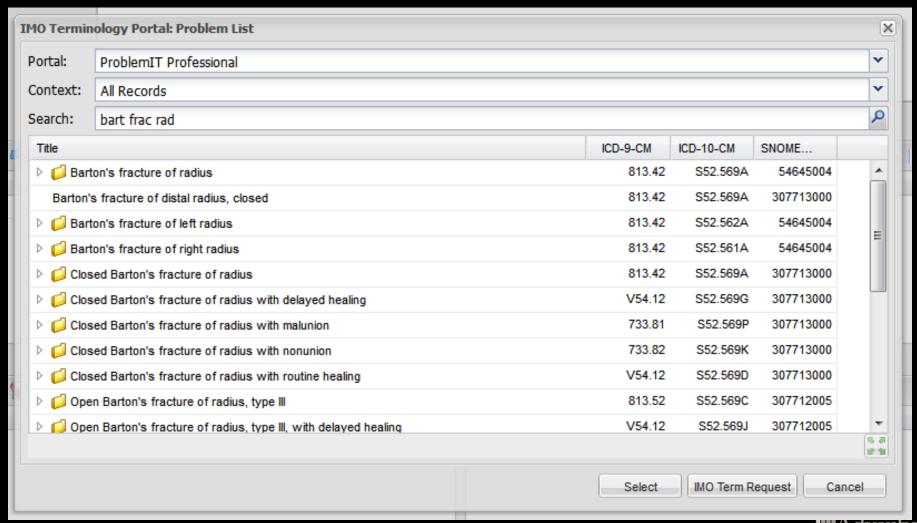


How to address hierarchical ambiguity in SNOMED CT



AHS Information Services

How to address hierarchical ambiguity in SNOMED CT

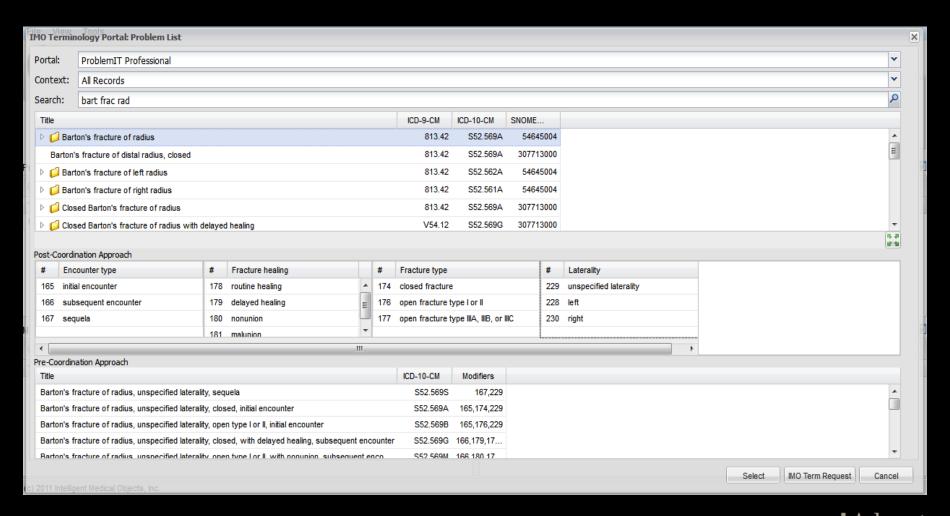


Issue of complex compositional mapping

- Requires many ICD-9 codes must necessarily be converted to SNOMED CT equivalents manually
- Suggested Resolution
 - Focus should be on clinical terms, not ICD-9 codes
 - Clinical terms may require multiple ICD-9 codes



Issue of complex compositional mapping



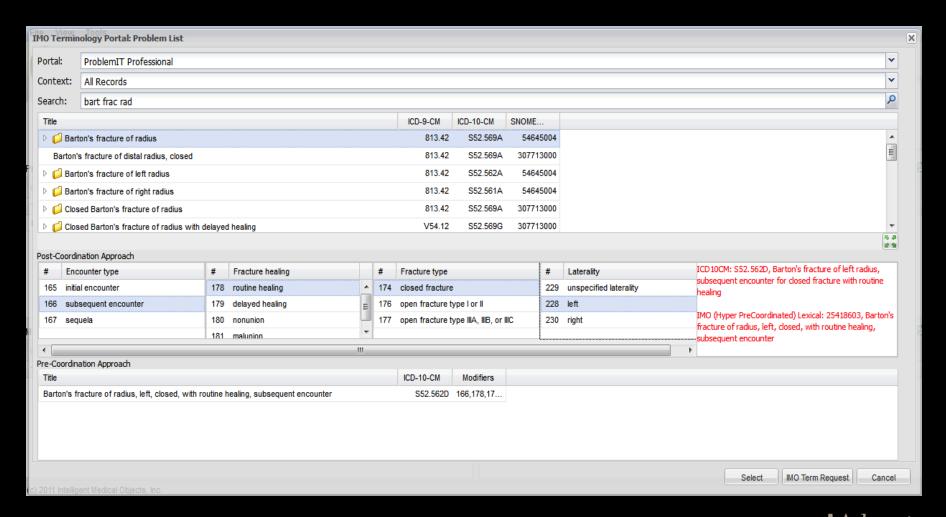


Not finding the right code by coding staff

- Busy Clinicians/coders may abandon the search for a concept if they cannot find it readily
- Suggested Resolution
 - Need clinician friendly, familiar terms
 - Support for abbreviations, acronyms, colloquialisms, misspellings etc.
 - Need easy search ability (good search algorithms, option of DYM/did you mean, good work index, ranking search results



Not finding the right code by coding staff





Meaningful Use Problem List Requirements

- Maintain active and updated problem list with SNOMED CT
- How to achieve interoperability with SNOMED CT when migrating from legacy data?



Terminology Migration Challenges (not an exhaustive list)

- Migration challenges
 - Administrative and classification verbiage
 - Excessive pre-coordination and negation
 - Multiple domains
 - Multiple hierarchies
- EHR Implementation issues
- Organizational challenges
- Constant change



Terminology Migration Challenges (not an exhaustive list)

- Uncertain algorithmic contortions
- Matching extensively pre-coordinated concepts with negation can make clinical documentation and data migration difficult
- For example, 'Chronic duodenal ulcer without hemorrhage AND without perforation but with obstruction'
 - Difficult to recognize and transform from one language to other.



EHR Implementation Issues

- Historically designed for administrative codesets only
- Not designed for multiple sources for diagnoses and problem lists
- May only support one code per term
 - Often need multiple codes
- Each system handles terminology differently
 - Systems from one vendor may vary significantly
 - Analyses and adjustments needed for each system



Constant Change

- Regulatory changes MU stages
- Terminology changes
 - Updates
 - ICD-9-CM to ICD-10-CM
 - SNOMED CT RF1 to RF2
- EHR changes New versions, adding new features and facilities
- Guidelines and quality measures
- Obamacare???



Discussion and Questions?







