Roles for SCT embedded in a CIS – A Language Processing Approach

Jon Patrick

Health IT Research Laboratory

University of Sydney

AuCTUG
Australian Clinical Terminology User Group

1. Roles for SCT embedded in a CIS

- Identify the class/category of information in a CIS field.
- Validate that the values of data in a field are consistent with the class.
- Express the relations between clinical entities so that they are explicit so as to enable semantic interoperability.
- To standardise language usage within the CIS to enable flexible data retrieval and aggregation in the face of the variations in clinical sociolects.
- To assert that a field in one place is the same as in another place despite different surface names.

Fundamental User Roles	Retrieval & Search	Aggregation
Point of Care Clinician-Author	Yes	No
Research Clinician	No	Yes
Administrator	No	Yes
Auditor	Yes	Yes

Why SCT is needed to improve the productivity of these Roles?

Data has to be reused by Authors yet they think little of other users.

Other users need SCT to understand what the Authors have written.

Authors need SCT because they forget what they meant.

Neither Authors nor Other Users can reuse information reliably
 if the description cannot be stabilized.

The Problem of Generalisation

- All language usage exploits metonymic, generalisation and entailment expressions
- Generalisation – viral pneumonia is a subtype of pneumonia
- Entailment – broken leg entails fractured tibia
- Metonymic – worsening condition – cancer spread, infection spread, temperature increased
- Retrievals and Aggregation need to understand the individual elements of a generalisation to compute the correct answer.
- A query on vasculitis must know about the 20 different sub-types to be computed correctly

2. Capturing text in fields and turning it into concepts

- TIMS front end demo
- http://175.107.163.157/demos/gcimsweb/

4. Using concepts for searching a CIS

- Intelligent Clinical Notes System (ICNS) demonstration
- http://hitrl.cs.usyd.edu.au/ICNS/login/
- http://hitrl.cs.usyd.edu.au/ICNS/demo/

5. Using concepts for completing data analytics

- Clinical Data Analytics Language (CliniDAL) demonstration
- http://ltrg.it.usyd.edu.au/~yche5936/clinidal_gcims_dual_mode/deve.py

Clinical Data Analytics Language ((CliniDAL))

- View SnoMED CT Hierarchy
- http://175.107.163.157/demos/clinidalswaps/amyloidosis.html

6. Using concepts for synoptic pathology reports

- Synoptic Reporter demonstration
- http://175.107.163.157/SynopticReporter/spr_sct.cgi

Medical Concept Identifier

▸ A general purpose language processing system with SNOMED CT encoding

▸ http://rp-www.cs.usyd.edu.au/~clinnote/gpnotes.cgi

7. Evaluating SCT coding in ED records

- Concord ED Study to reveal the most fequent SCT equivalent codes used in text reporting.
- Aim is to define the ED Refset by usage rather than by Delphi survey.
- Available to anyone who wants a starter set for developing their Refset

The End

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- How does clinician choose between ambigous code names.
  - Which values should the interface acutally display.
  - How do you choose the level in the hierarchy and how do you deliver it to the UI.
  - How do you deliver the variable display of the hierarchy to individual uer preferences.

- How do you arrive at UI codes for a community of users drawn as a subset.
- Lists should display preferred terms.
- How do you sell the UI to the users.
  - Most sales has to go to p-o-c physician who don't appreciate the neds/advs of aggregation.
  - Need to show demonstrations to the clinical teams of the business cases/advanatges.

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- Need to allow some level of flexibility in the UI to suit different search styles, but,
- Consistent UIs makes transition between organisations easier.
- Vendors more resistant to standardising UI so as to differentiate themselves.
- Unless the Refset is easy to manage and use the maintenance of it is high.
- Needs to be an intutive way. System has to help prompt

- Common User Interface site gives lots of information
- Users like to tell stories, use own language
- How do we get in between NLP and long lists
- NLP may be good at interpretation by not so for coalface performance.
- How do we allow the anarchy of clinial design of UI with the need for langauge unification.
- Search of search within a set of results.

- Using SCT in the UI cannot be the starting point – adherence to clinical expressions is the most important beginning point.
- The QH EMR Viewer has led interest in imporving its behaviour – need to show something to get a reponse – push model
- Individual' should be able to see the subset that suits thei practice
- Combinaiton of auto-completion and drop down lists.

- Sydney Workshop Questions
- Attitudes – newest report on specialists shows they keen on emr but impediments are important.
- Important to keep the original text as well as the code.
- Is their a workshop for training clinicians in SCT

- Should you have list model of codes
- Need for searching in flexible ways
- How are interfaces different for searcch vs data entry
- Need for improved search strategies
- Context based retrieval based on your clinical specialty/location

- What is the role of browsing in clinical work
- How do you implement preference subsets in an automatic way.
- How are the axes of preferences defined:
  - medical specialities
  - clinics/wards/
- Current Refsets are about the SCT axes

▸ Need to compile codesets for small specialties

▶ CEC

◦ need for a tool that enables matching a code against a text.

◦ create a TS service

▶ College of Surgeons, Meagan Zille, using ICD10 for pre and post diagnosis categories and want to replace it. Regisrtar's Logbook from College portal. Not updating anymore- doesn't have enough specifics

- TRAC Gene coy for delivering to clients.
- Vic Infections – getting pathology (LOINC) and theatre events in CMBS, Simon Burrell.
- Need to minimise the time spent on writing notes.
- Symphony Health – Brian

- ▸ physicians are overwhelmed by choice- need to restrict the list sizes
- ▸ given subtle differences between descriptors how do you choose
- ▸ solution must not be NOT manually maintained
- ▸ need to be usuable, practicable, multiple uses and how do you overcome obstacles to change
- ▸ trainee coders need to learn

- existing system of opthalmology screening needs to be converted to SCT codes
- locally developed CIS need to be improved

Number of screen pages	Annual License Fee	Annual License Fee	Training	Consulting/day	Rate per page
	Simulator	CIS			
1-20	20K	30K	$7.5K	$220/hr, 1.5K	1.5K
21-50	40K	50K			1.0K
51-100	60K	75K			.75K
101-200	100K	125K			.625K
>200	150K	200K			.5K (400)