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PTY LTD

Solution to SNOMED CT Implementation in Clinical Systems

IHTSDO Conference Oct 2011

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What We'll Discuss:

- ***1. Setting the Scene***
- 2. The Pilot and How it Works
- 3. Results
- 4. Conclusions

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THE CHALLENGE IN THE ED:

- SNOMED CT coding of specific ED data elements is required for national initiatives such as the PCEHR
- ICD codes are required for emergency service reporting
- ICD codes are required to support morbidity reporting for admitted patients

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A KEY QUESTION:

- **Could we achieve ICD and SNOMED code capture accurately without interrupting the clinician workflow with time-consuming pick lists?**

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IMPORTANTLY…

- **Could clinicians enter data in the way that is meaningful to them and maintains clinical communication quality?**

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AND…

- **Could we achieve meaningful clinical input plus coding with a single natural language input?**

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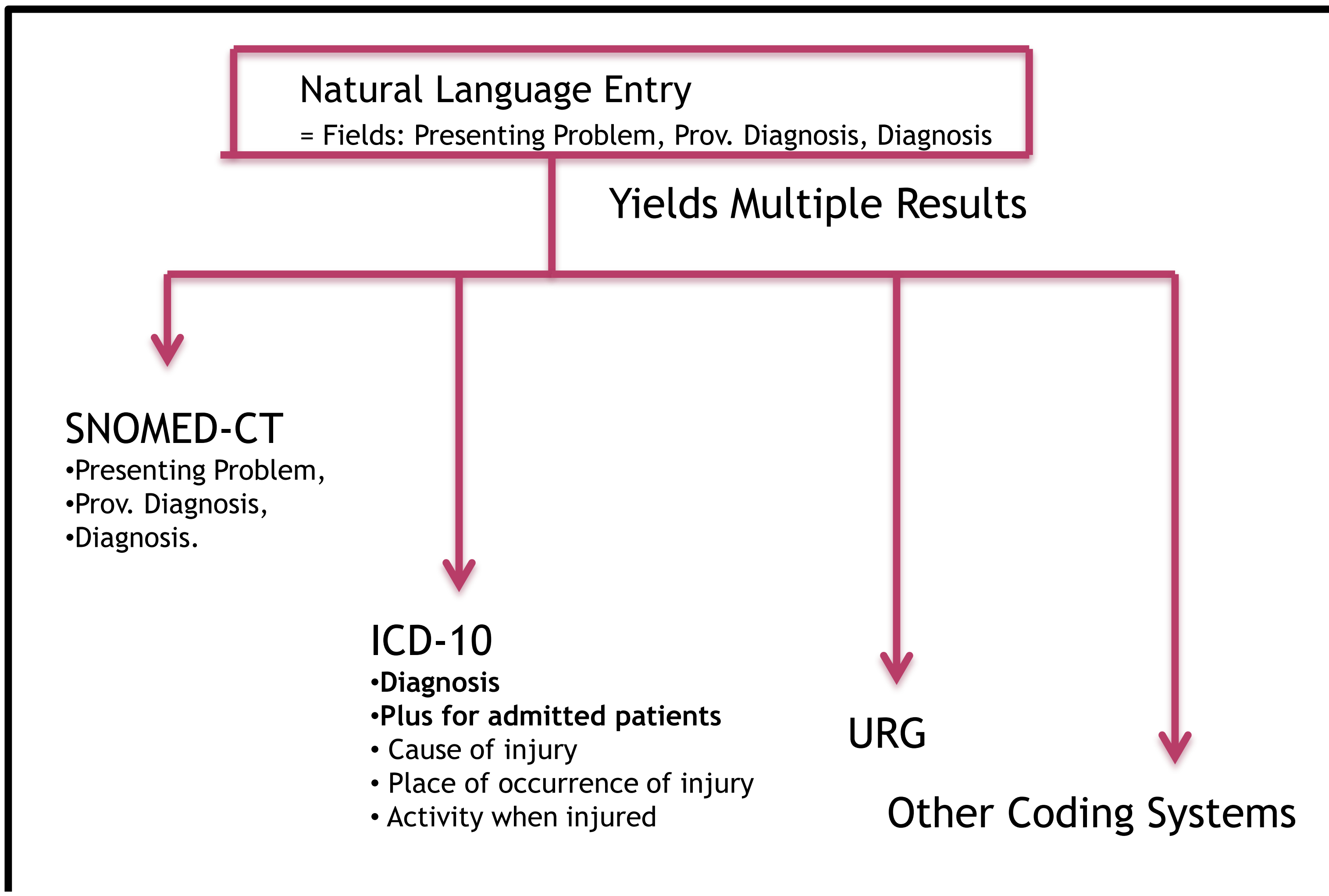
LIKE THIS:



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YES WE CAN!

- Such a system is presently in pilot at a major Victorian hospital

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THE PILOT:

- Objectives:
  - To confirm and quantify the clinical and financial benefits:
    - Faster coding using fewer resources
    - Less clinical intrusion
    - Increased accuracy and specificity
  - Refine processes relating to:
    - Documentation
    - Coding
    - Terminology
  - Create live system implementation approach

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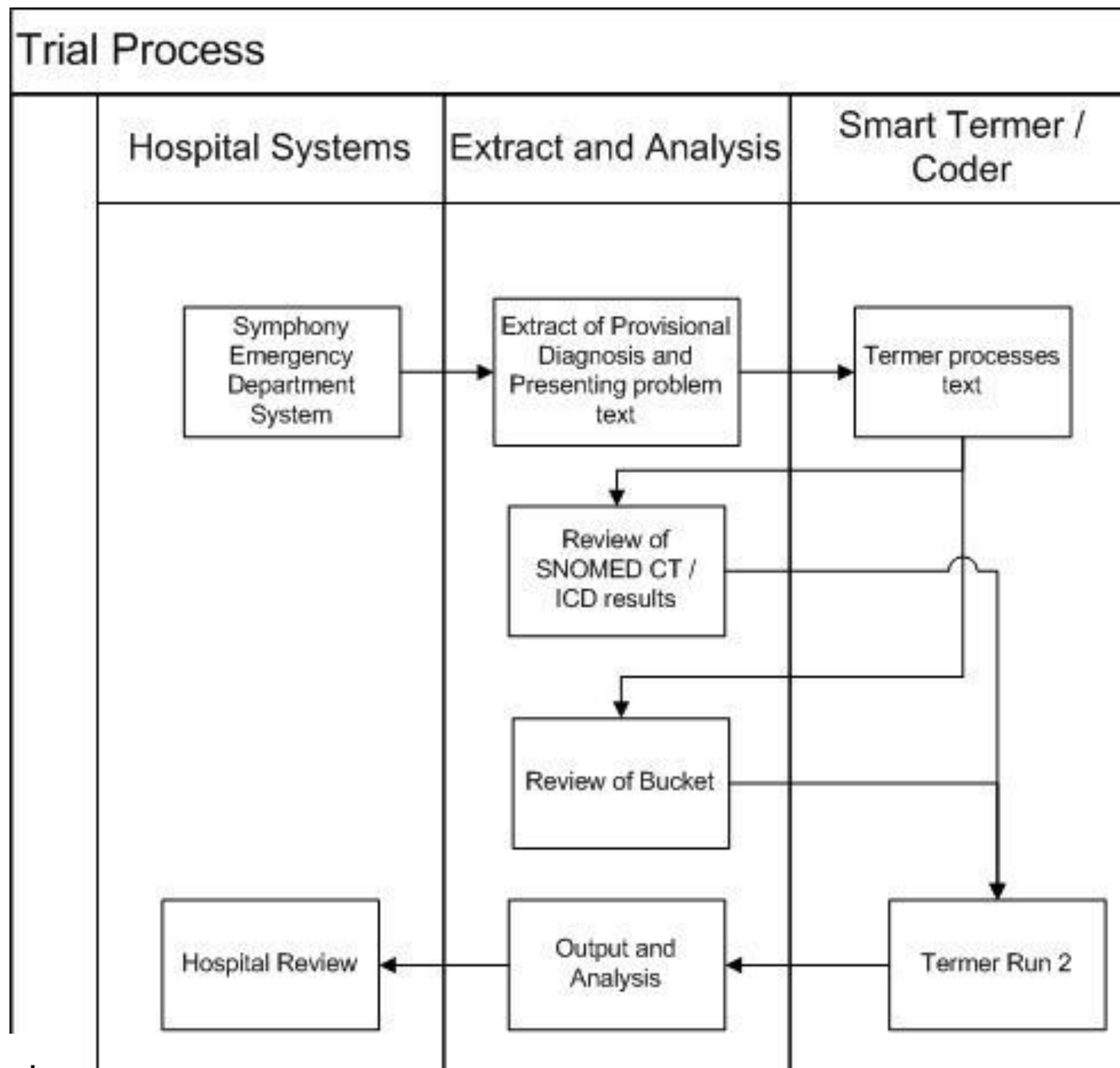
THE TRIAL PROCESS



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Entries May Be

- Simple
- Multiple concept
- Complex

- Trial entries are largely multiple concept and complex – i.e. multiple sentences.

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Example – Clinician Recording Diagnostic Information

- Diagnosis (text entered):

  fell down stairs at home and # nof

System returns to specified fields in host product:

SNOMED CT concepts for the diagnosis: # NOF

ICD concepts for the diagnosis reporting field

ICD concepts for the cause of injury field

ICD concepts for place of occurrence

ICD concepts for activity

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DEMONSTRATION OF TERM ENTRY

- Response shown is for demonstration, user interface is dependent upon the host but can be provided by Health eWords

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SmartTermer Administrator v:2.0.0.175

Data Explorer | Termer Manager | Batch Operations | Bucket | Ignoring Log | Connections | DEMONSTRATION

fell down stairs at home and # nof

Interpret | Age | Sex:

Words 8.8.8 | Semantics 1 | Concept List 7/2 | New Concepts 2.2.0.0 | Report | TestBatch | Smart Tables | Translations 2 | Multi - Age

```
Context:
Text:          fell down stairs at home and # nof                     40


SNOMED-CT disorder:   5913000      - Fracture of neck of femur (disorder)

SNOMED-CT cause:      414188008    - Fall down stairs (event)

SNOMED-CT child:      264362003    - Home (environment)


ICD 10 AM cause:      W109         - Fall on and from other and unspecified stairs and steps
                      Y920         - Home

ICD 10 AM activity:   U739         - Unspecified activity

ICD 10 AM injury:     S7200        - Fracture of neck of femur
```

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THE RESULTS TO DATE ICD:

Date of run	No. of entries with Provisional Diagnosis	Number coded first run	% coded	Number coded second run	% coded 2nd run	Number unable to be coded	% of codeable cases coded 2nd run
14 August	648	634	97.8	642	99.2	6	100.0
21 August	699	652	93.3	681	98.0	12	99.7
28 August	722	596	82.6	710	98.3	11	99.9
4th Sept	729	610	83.7	714	97.9	12	99.6

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THE RESULTS TO DATE SNOMED CT:

Date of run	No. of entries with Provisional Diagnosis	Number coded first run	% coded	Number coded second run	% coded 2nd run	Number unable to be coded	% of codeable cases coded 2nd run
14-Aug	648	601	92.7	641	98.9	6	99.8
21-Aug	699	651	93.1	681	97.4	14	99.4
28-Aug	722	682	94.5	710	98.3	11	99.9
4th Sept	729	694	95.2	714	97.9	12	99.6

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RESULT COMMENTS

- No clinical process change
  - Clinical documentation errors or imprecision is responsible for approximately 80% of the items not coded in run 1.
  - Clinical practice records many elements which are unnecessary in an electronic record – i.e. they are already present in the record e.g.:
    - "82 yo male presents to see Dr Williams" This is not a diagnostic statement.
    - ACS – used to mean Acute Coronary Syndrome AND Altered Conscious State
- With feedback to clinicians and minor modifications to current recording it is estimated that the initial run would result in a much higher accuracy.

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SPELLING AND CONTEXT TERMS

- All 'new' words are collected and analysed
- Currently 45 'words' meaning diarrhoea

- Context: Speciality influences meaning
- e.g.: The abbreviation DD

Example:

- Musculoskeletal = Disc Degeneration
- Gastrointestinal = Diverticular Disease

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SNOMED CT RESULT

- Negation
  - Diagnosis fields don't record non conditions
  - These are identified in the software process but codes not applied (ensuring term is not provided)

```
Text:            bee sting - no signs of allergy or anaphylaxis, no cellulitis

SNOMED-CT disorder:   262552005    - Bee sting without reaction (disorder)

ICD 10 AM cause:      X2330        - Contact with unspecified bees
ICD 10 AM location:   Y929         - Unspecified place of occurrence
ICD 10 AM activity:   U739         - Unspecified activity
ICD 10 AM injury:     T634         - Venom of other arthropods
```

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RESULT ANALYSIS (OF CODEABLE ENTRIES)

- Multiple results
  - 1 result 52.5% (n331)
  - 2 results 19.4% (n232)
  - 3 results 2.5% (n16)
  - 4 or more results 8.1% (n51)

- Post-coordination e.g. Suspected, left, right.
  - 25% (n 158)

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RELATIONSHIP TO REFERENCE SETS

- National emergency reference set
- 9.5% of terms represent concepts not in the national reference set
- 1.3 % represent causes not diagnoses

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IN SUMMARY:

- Simple data entry
- Single entry – multiple results
  - Diagnostic, Cause of Injury and other information is able to be coded.
- Learns the words you use
  - new words (misspellings etc) found and added each week. This has decreased by 34% over the initial 4 weeks of the trial.
- With or without user intervention
  - Currently no user intervention, clinical review and training would improve the results – limited changes needed.
- SNOMED CT and ICD-10-AM
  - Returns ICD – diagnosis, cause, injury activity, injury location
  - Returns SNOMED-CT disorder – when able to be coded. Approx: 11% of the text provided is not represented in the current national emergency term set.

Note: TM Pending

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THIS MAKES HOST SOFTWARE MORE ATTRACTIVE:

- Clinicians enter data in the way that is meaningful to them and clinical communication quality is maintained.
- Code requirements for national initiatives such as the PCEHR to use SNOMED CT can be met with minimum functional changes to the host software product or clinical practice
- ICD codes required for emergency service reporting can be produced from the single process
- ICD codes required to support morbidity reporting for those patients who are admitted can be provided for clinical coder audit (reducing coding time)

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QUESTIONS?

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