SNOMED in Big Data and Analytics:
Where We Are and Where We Are Going

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Agenda

- What is Big Data?
- Claims data
- Unstructured documentation
- Decision support
- Quality measures
- The future

Big Data

What is Big Data?

Structured

- Claims data

- Lab orders

- Drug orders

- EMR

- CCDs, HL7

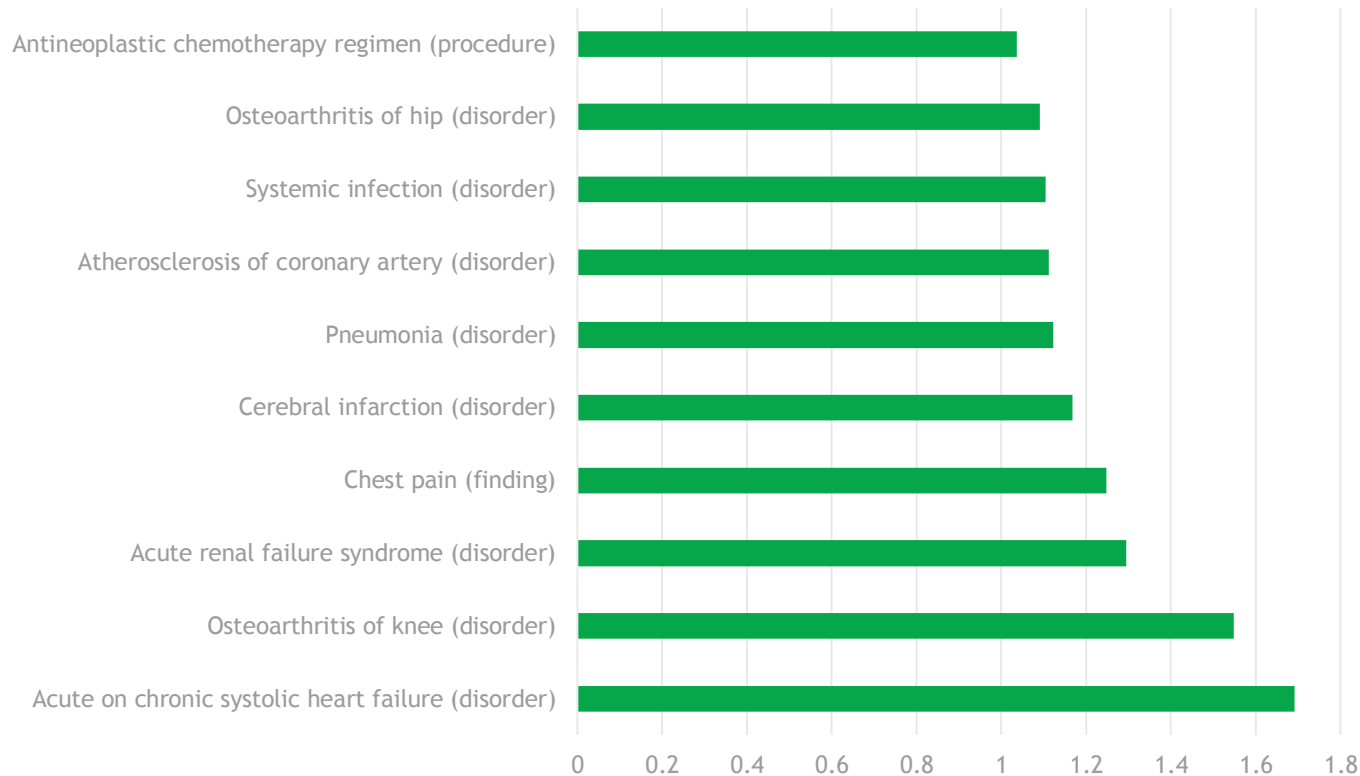## Unstructured

- Dictations

- Notes

Analytics

Claims Analytics

Method: 120,000 ICD-9-CM Claims converted to ICD-10-CM and SNOMED CT using SmartGEMS and ICD-10-CM to SNOMED maps.

Frequent SNOMED as a Percentage of Claims

| Category	Value
Antineoplastic chemotherapy regimen (procedure)	~1.03
Osteoarthritis of hip (disorder)	~1.08
Systemic infection (disorder)	~1.10
Atherosclerosis of coronary artery (disorder)	~1.11
Pneumonia (disorder)	~1.12
Cerebral infarction (disorder)	~1.17
Chest pain (finding)	~1.24
Acute renal failure syndrome (disorder)	~1.29
Osteoarthritis of knee (disorder)	~1.55
Acute on chronic systolic heart failure (disorder)	~1.69

Claims Analytics SNOMED

- What do these SNOMED concepts tell us?

  - Provide common diagnosis that could be on problem lists and in pick lists

  - Inform decision support applications – will these SNOMED concepts trigger the best decision support?

  - Transmit to quality measure programs – do we have the right SNOMED concepts for quality measure reporting?

Claims Analytics

Method: Use the simulated ICD-10-CM claims to analyze the documentation elements (attributes) now required in ICD-10-CM

6
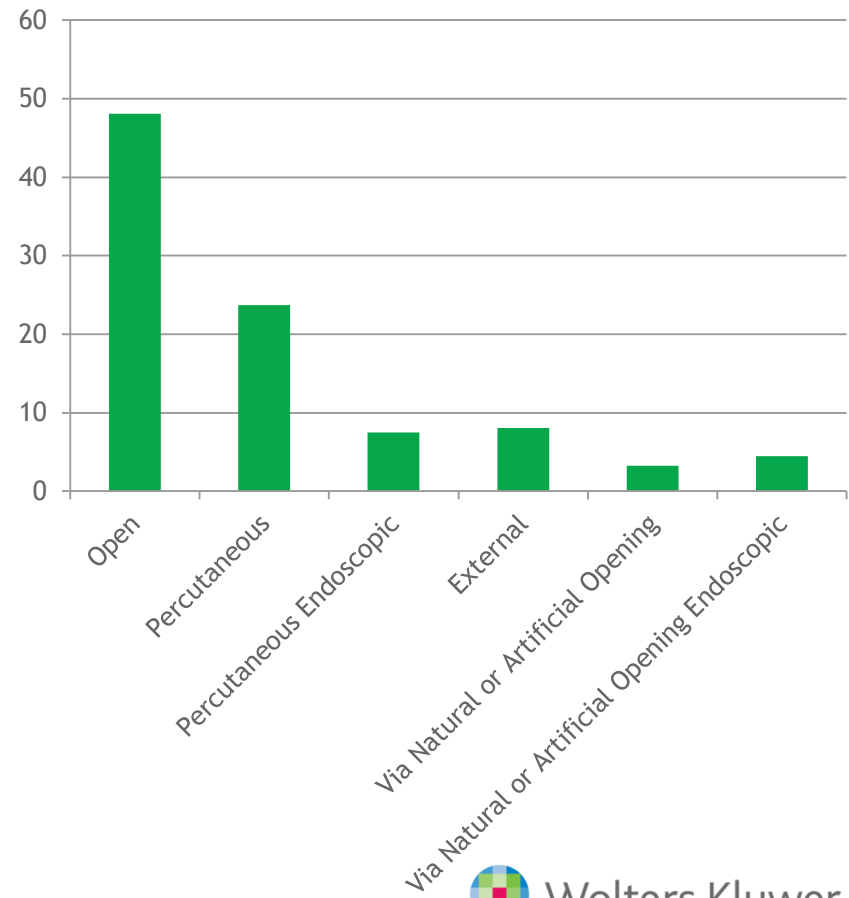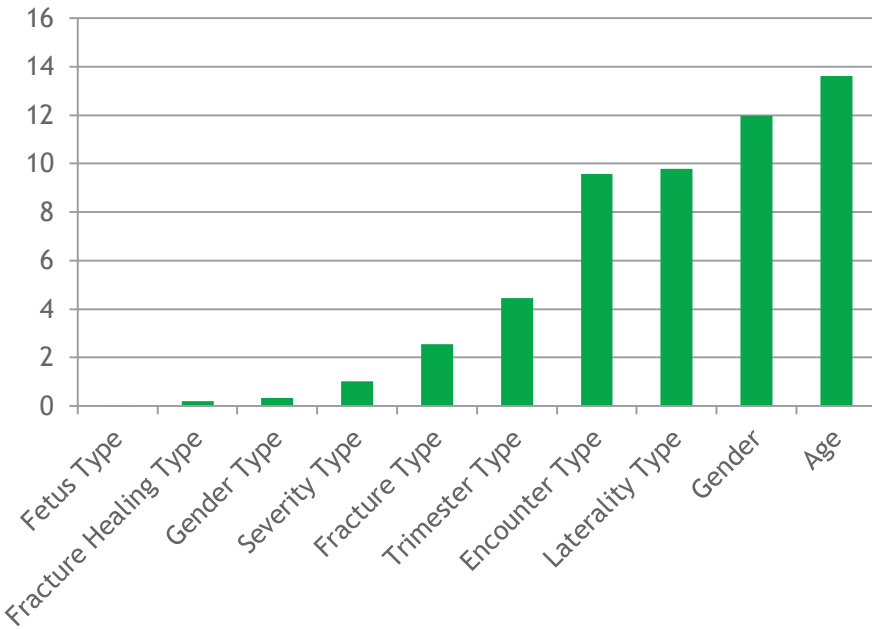
Claims Analytics

I-10 Unspecified

Method: Using the simulated ICD-10-CM claims, estimate the potential use of *unspecified* ICD-10-CM codes

ICD-10-CM	ICD-10-CM Description	SNOMED Description
M17.9	Osteoarthritis of knee, unspecified	Osteoarthritis of knee
N17.9	Acute kidney failure, unspecified	Acute renal failure syndrome
I63.50	Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebral artery	Cerebral infarction
J18.9	Pneumonia, unspecified organism	Pneumonia
M16.9	Osteoarthritis of hip, unspecified	Osteoarthritis of hip
A41.9	Sepsis, unspecified organism	Systemic infection
I48.91	Unspecified atrial fibrillation	Atrial fibrillation
L03.119	Cellulitis of unspecified part of limb	Cellulitis
C64.9	Malignant neoplasm of unspecified kidney, except renal pelvis	Primary malignant neoplasm of kidney
K85.9	Acute pancreatitis, unspecified	Acute pancreatitis

Claims Analytics

Use the results of the analytics to inform CDI initiatives and recommendations for clinicians.
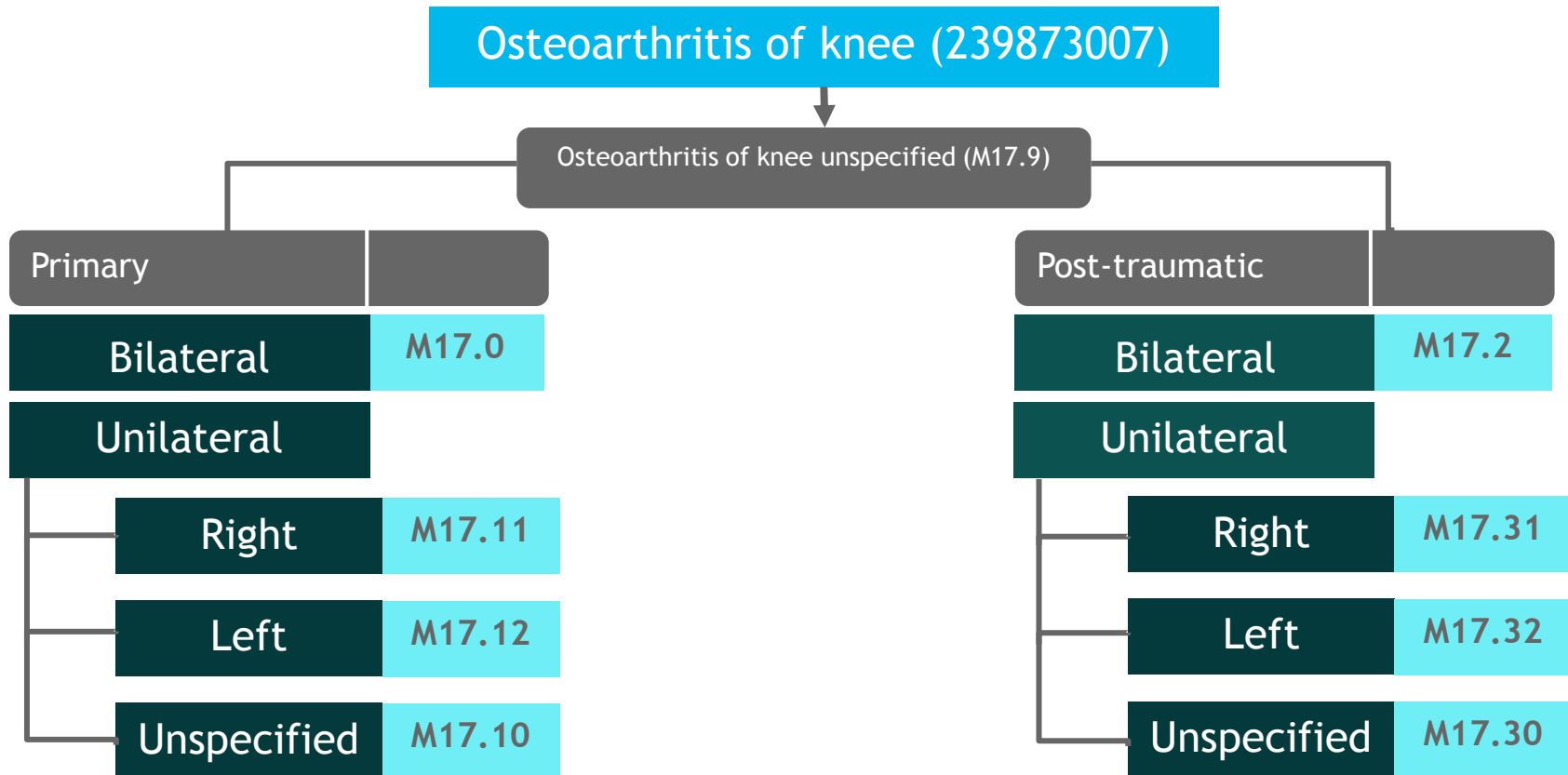
Unstructured Text

Unstructured Text - NLP
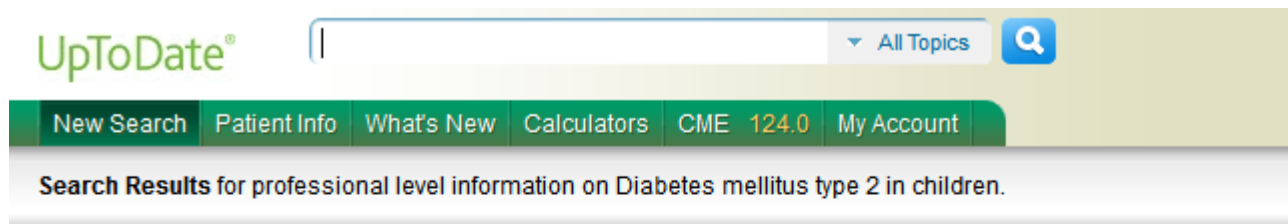
- Most clinical information is locked up as free text

- SNOMED provides the best terminology for NLP

- Once unlocked, we now have computable data

Using SNOMED

SNOMED → Decision Support

http://www.uptodate.com/hl7/infobutton?
mainSearchCriteria.v.cs=2.16.840.1.113883.6.96&
mainSearchCriteria.v.c=44054006
&age.v.v=8&age.v.u=a

SNOMED → Decision Support

SNOMED → Quality Measures

Acute myocardial infarction (57054005)

Clin-eguide - Windows Internet Explorer

http://clineguide.ovid.com/clinicalresource/re/displayCGPopup?dbName=mdcgeb&fileName=/CG_12854-9636_31250/root[1]&filter=/online/r

Acute myocardial infarction: aspirin at arrival (NHIQM AMI-1)

- Administer aspirin immediately to all patients with suspected MI, unless contraindicated.

National Hospital Inpatient Quality Measure (NHIQM) - CMS/TJC

- The number of acute myocardial infarction (AMI) patients aged >/=18 years who received aspirin within 24 hours before or after hospital arrival.

CMS =Centers for Medicare and Medicaid Services; TJC =The Joint Commission

Note:

- Reporting of this measure to CMS is voluntary.

Population

- Includes patients discharged with an ICD-9-CM Principal Diagnosis Code for AMI (as defined in Appendix A, table 1.1 in the NHIQM Specifications Manual).

- Medical therapy
- PCI vs CABG

- If high risk, admit to CCU facility capable of performing PCI or CABG.
- If intermediate or low risk, admit to a facility with cardiac monitoring.

The Future

Additional sources and uses of Big Data

DIY Healthcare

- Apple's App Store offers thousand of mobile health apps

- Cholesterol, HIV, UTI, allergy, STD testing kits

- Home EKG, pulse ox, blood pressure and glucose

- Where is all this personal health information going to go?

- How do we get this information codified?

Google - Calico

'The marriage of great thinking, guts, with technology,
Big Data and genomics…'
- Forbes

'Can Google Solve Death?'
- Time

- Calico may become a global clinical trial around health

- Google will sort data, pattern match, and find
  correlational and causal relationships within data

We will have all this great healthcare data...

Now let's do something with it!

Questions?

Thank you

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