

Why Is This Still Hard?

*Why interoperability hasn't (YET) transformed
Quality Improvement?*

CMSS Annual Meeting 2022
Thursday, November 10

Experts Joining Us Today



**Angela Kennedy,
DC, MBA**

*Director, Strategic Operations
Medical Specialty Societies
US Healthcare Solutions*



David Voccola

*Senior Director,
Global Strategy Real
World Technology
Solutions
Integrated Health Practice*



**Calum Yacoubian,
MD**

*Director, Healthcare Product &
Strategy
Linguamatics*



**Jamie Skipper, BSN,
PhD**

*Director of Healthcare Registry
Technology Consulting
Services
US Healthcare Solutions*



What did FHIR promise and what is the reality?

Natural Language Processing



Once that 18 months is over, it is everything. It's text notes, transcriptions, and other kinds of documents. The only way that we'll be able to get our arms around that is using algorithms, machine learning, and other kinds of approaches, such as natural language processing, to be able to take advantage of on behalf of the patient, on behalf of better quality, to be able to take advantage of that broader, comprehensive information that's available

Micky Tripathi

National Coordinator for Health IT, ONC

<https://ehrintelligence.com/news/onc-leader-tripathi-offers-tips-for-interoperability-rule-success>

What is NLP?

Different word, same meaning

- cyclosporine
- ciclosporin
- Neoral
- Sandimmune

Different expression, same meaning

- Non-smoker
- Does not smoke
- Does not drink or smoke
- Denies tobacco use

Different grammar, same meaning

- 5mg/kg of cyclosporine per day
- 5mg/kg per diem of cyclosporine
- cyclosporine 5mg/kg per day

Same word, different context

- Diagnosed with diabetes
- Family history of diabetes
- No family history of diabetes

NLP



Why does the

Symptoms

Lifestyle

James Anderson, a 51 year old man with past history of hypertension and osteoarthritis, complains of tiredness, daytime somnolence, and frequently waking up at night to pass urine. He has a sedentary lifestyle with a high fat and high carbohydrates diet. He is a former smoker of 2 packs a day, quit 10 years ago. Patient states he lives alone, and is under a lot of stress. Lately, he has been drinking approximately 6 beers a day. In the past 4 years has become significantly overweight, and has had increased problems walking upstairs, he has a current body mass index of 38.2 kg/m2 and BP of 140/90. Following a visit to his PCP, he was diagnosed with type 2 diabetes (T2D), based on the following diagnosis criteria: HbA1c > 48 mmol/mol; fasting glucose concentration > 7.0 mmol/l; 2-hour post 75gram glucose load (oral glucose tolerance test) glucose concentration > 11.1 mmol/l (screening result provided below)

Additionally, based on the high-risk profile for other metabolic co-morbid conditions associated with T2D further assessments included:

Testing parameter/Time frame	Normal	Patient results
Blood glucose level measurement (HbA1c)/mmo/mol and % HbA1c	Optimum level HbA1c > 48 mmol/mol and between % HbA1c 6.5% and 7.5%	74.0 mmol/mol and HbA1c 9%
2-hour post 75gram glucose load (oral glucose tolerance test)	> 11.1 mmol/l	15.1 mmol/l
K	3.6 – 5.2 mmol/l	4.5 mmol/l
Na	135-145 mEq/L	139mEq/L /l
Total Cholesterol	<= 5.0 mmol/L or lower	11.1 6.5mmol/L
Kidney function testing (Urinary albumin)	<30 mg/g	26 mg/g

His current medications include: OTC Advil prn; 40mg of Lotensin daily. He was prescribed metformin 500mg three times a day implemented in combination with appropriate lifestyle and dietary advice and intervention. He was also prescribed a lipid lowering agent and antihypertension agent and asked to return in 3 months.

He missed his 3 month appointment on 24th November 2014 and follow-up at 6 month on 2015/02/18 showed an HbA1c increased to 91.3 mmol/mol/HbA1c 10.5%, increased weigh to 41 2 kg/m2 along with minimal increases in blood pressure and cholesterol.

Synthetic Data



Diseases



Measurements
Units of Measure
Numbers Only
Words / Numbers

Patient Structured Data

Name **Words** James Anderson

Age **Synonyms** 51

Gender **Abbreviations** Male
Misspellings

Type 2 diabetes E11.9

Hypertension

Metformin 500mg TID

Medications



Dates / Time



Unlock the highly valuable data trapped in the EMR

Drive improved outcomes with repeatable extraction of patient information

Synthetic Data

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Increased Tumour Size

Ejection Fraction 40%

EGFR T790 positive

Tumour margins negative

Failed treatment with cisplatin

PDL1 negative

Radiology Report

Echocardiogram

Pathology Report

Operative Note

Progress Note

Tumour Tissue

Admitting Note

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Diseases

Text	Normalized Value
Type 2 Diabetes	Diabetes Mellitus, Type 2
T2D	SNOMEDid 44054006

Symptoms

Text	Normalized Value
Sleepiness	Fatigue/tiredness
Daytime Somnolence	
Frequently waking up at night to pass urine	Nocturia Urinary frequency

Social Determinants

Text	Normalized Value
Former smoker	Ex smoker
Quit 10 years ago	
Problems walking	Ambulatory Status: walking difficulty
Lot of stress	High levels of stress/Stress
He lives alone	Social Isolation
Missed his 3 month appointment	Did not attend

Demographics

Text	Normalized Value
51 year old	51y
man	Male

Dates

Text	Normalized Value
24th November 2014	20141124
2015/02/28	20150228


Measurements

Text	Normalized Value
Body mass index of 38.2 kg/m2	BMI 38.2 kg/m2
Ht 5ft 11	Height 1.8 m

Medications

Text	Normalized Value			
On Metformin 0.5g PO three times a day				
Normalized value				
Medications				
Drug Name	Dose	Unit	Route	Frequency
Metformin	500	mg	Oral	TID





**What are the information blocking
regs actually trying to achieve --
what they are and aren't?**

Additional Questions?

Angela Kennedy

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William (Bill) Lawrence

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