OSCAR EMR
Mini-conference #4
June 14, 2018
Dr. Ian Pun

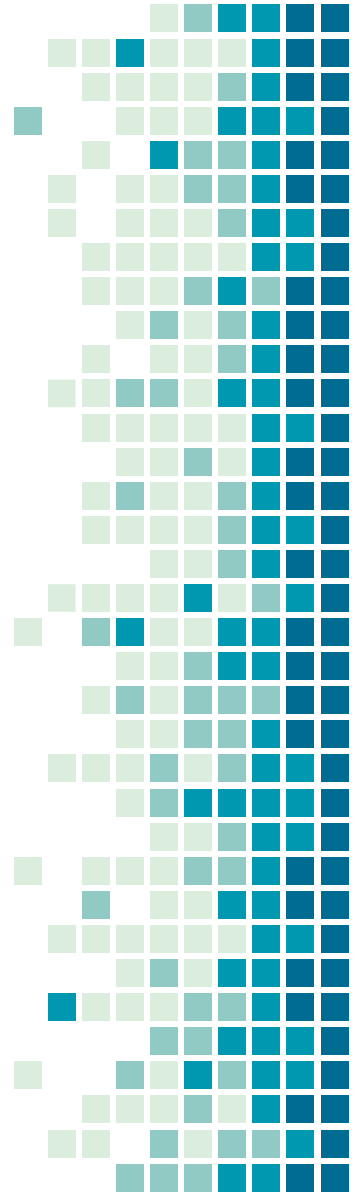# Welcome!

Ian Pun MD

OSCAR EMR user since 2009

any questions, email me:
ianpun@gmail.com

BC OSCAR

oscarmcmaster-bc-users@lists.sourceforge.net

Join my Google Classroom

OSCAR is open-source Electronic Medical Record (EMR) software that was first developed at McMaster University by Dr. David Chan. It is continuously enriched by contributions from OSCAR users and the Charter OSCAR Service Providers that support them. OSCAR has been certified by OntarioMD, and verified as IHE compliant, achievements made possible by the creation and success of OSCAR EMR's ISO 13485:2003 certified Quality Management System.
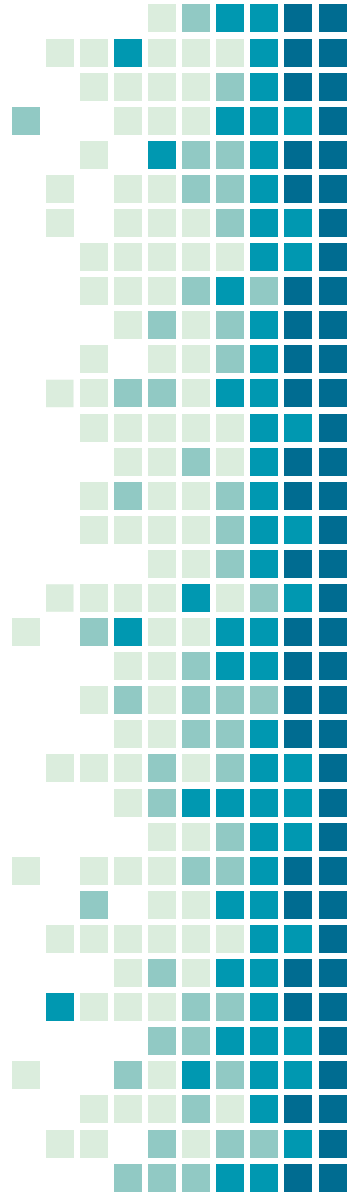
Our mission is to crowd-source ideas with the open-source OSCAR EMR. For physicians by physicians.
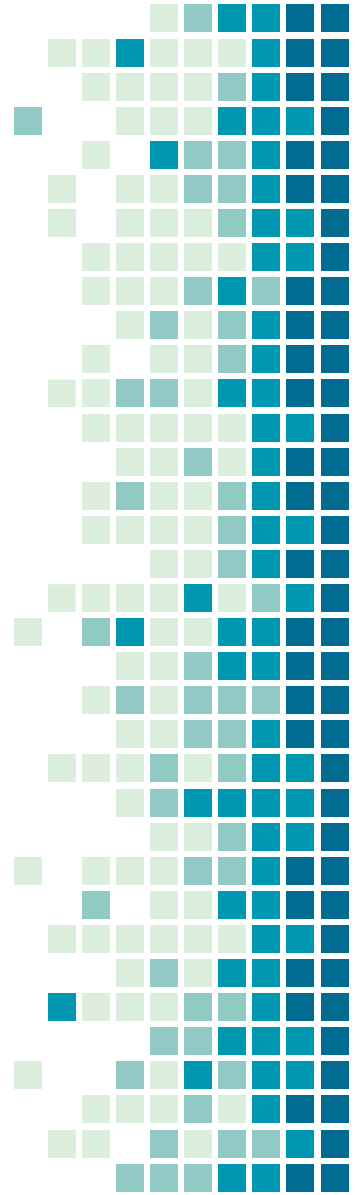
Special Guest

Dr. Raymond Chan

staff cardiologist at Scarborough Hospital

Agenda
OSCAR EMR
mini-conference
 June 14, 2018 @ 6 pm
dinner from Congee Queen

– **Dr. Raymond Chan**

Lower CV events by lowering LDL
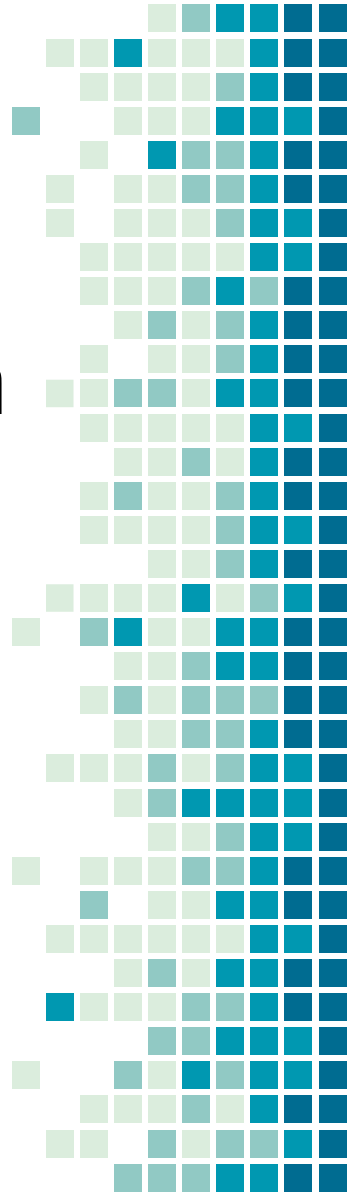
– **Dr. Ian Pun**

Find your LDL patients using A.I.

Track your lab tests

Take photos to OSCAR

Code your public health vaccines

Artificial Intelligence

practical applications in medicine by Ian Pun MD

FIND your LDLs

- CCS 2016 CV risk assessment every 5 years 40 to 75

- CLINICAL PEARL

- target lower LDL = lower CV risk   LDL < 1.6

- use AI queries for OSCAR

Artificial Intelligence

- term coined in the 1950's (Newser) – **John McCarthy**, the computer **scientist** who coined the term "artificial intelligence" in 1955. **McCarthy** was teaching mathematics at Dartmouth when he organized the first Artificial Intelligence conference in 1956

- science of training machines to perform human tasks

- chess playing, data processing, speech synthesis, speech recognition, natural language processing, image recognition

- AI science fiction movie examples: HAL9000 in 2001, R2D2 from Starwars, T-800 in Terminator
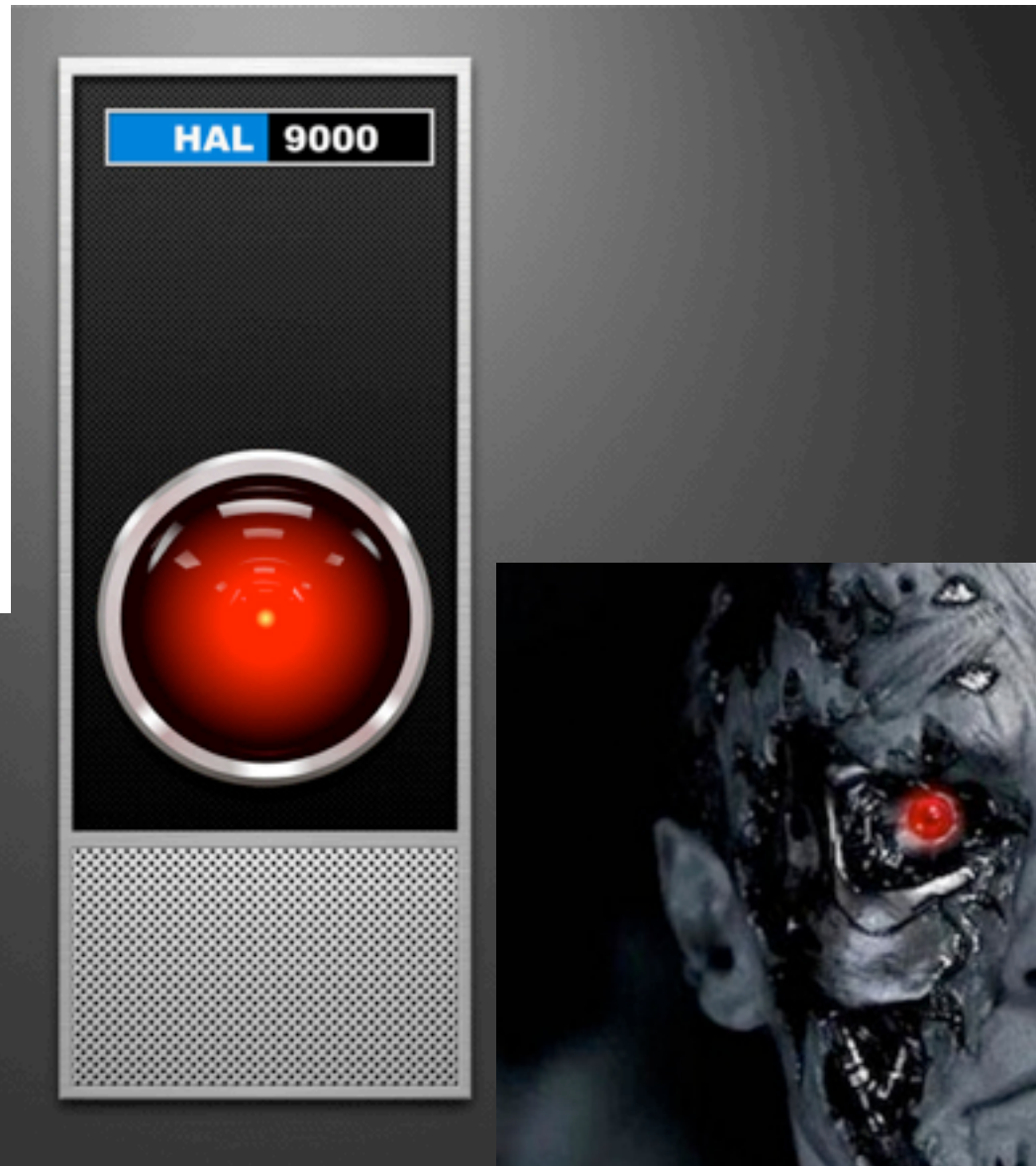
Artificial Intelligence

- what is Intelligence? - Sensing, Predictive Modelling, Acting on it.

- AI. Any technique that mimics human intelligence using logic, if-then rules, decision trees, and deep learning (neural nets)

- OSCAR can use the logic rules in form of SQL queries for you to find your target patients

Present day A.I.

Google Home = present day HAL

facebook

amazon.ca

Machine Learning

- subsets of Artificial Intelligence

Artificial Intelligence

Machine Learning

Deep Learning
The subset of machine learning composed of algorithms that permit software to train itself to perform tasks, like speech and image recognition, by exposing multilayered neural networks to vast amounts of data.

A subset of AI that includes abstruse statistical techniques that enable machines to improve at tasks with experience. The category includes deep learning

Any technique that enables computers to mimic human intelligence, using logic, if-then rules, decision trees, and machine learning (including deep learning)

What can AI do?

- AI adapts through progressive learning algorithms, now using neural network

- AI automates repetitive learning and discovery through data.

- AI analyzes more and deeper data with incredible accuracy

- NOW POSSIBLE with CHEAP MODERN COMPUTERS (fast CPU, GPUs, neural net chips) and BIG DATA

AI is now possible for everyone

- NOW POSSIBLE with CHEAP MODERN COMPUTERS (fast CPU, GPUs, neural net chips see below) and BIG DATA. and easy to use SOFTWARE e.g. Google Tensorflow

- A.I. solutions are NOT BRUTE FORCED but use algorithms **HAL** (Heuristically programmed ALgorithmic computer)
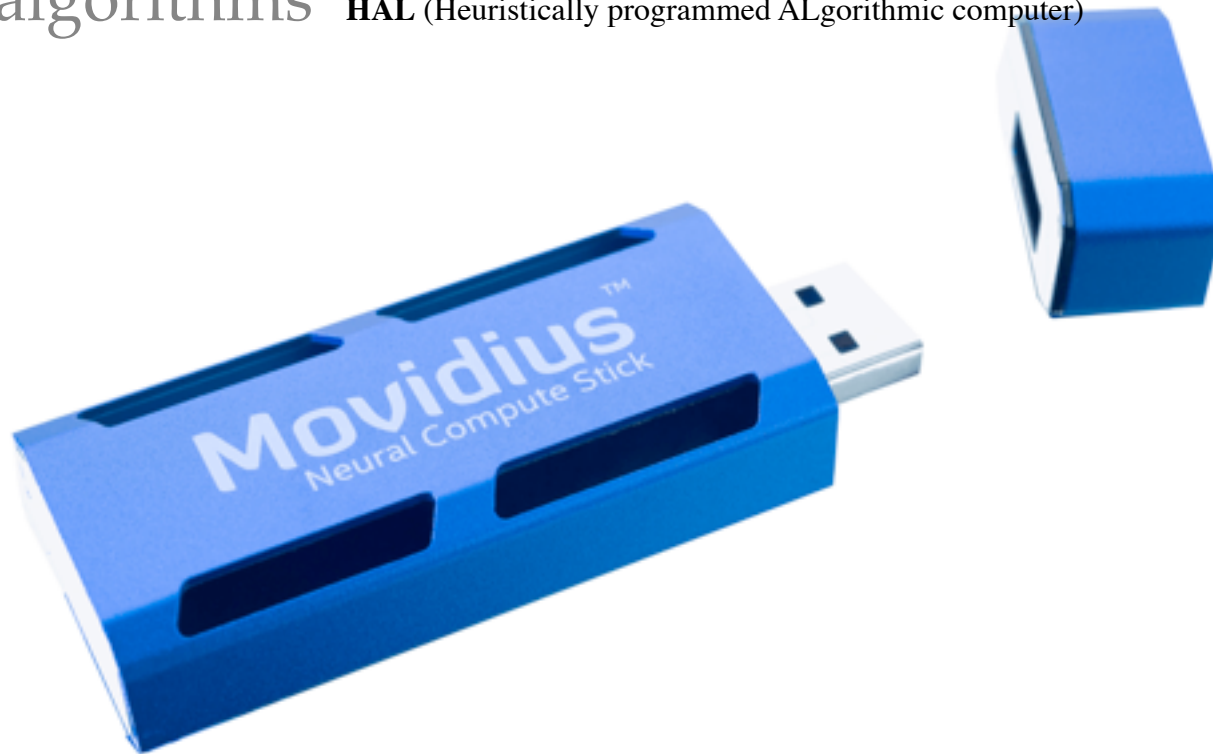
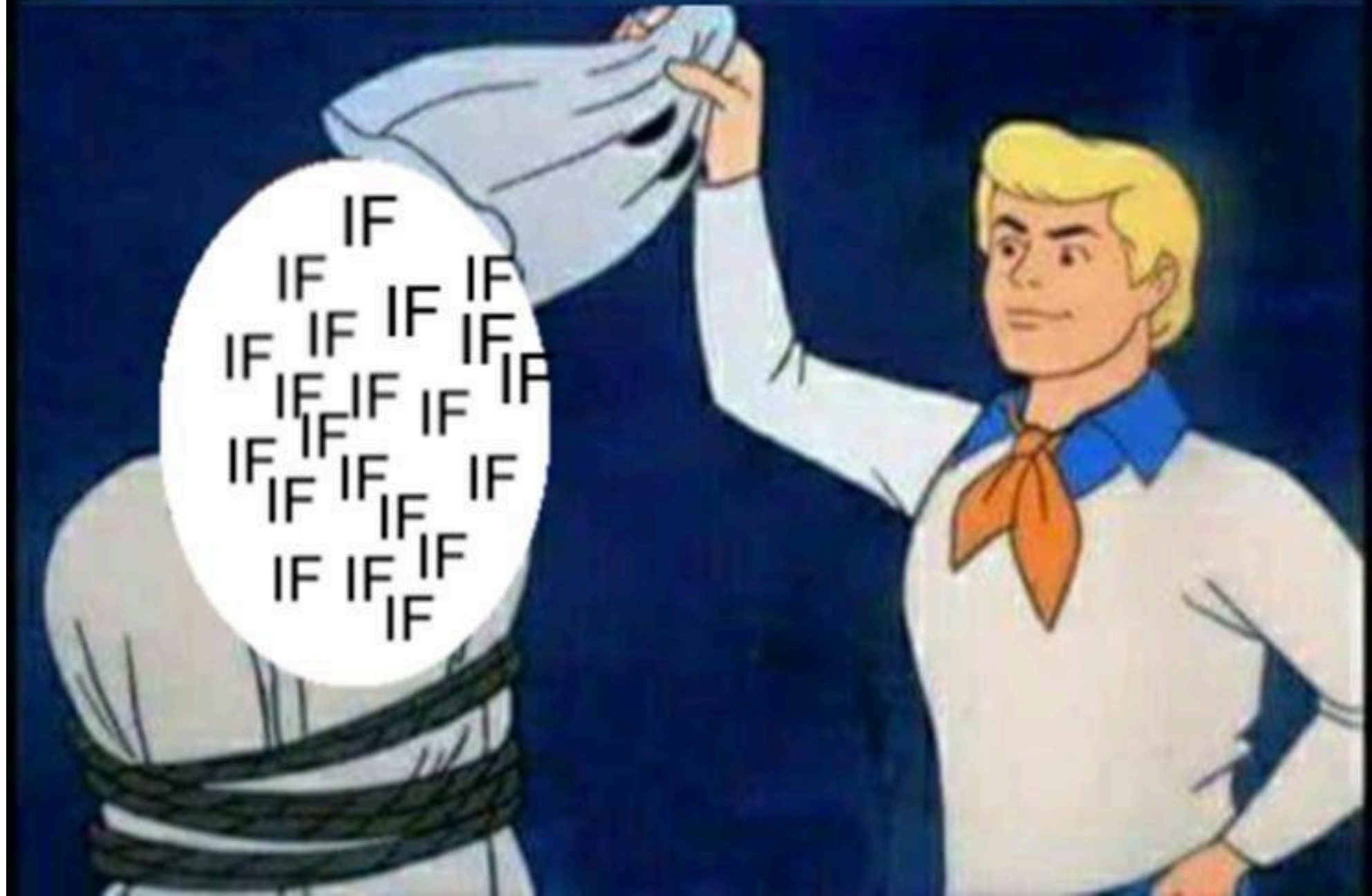Okay gang, let's see who the advanced AI really is.

Can AI replace doctors?

- cannot replace creativity, compassion, craftsmanship
BUT CAN BE SIMULATED
- Clinician is still needed
until a generalized self-learning AI exists
- BUT programs will write own programs

EMR usage in Ontario

Criteria

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
PAPER	ENTER DATA	EARLY DATA USE	LOOK AHEAD / PREDICT	POPULATION DATA USE	INTEGRATE

Functional Areas

Practice Management
- Appointment Scheduling
- Practice Billing
- Communication & Messaging

Information Management
- Encounter Documentation
- Data Quality & Nomenclature Consistency
- Document Management

Diagnosis & Treatment Support
- Results Management
- Referral & Consultation Tracking
- Prevention & Screening
- Complex Care / Chronic Disease Management

Key Measures

State of EMR

- current EMRs make doctors perform more like machines.
- less patient eye contact.
- more time with drop down menus, filling in text boxes
- locked in by vendor who don't allow easy access to your data e.g. cloud

Let's get back to LDL

OPEN your OSCAR
go to ADMIN->Query by Example
into search box type
select * from measurements where type
= "LDL" limit 10;

if you got results YOU'RE GOOD!

Rule Based A.I.

- Now we use A.I. based on preprogrammed rules to find the LDL

- IF statements

- e.g. If A1C > 6.5% then patient is diabetic

- e.g. If LDL > 4.9 then F.H.

- e.g. IF BP > 140/90 then hypertension

- but medicine isn't that simple

EMR screening query

- rule based AI => logical SQL query

- special SQL queries can search for certain lab values correlate with physical parameters i.e. BP, weight, demographic, existing diagnoses and prescription

- requires understanding of SQL schema to do the searching

- deterministic (query => same result)

Download my Lab search

go to my OSCAR google Class in ABOUT

download
Report by Template search for recent abnormal lab result in measurements

Latest lab result <=> ?

Dr. Pun Searches for patients by recent LAB result A1C , ie
for range value

Step 1:	Lab Test type	LDL
Step 2:	LAB test value >=<	> 5
Step 3:	Generate Query	Run Query

Show/Hide Options

Searching LDL > 5

Latest lab result <=> ?

Dr. Pun Searches for patients by recent LAB result A1C , ie HB, PSA .CALC > 6.0 , use % for wildcard or and dataField for r

Hide/Show Query

demographicNo	Dem	dateObserved	age	last_name	first_name	type	dataField	co
32	32	2018-04-	6 72	S	E	LDL	5.42	
23	23	2018-03-	0 57	L		LDL	5.46	
39	39	2018-03-	9 47	Y		LDL	5.31	
62	62	2017-12-	9 35	C		LDL	5.01	
26	26	2017-11-	5 58	C		LDL	5.08	
26	26	2017-10-	5 61	Y		LDL	5.15	
32	32	2017-07-	5 40	Z		LDL	5.37	
39	39	2017-04-	5 70	M	(NO ANSWER)	LDL	5.16	
14	14	2016-12-	3 30	T		LDL	5.31	
35	35	2012-05-	7 33	H		LDL	5.62	

patient names

<-- Back | Print | Export to CSV | Export to XLS

click on link to go to echart FIND your LDL patients and review

SQL query to snapshot all patient data

- a new data structure and SQL scripts needed -> LDL, A1C, LDL, ALT, BPs, BMI , statin use that pools data from multiple tables

- queries the latest lab result of every patient and along with the drugs they are on

- this requires OSP support

new schema with CV risk criteria (GOAL study)

```sql
CREATE TABLE `recentmeasurements` (
 `id` int(10) unsigned NOT NULL AUTO_INCREMENT,
 `demographic_no` int(10) NOT NULL DEFAULT '0',
 `name` varchar(50) NOT NULL DEFAULT '',
 `dateObserved` datetime NOT NULL,
 `age` int(3) DEFAULT '0',
 `A1C` varchar(10) DEFAULT '',
 `TCHL` varchar(10) DEFAULT '',
 `LDL` varchar(10) DEFAULT '',
 `HDL` varchar(10) DEFAULT '',
 `TG` varchar(10) DEFAULT '',
 `ALT` varchar(10) DEFAULT '',
 `BPs` varchar(10) DEFAULT '',
 `BPd` varchar(10) DEFAULT '',
 `HT` varchar(10) DEFAULT '',
 `WT` varchar(5) DEFAULT '',
 `BMI` varchar(5) DEFAULT '',
 `NOSK` int(3) DEFAULT '0',
 `ALC` int(3) DEFAULT '0',
 `Exer` int(4) DEFAULT '0',
 `creat` int(3) DEFAULT '0',
 `ACR` int(4) DEFAULT '0',
 `diabetes` varchar(3) DEFAULT '',
 `hyperten` varchar(3) DEFAULT '',
 `CVD` varchar(3) DEFAULT '',
 `statin` varchar(5) DEFAULT '',
 `eze` varchar(5) DEFAULT '',
 PRIMARY KEY (`id`),
 KEY `demographicNo` (`demographic_no`)
) ENGINE=MyISAM AUTO_INCREMENT=13710 DEFAULT CHARSET=latin1;
```

SQL query to young abnormal LDL

- query young people with LDL > 4

```
select * from recentmeasurements where age > 20 and age <30
and LDL > 4;
```

id	dem...	name	dateObserved	age	TCHL	HDL	LDL	A1C	ALT	BPs	BPd	HT	WT	BMI	NOSK	ALC	Exer	diabetes	hyperten	CVD	statin	eze
4	13	LI,...	2017-06-17...	29	7.24	1.92	4.82	0.055	21	121	81	176	152.7	22.4	0	0	150	NULL	NULL	NULL	NULL	NULL
5	18	A...	2017-03-21...	22	6.65	1.34	4.39	0.057	16	100	76	160	149	26.5	0	0	NULL NULL	NULL	NULL	NULL	NULL	NULL
7	24	N...	2018-05-03...	26	6.17	1.63	4.09	0.068	49	139	104	174	202	30.3	0	0	0	250	NULL	NULL	YES	NULL
9	27	Z...	2011-10-26...	27	5.88	1.57	4.07	0.054	19	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL NULL	NULL	NULL	NULL	NULL	NULL
11	32	H...	2015-08-24...	25	7.04	1.08	4.76	0.067	201	120	88	176	175	25.7	0	0	NULL	250	NULL	NULL	NULL	NULL

SQL query abnormal LDL

- query people with LDL > 5 possible FH

```
1  select * from recentmeasurements where LDL > 5;
2
```

⚙ ▾   Query Favorites ▾   Query History ▾

id	dem...	name	dateObserved	age	TCHL	HDL	LDL	A1C	ALT	BPs	BPd	HT	WT	BMI	NOSK	ALC	Exer	diabetes
328	13	CHA...	2017-12-23...	35	6.88	1.44	5.01	0.053	23	113	75	173	139.8	21.2	7	0	50	NULL
523	40	TA...	2016-12-24...	30	7.12	1.01	5.31	0.049	27	153	93	180	198	27.8	0	0	NULL	NULL
728	82	LOO...	2018-03-29...	57	7.62	1.31	5.46	0.058	32	134	83	157.5	122	22.4	NULL	NULL	NULL	NULL
882	59	YAN...	2017-10-13...	61	5.96	1.51	5.15	0.064	16	111	76	148	119	24.7	0	0	60	250
890	04	CHA...	2017-11-22...	58	7.86	2.38	5.08	0.058	19	112	75	148	96.6	NULL	0	0	NULL	NULL
1088	20	SPR...	2018-04-18...	72	7.90	1.49	5.42	0.055	15	149	100	157	168	31	0	0	NULL	NULL
1098	98	ZHO...	2017-07-30...	40	5.39	0.86	5.37	0.06	34	112	72	NULL	160	NULL	0	0	100	NULL
120	30	HU, ...	2012-05-28...	33	7.67	0.99	5.62	0.059	30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
1327	50	YIN,...	2018-03-09...	47	8.69	1.58	5.31	0.055	17	129	89	176	173	25.4	0	0	NULL	NULL
1334	58	MA...	2017-04-12...	70	8.49	1.55	5.16	0.121	20	163	81	175	155	23	0	0	NULL	250

EMR query novel drug

- find patients who are high risk and may benefit from novel treatment

- LDL, A1C, LDL, ALT, BPs, BMI , statin use

```
select * from recentmeasurements where statin = "YES" and
eze = "YES" and LDL > 2
;
```

QUERY PATIENTS who have LDL > 2 and on Statin and Ezetimide

	Query Favorites		Query History											Run Current	
id	demographic_no	n..	dateObserved	age	TCHL	HDL	LDL	A1C	ALT	BPs	BPd	HT	WT	BMI	NOSK	A..	Exer	diabetes	hyperten	statin
74		021 Y..	2018-03-15...	70	6.23	1.14	4.22	0.072	29	136	56	157	146	26.9	0 N..	NULL	250	401	YES
88		459 Y..	2017-10-13...	61	5.96	1.51	5.15	0.064	16	111	76	148	119	24.7	0 0	60	250	NULL	YES
9		12 Z..	2017-11-11...	80	6.56	2.64	3.58	0.068	23	120	70	155	86	16.3	0 0	NULL 250	NULL	YES

EMR query novel drug

- query patients who have diabetes and BMI >= 30 and LDL > 2

```
ct * from recentmeasurements where diabetes = 250 and
>=30 and LDL > 2;
```

	dateObserved	age	TCHL	HDL	LDL	A1C	ALT	BPs	BPd	HT	WT	BMI	NOSK	ALC	Exer	diabetes	hyperten	CVD	statin	eze
...	2013-02-07...	82	3.82	1.21	2.15	0.07	18	119	69	167	196	31.9	NULL	NULL	NULL	250	401	NULL	NULL	NULL
...	2013-11-06...	39	4.21	1.28	2.50	0.064	26	124	95	175	209	31	NULL	NULL	NULL	250	NULL	NULL	NULL	NULL
...	2015-10-18...	43	5.65	1.48	3.67	0.059	17	133	92	179	257	36.5	0	0	NULL	250	401	NULL	NULL	NULL
...	2016-04-29...	73	4.56	1.50	2.51	0.057	11	154	100	167	243	39.6	0	0	NULL	250	401	NULL	NULL	NULL
...	2016-06-17...	35	5.76	1.19	3.66	0.057	47	117	97	160	201	35.7	0	0	180	250	NULL	NULL	NULL	NULL
...	2017-05-04...	45	4.41	1.72	2.18	0.06	34	130	80	163	176	30.1	0	0	NULL	250	NULL	NULL	NULL	NULL
...	2017-07-08...	52	5.60	0.94	3.42	0.097	19	146	99	170	210	33	0	0	NULL	250	NULL	NULL	NULL	NULL
...	2017-08-03...	36	5.67	1.11	3.56	0.061	33	119	80	183	222	30.1	0	0	100	250	NULL	NULL	NULL	NULL
...	2017-10-20...	76	5.16	1.70	3.01	0.064	22	163	109	170	205	32.2	0	0	150	250	NULL	NULL	NULL	NULL
...	2017-10-25...	23	4.98	1.10	3.32	0.069	30	160	100	180	400	56.1	0	0	0	250	NULL	NULL	NULL	NULL
...	2017-12-20...	79	4.93	1.03	2.39	0.059	39	152	92	170	199	31.3	0	0	0	250	401	428	YES	NULL
...	2017-12-20...	69	5.26	0.77	3.05	0.063	35	134	75	166	196	32.3	0	0	0	250	401	NULL	NULL	YES
...	2018-03-01...	78	4.15	0.81	2.05	0.07	15	151	88	146	155	33	0	0	5	250	401	NULL	NULL	NULL
...	2018-03-08...	42	5.02	1.24	2.02	0.07	26	108	80	150	156	31.5	0	0	NULL	250	401	NULL	YES	NULL
...	2018-03-12...	47	4.03	1.05	2.25	0.073	17	121	83	166	209	34.5	NULL	NULL	NULL	250	NULL	NULL	NULL	NULL
...	2018-03-19...	52	4.97	1.15	3.37	0.062	28	142	84	165	180.4	30.1	0	0	210	250	NULL	NULL	NULL	NULL
...	2018-04-24	47	5.39	0.94	3.50	0.066	8	157	100	160	169	30	0	0	100	250	NULL	NULL	YES	NULL

Flat data structure

- this pooled data structure will be the basis of training data for our neural network to classify diabetes, hypertension , CV disease (ICD-9 codes)

```
select * from recentmeasurements where statin = "YES" and
eze = "YES" and LDL > 2
;
```

QUERY PATIENTS who have LDL > 2 and on Statin and Ezetimide

						dateObserved	age	TCHL	HDL	LDL	A1C	ALT	BPs	BPd	HT	WT	BMI	NOSK	A..	Exer	diabetes	hyperten	statin
id		demographic_no		n..																			
74			021	Y..	2018-03-15...	70	6.23	1.14	4.22	0.072	29	136	56	157	146	26.9	0	N..	NULL	250	401	YES
88			859	Y..	2017-10-13...	61	5.96	1.51	5.15	0.064	16	111	76	148	119	24.7	0	0	60	250	NULL	YES
97			12	Z..	2017-11-11...	80	6.56	2.64	3.58	0.068	23	120	70	155	86	16.3	0	0	NULL	250	NULL	YES

Instead of using rule based logic to classify, machine language uses examples in a neural net to recursively and statistically classify adjusting weights of the nodes so the error is minimized.

neural net demonstration
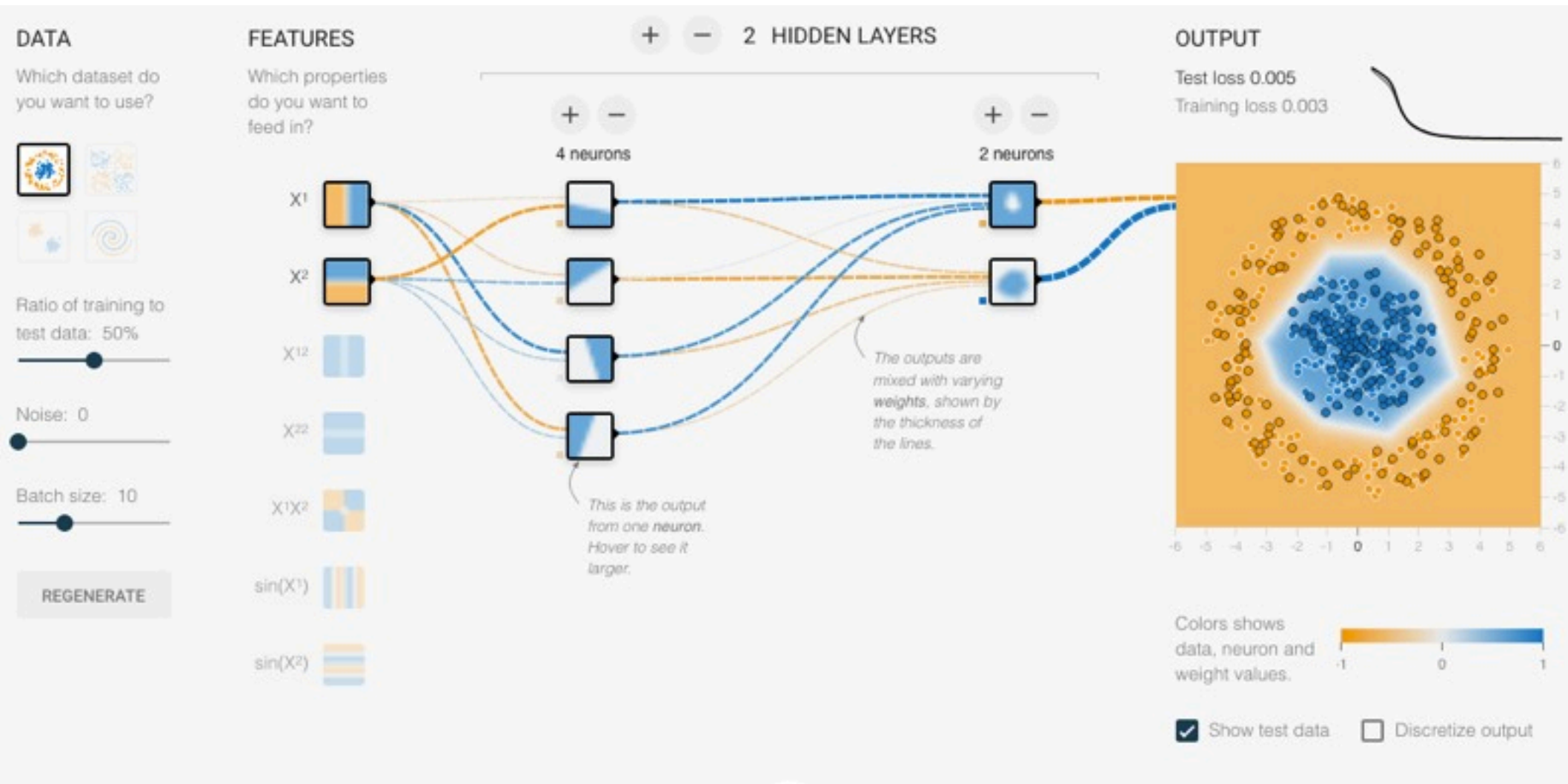
Take some data, parameters with classified result feed into neural net => training
feed test data

logistic regression classifier

Google Tensorflow neural net training classifer
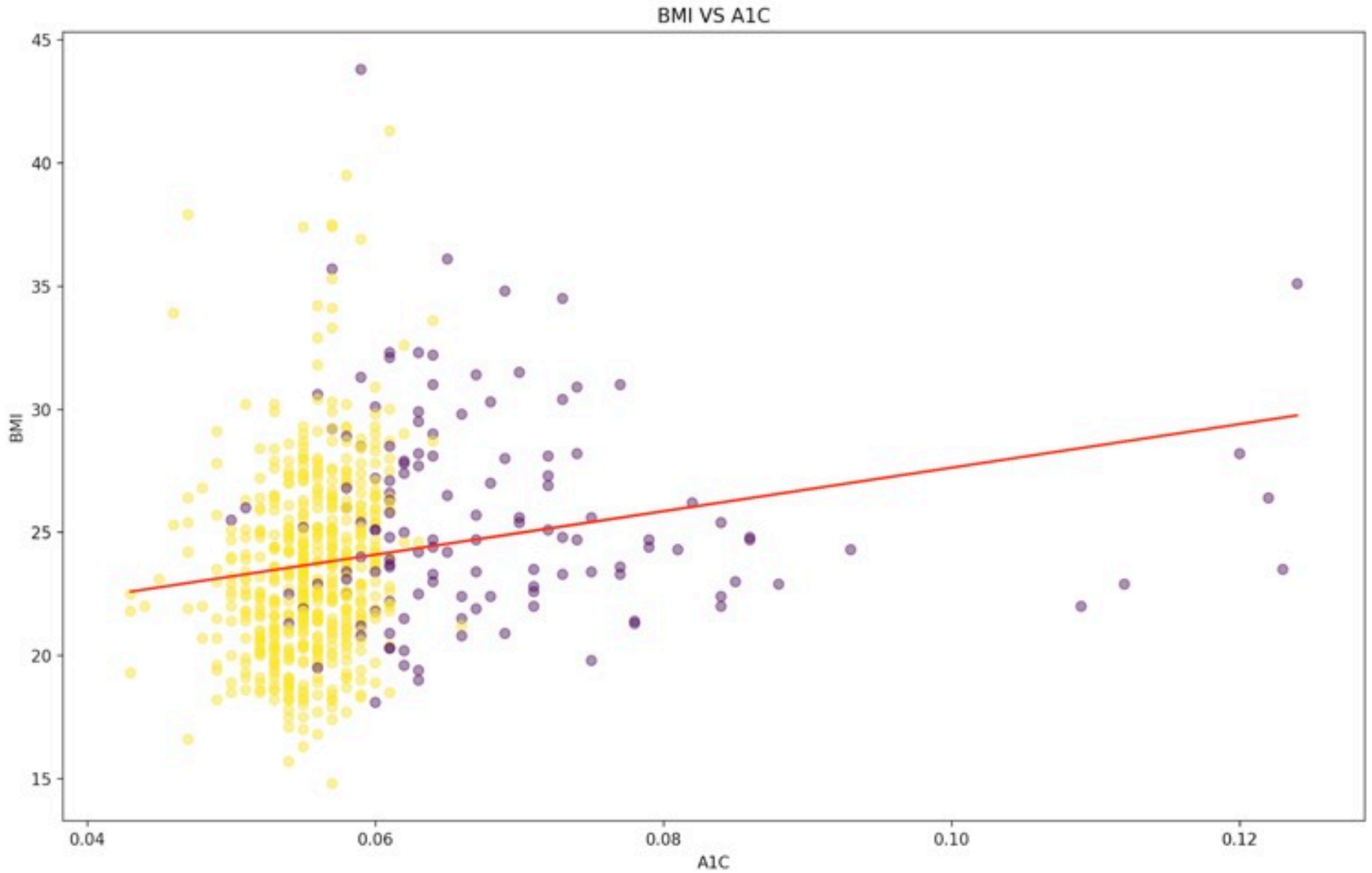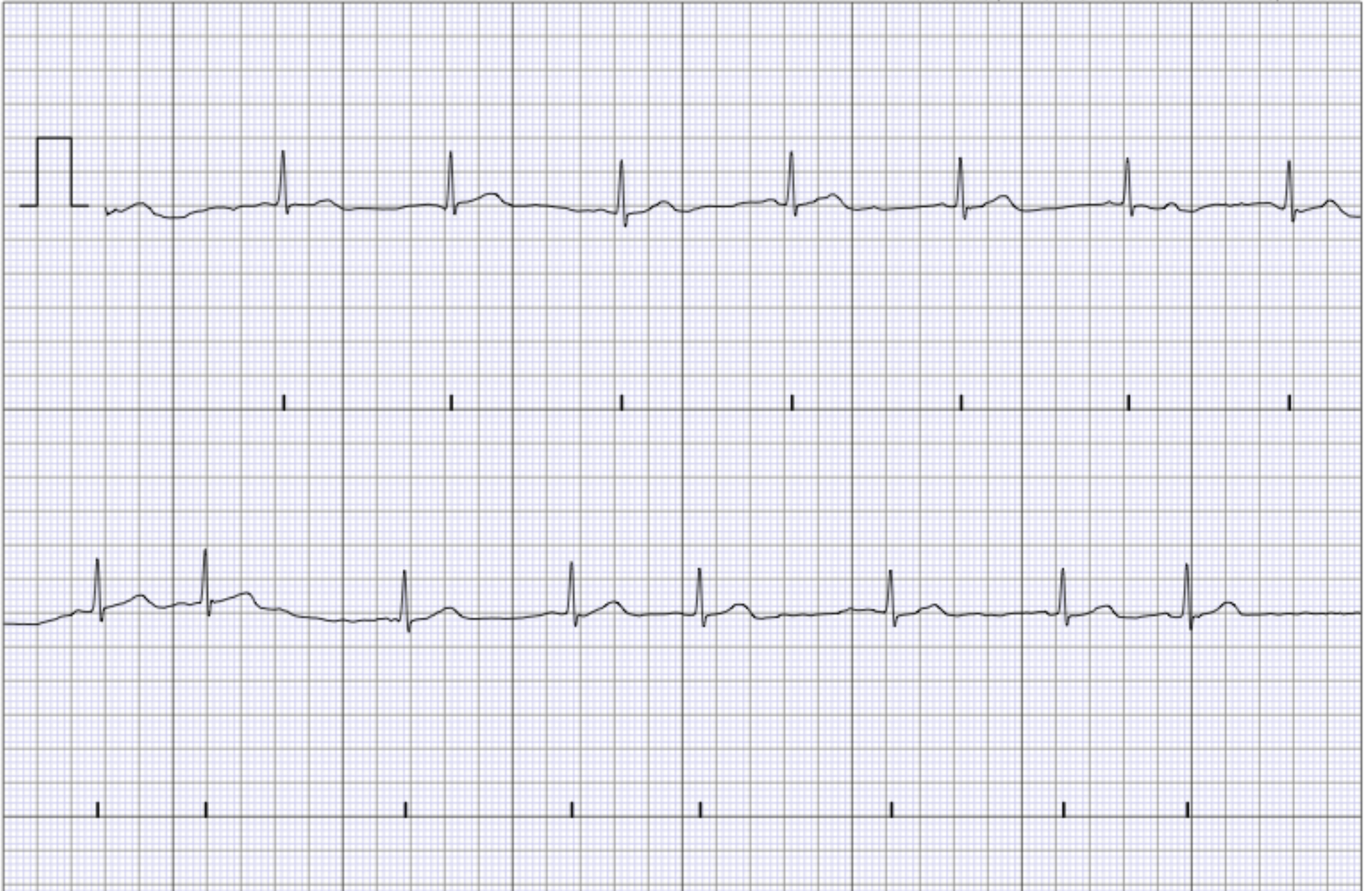
Information Gap & Decision Gap
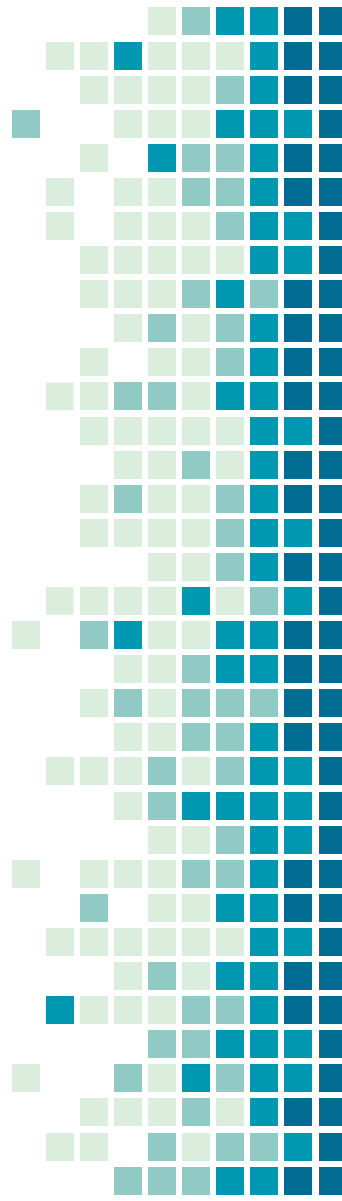
Information We See Today

Actual Biology

Clinic Visit Frequency

Frequency of Health-related Decisions

Kardia Mobile

Kardia Mobile

Enhanced filter, Mains Filter: 60 Hz　　Scale: 25mm/s, 10mm/mV

LAB RESULT TRACKING

lab result workflow paper

- give patient req for blood work

- make a photocopy of it, put it into pile

- patient goes for blood work

- patient comes back for follow up, patient informed

- take the photocopy, destroy it

lab result workflow EMR

- give patient req for blood work printed from EMR lab form MOHLTC eform

- make a tickler to remind you took blood work

- Can't enter TRACKING NUMBERS

- results come back, tell patient to come back, patient informed, clear tickler

failure for results to f/u

- patient simply didn't go to take the blood test.

- the lab didn't do the blood test.

- the lab did the blood test and didn't report it. (didn't push to HL7)

- somehow you missed the abnormal lab test; you thought the specialist will f/u

- WHO IS RESPONSIBLE?

G.P. vs specialists

- some specialists tell patients they have seen to follow up their pathology results with their family doctor

- e.g. H pylori, intestinal metaplasia, PSA

- Do not ASSUME the specialist will follow up!

use my RbT to search

Report By Template

Search lab result not back
Search Lab req for LAB TYPE request
but LAB results was not back -in the time interval by Ian Pun MD 2

Step 1:	Lab Type search for:	PSA
Step 2:	NUMBER of MONTHS going back:	3 months
Step 3:	Generate Query	Run Query

Show/Hide Options

measurement blood results

- make sure your lab results are pushed to measurements

- go to ADMIN->query by examples

- select * from measurements where type = "PSA" limit 10;

- Click on QUERY. does it work?

measurement blood results

- to use my RbT, make sure use labreq form when ordering blood- ask your OSP

- make sure blood results appear as measurements. CBC, A1C, PSA, TSH

use my RbT to search

Report By Template

Search lab result not back
Search Lab req for LAB TYPE request
but LAB results was not back -in the time interval by Ian Pun MD 2

Step 1:	Lab Type search for:	PSA
Step 2:	NUMBER of MONTHS going back:	3 months
Step 3:	Generate Query	Run Query

Show/Hide Options

use my RbT to search

result for searching PSA ordered

Report by Template

Search lab result not back

Search Lab req for LAB TYPE request
but LAB results was not back -in the time interval by I...

Hide

date	demo	name
2018-05-19	2	IG
2018-05-23	3	M
2018-05-23	2	N
2018-05-28	2	IG
2018-05-29	2	
2018-05-30	2	G
2018-06-04	2	NG
2018-06-06	3	
2018-06-11	1	
2018-06-11	1	IAN

<-- Back   Print   Export to CSV   Export to XLS

use my lab search RbT

- periodically look for abnormal lab results like PSA

- search for lab type and value

- eg search for PSA > 4

Latest lab result <=> ?

Dr. Pun Searches for patients by recent LAB result A1C , ie HB, PSA .CALC > 6.0 , use % for wildcard or and dataField for range value

demographicNo	Dem	dateObserved		age	last_name	first_name		type	dataField	comm
397	397	2018-04	:00	79	P			PSA	8.7	
324	324	2018-04	:30	73	S			PSA	5.49	
137	137	2018-04	:29	70	T		SC	PSA	5.20	f/t 0.29
377	377	2018-03	:01	73	S		)	PSA	4.97	
360	360	2018-02	:25	77	F			PSA	11.40	
255	255	2018-01	:28	66	W			PSA	4.91	
409	409	2018-01	:26	65	T			PSA	4.67	
204	204	2017-12	:00	52	P			PSA	5.0	
197	197	2017-11	:25	76	F			PSA	10.32	
320	320	2017-11	:05	72	G			PSA	6.06	
143	143	2017-11	:13	64	LI			PSA	10.23	
245	245	2017-10	:02	76	N	search PSA		PSA	7.76	got the prostate bi
391	391	2017-10	:57	81	L			PSA	4.76	
278	278	2017-09	:39	64	D			PSA	6.91	
335	335	2017-09	:42	79	C			PSA	4.80	
202	202	2017-09	:17	83	Z			PSA	5.31	
208	208	2017-07	:00	84	L			PSA	12.2	
271	271	2017-06	:00	50	T		E)	PSA	10.02	f/t low Dr,
568	568	2017-05	:00	70	C			PSA	5.2	f/T 0.17 dr, P
387	387	2017-05	:00	80	Z			PSA	8.8	
398	398	2017-04	:15	70	M		ER)	PSA	6.74	
671	671	2016-11	:48	91	LI			PSA	8.54	
249	249	2016-06	:57	65	G			PSA	4.07	
395	395	2016-06	:27	68	G		IGH)	PSA	6.02	
372	372	2016-05	:00	66	S			PSA	4.4	dr. f/t 0.13
308	308	2015-09	:59	62	S			PSA	4.58	
348	348	2012-03	:46	56	G			PSA	6.08	
258	258	2011-06	:20	69	P			PSA	7.56	
307	307	2011-05	:51	70	D			PSA	4.02	

PHOTO UPLOADING

Photo documentation

- BMJ 1998 Nov 28;317(7171):1523.

Videos, photographs, and patient consent. Most patients agree to be videoed for teaching and publication purposes.

- Patients will demand it.

".... On anoscopic examination, he has a hemorrhoidal bulging in the traditional 1 o'clock, 5 o'clock and 9 o'clock positions. I suggested that I apply a band for him, but he wanted me to take a picture to show him before he would consent for banding. Unfortunately, I do not have the equipment to achieve such a request of the patient.................."

google: photo consent eform oscaremr

PHOTO CONSENT FORM

To be completed following discussion with the patient

PATIENT NAME: FAKE1, JACKY

PATIENT'S ADDRESS: 1 fake street, Toronto, ON, M1D 4F5

We believe photo documentation will enchance your medical care. This authorization grants permission to use your image in perpetuity for clinical documentation and educational purposes.

By signing this document, you agree:

1. To allow the recording of your image (photographs and videos with smartphone camera), to be stored in your electronic chart.
2. To distribute and display your image in any medium, for the purpose of clinical documentation and education. Images may be stored in a private secure cloud server on the internet.
3. To grant permission to other entities to reproduce the images for educational purposes, in which case your anonymity will be assured through all reasonable means.
4. That there is no reimbursement for the right to take, or to use your photograph or recording.

Nature of image and/or spoken words to be recorded:

Any baseline normal examination or pathology in image or function

Purpose of recording, image and/or spoken words, including the intended audience:

To document medical problems (e.g. skin changes) which may change over time. For future reference, review, and educational purposes, as appropriate. When necesary, the images may be reviewed by the patient and health care providers - including doctors, nurses, trainees, and clinic support staff.

take photos

Rashes: dermatitis, eczema, rosecea, petechiae
Infections: abscess, cellulitis, fungal nail, shingles, mastitis, warts, ring worm
Lesions: sebaceous cysts, skin cancer, moles on back, keloids, ulcers
Injuries: hematomas, bruises, lacerations, burns

Rectal: Hemorrhoids, fistulas
GU: penile warts, vaginal warts, cervical discharge

Ophthalmology: conjunctivitis, stye, chalazion, scleral icterus, dislocated lens
MSK: scoliosis, arthritis (hands, knees), bunions, ganglion, joint swelling
ENT: goiter, tonsils, TM's, cold sores, shingles

Pre and post op pictures, incisions

WHAT CAMERA

Tom's Hardware guide 2018

Google Pixel 2 XL Best Overall Camera Phone

Samsung Galaxy S9+ Best Camera Features

Apple iPhone X Best iOS Camera Phone

Asus ZenFone 3 Zoom   Best Budget Camera Phone

LG G7 ThinQ   Best AI Features

Sony Xperia Z3
Hua wei good budget phones
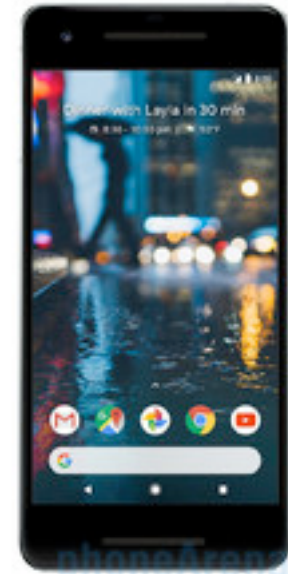
two device hack for photos

Use desktop/laptop computer for data viewing, searching and entry

Use smartphone for picture taking and Google dictating

OPEN OSCAR on both devices

Go to the patient eChart on desktop/laptop

Go to the patient demographic screen- add a document, take a picture using Camera app , click on checkmark and click on attach.
The photo will appear in the computer when refreshed.

You can also attach from the photo library in your phone
I notice some OSCARs may not have the "PHOTO" document type, ask your OSP to include it or use "OTHER"

dislocated lens implant
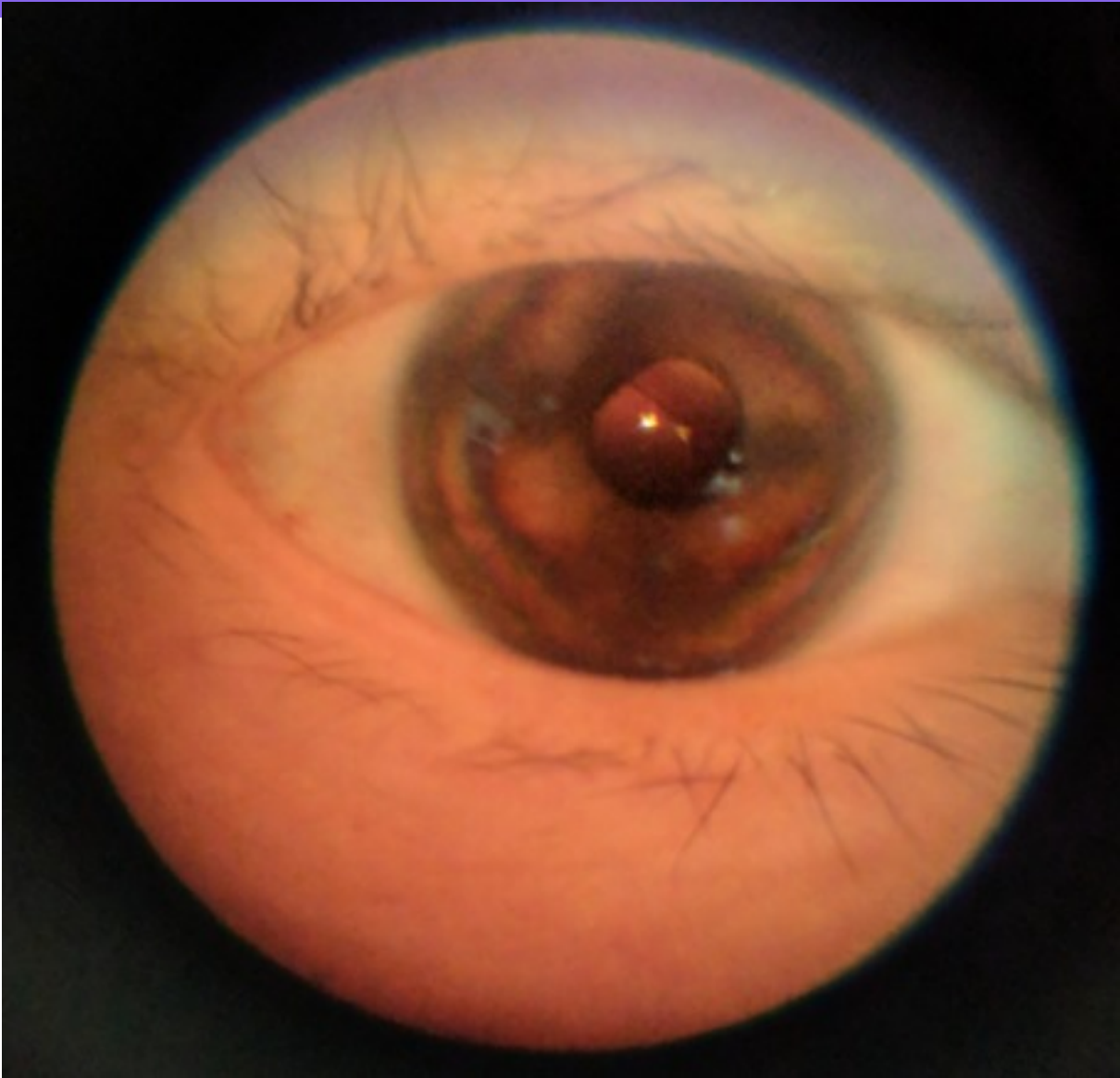
place the google phone right to the ophthalmoscope, click on magnification on the photo app

taken thru WelchAllyn panoptic ophthalmoscope

CATALYS femtosecond laser

Bochner Eye Institute

laser cuts cataract into squares - Google Pixel

take videos

MSK: range of motion , Tremours, Gait

Neurologic: Dementia Autism

Live specimens

MVA evidence: Dash cam videos

take mp4 from smartphone. upload directly , or bluetooth to computer every 10 seconds is about 20MB memory. 20 MB may be the upload size for OSCAR attachments.

video of red deer tick Lyme disease vector

record video off scopes

camera of operating microscope or endoscope to output HDMI video

use HDMI recorder

$200 device, intended for video game recording, captures HDMI signal from scope onto SD card.
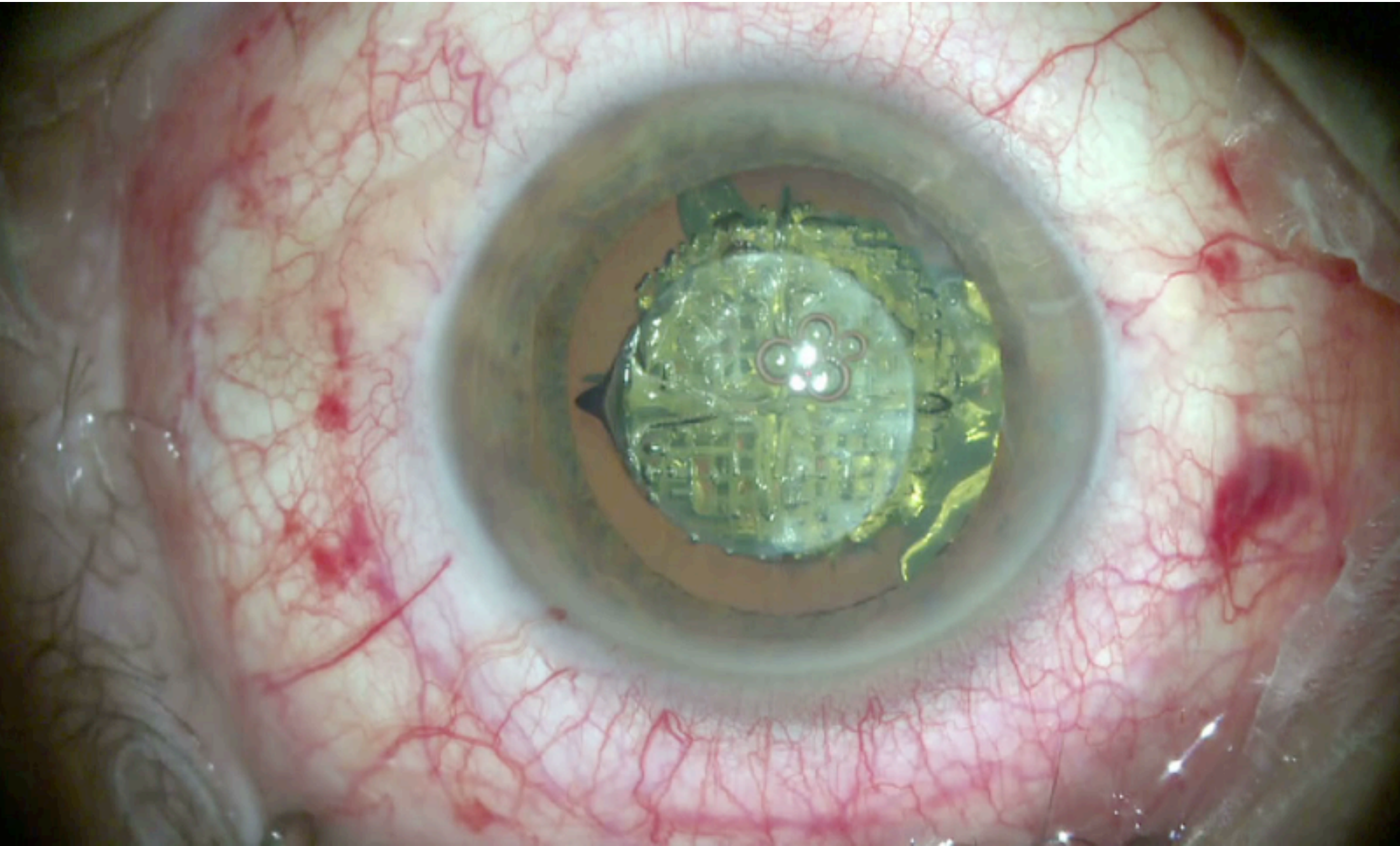
video of cataract extraction & IOL implant after femtosecond laser
performed by Dr. Raymond Stein
recorded by Dr. Ian Pun using video gaming capture hardware

OBS recording software
used at Bochner Eye Institute
by Dr. Ian Pun
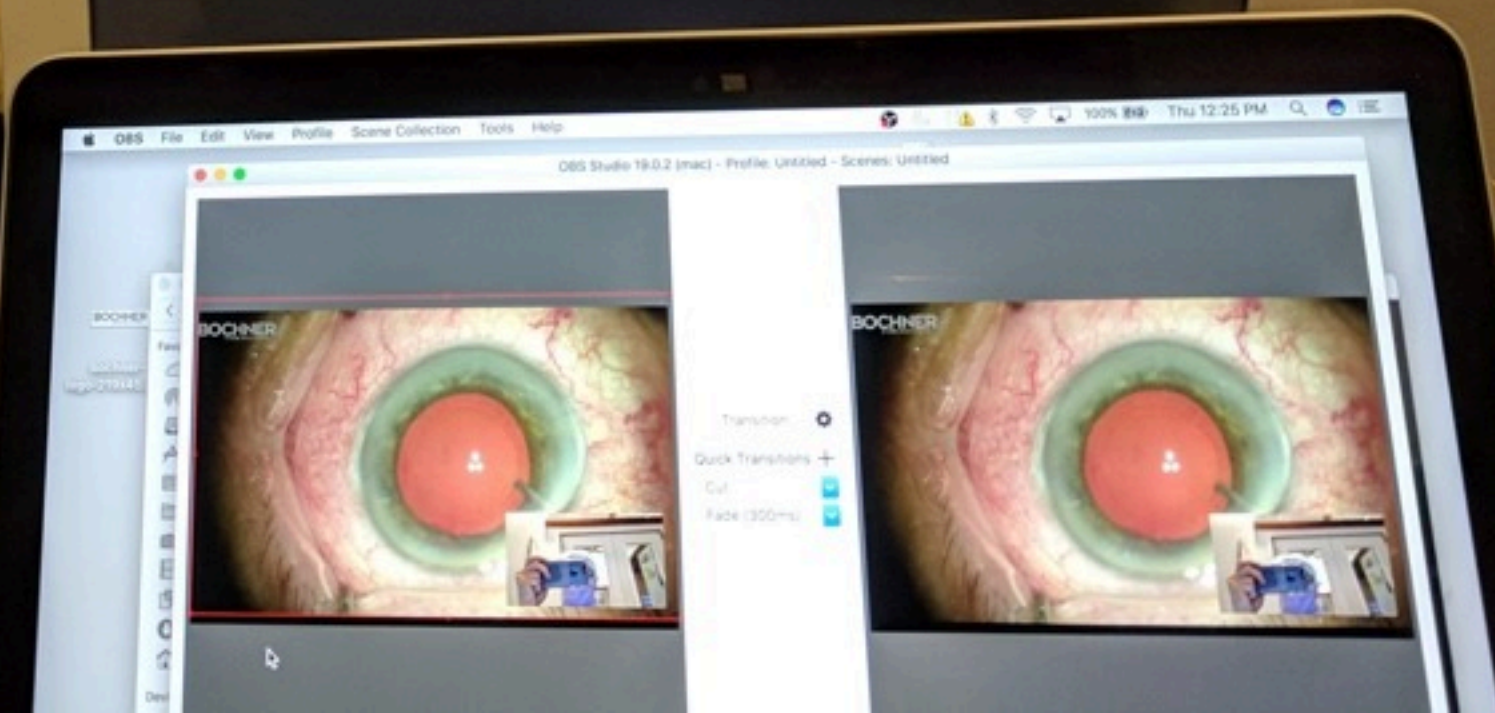
PUBLIC VACCINE REPORTING

Public Health Vaccine

- Doctors must report to public health on giving vaccine July 1, 2018

- no website or webservice for doctors in place yet. no OSCAR client yet.

- https://tph.icon.ehealthontario.ca/#!/welcome

- **Digital Health Immunizations Repository (DHIR)** HL7 FHIR Implementation Guide

- Note: On July 1, 2018, the day section 6 of Schedule 2 to the *Protecting Patients Act, 2017* comes into force, the Regulation is amended by adding the following section: (See: O. Reg. 146/18, s. 2)

Immunization report

5. (1) Every physician or nurse who administers an immunizing agent to a child in relation to a designated disease shall provide a report to the medical officer of health for the public health unit in which the immunizing agent was administered within,

(a) 14 days after administering the immunizing agent; or

(b) such earlier date as the medical officer of health may specify in writing. O. Reg. 146/18, s. 2.

(2) The report must include the following information:

1. The child's full name, address and telephone number.

2. The child's sex.

3. The child's date of birth.

4. The child's health number assigned by the General Manager under the *Health Insurance Act*.

5. The full name of every parent of the child.

6. The date of administration of the immunizing agent.

7. The trade name and immunizing agent for the vaccine product administered.

8. The lot number and expiry date of the immunizing agent.

9. The full name, title (including professional designation identification) and contact information of the physician or nurse who administered the immunizing agent. O. Reg. 146/18, s. 2.

(3) Subject to subsection (4), the physician or nurse must provide the report using one of the following methods:

1. Submission through Immunization Connect Ontario for Healthcare Providers (ICON HCP).

2. Submission through a secure transfer of immunization records from an electronic medical records system that is compatible with the system used by the medical officer of health. O. Reg. 146/18, s. 2.

ICON system is NOT user friendly

- lots of credentials needed to sign on

- too many menus

- Lot numbers are not sorted

- takes minutes to enter one vaccine, as many visits require multiple vaccines

- physicians were not involved in implementation process

immunizations

E| received on that date.

N020210
N020211
M040622
M043423
N005621
L009464
L016269
L031432
M001197
M018483
1362 AA
K001934
K021623
023341
M014911
N020211
L009464
L016269
M001197
0068AA

0068AA

2 Months

ō **DTaP-IPV-Hib**
*Diphtheria, Tetanus, Pertussis,
Polio*, Hib

ō **Pneu-C**
Pneumococcal conjugate

ō **Rota-1**
Rotavirus monovalent

4 Months

ō **DTaP-IPV-Hib**
Diphtheria, Tetanus, Pertussis

Save

Vaccine reporting system should be implemented like this

- when vaccine is delivered to physician, the quantity and lot number should be given to the physician as a digitally signed cryptographic ledger, not a packing slip

- this cryptographic ledger should be decremented as each vaccine is administered or wasted.

- ledger is periodically sent back to public health servers.

Code your vaccine

Summary

Prevention HPV Vaccine provided by Ian Y H Pun on 2018-06-11
Location: L deltoid
Route: im
Dose: 0.5
Lot: N035952 10NO2019
Manufacturer: Gardasil 9 HPV vaccine MERCK
Comments: #V #Gardasil 9 HPV vaccine MERCK , N035952 10NO2019 , L

Prevention : HPV Vaccine

- ● Completed
- ○ Refused
- ○ Ineligible

Date: 2018-06-1 🗓

Provider: Pun Ian Y H ▲▼

Result

Location: L deltoid

Route: im

Dose: 0.5

Lot: N035952 10NO2019

Manufacture: Gardasil 9 HPV vaccine

Comments

#V #Gardasil 9 HPV vaccine MERCK , N035952 10NO2019 , L deltoid , IM , 0.5 cc

make vaccine templates

- MAKE ENCOUNTER TEMPLATES for vaccines prefix with #V #

- #V #Gardasil 9 HPV vaccine MERCK , N035952 10NO2019 , L deltoid , 0.5 cc, im

- #V #Adacel Td-pertussis -polio vaccine Sanofi , N1A82 2018 SE , L deltoid , 0.5 cc, im

THANKS for coming!

email Dr. Ian Pun ianpun@gmail.com

I will present next talk at

OntarioMD EMR Everystep conference in Toronto on Sept 27, 2018