Patients and families

Patients in mind

Patients in your heart

Innovating for Health

The Intelligent EHR

Dr Charles Gutteridge Clinical Informatics

Kunnskapssenteret

Kvalitetsindikatorer baset pa data fra medisinske kvalitetsregistre

…will be the development of a web based information technology for interactive data entry from electronic records

…however, this technology will not be available in the near future

The health task for everyone

Overview of health issues in East London

Indicators	Newham	Tower Hamlets	Waltham Forest	England Average
Life expectancy (males)[2]	76.2	76.7	77.4	78.6
Life expectancy (females)[2]	81.1	81.4	81.9	82.6
Infant death[2]	5.3	4.0	5.4	4.6
Deaths from smoking[4]	249	300	221	211
Early deaths: heart disease and stroke[4]	115	106	86	67.3
Early deaths: cancer[4]	112	135	114	110.1
People diagnosed with diabetes[5]	6.9	5.8	5.9	5.5
New cases of TB[4]	124	61	50	15.3
Acute sexually transmitted infections[7]	1673	1743	1359	775

Key:

- Significantly worse than the England average
- Not statistically different from the England average
- Significantly better than the England average

Source: Association of Public Health Observations, Health Profile, June 12

1 Newham is the 2nd most deprived borough in England, City and Hackney the 4th most deprived, Tower Hamlets the 11th most deprived, Waltham Forest the 15th most deprived out of 152 in England.

2 At birth 2008 – 2010

3 Rate per 1000 live births 2008 – 2010

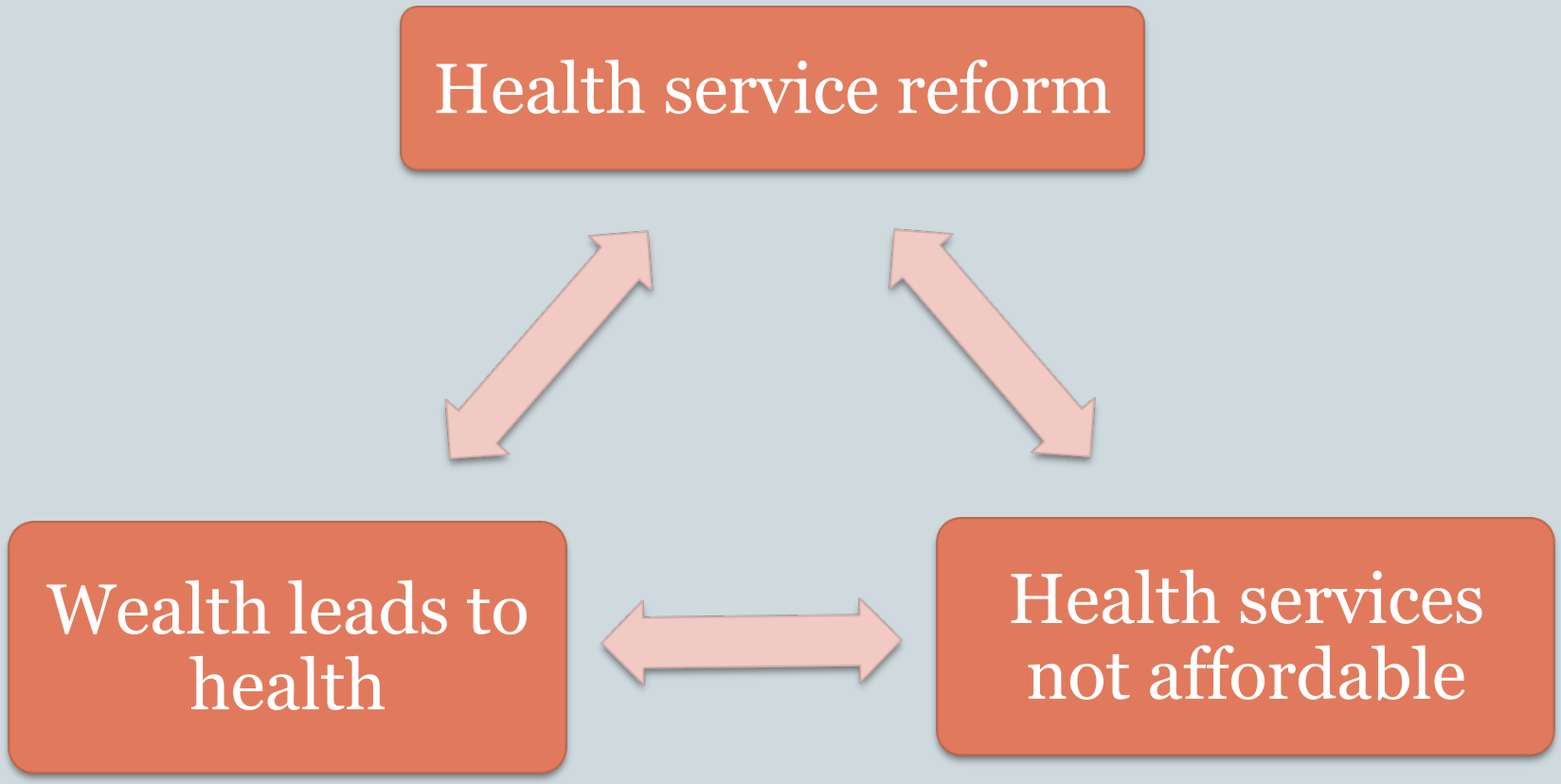
4 Per 100,000 population aged 35+ directly age standardised rate 2008 – 2010

5 % of people on GP regulators with a recorded diagnosis of diabetes in 2010/11

6 Crude rate per 100,000 population 2008 – 2010

7 Crude rate per 100,000 population 2011. Chlamydia screening coverage may influence rate

Policy drivers

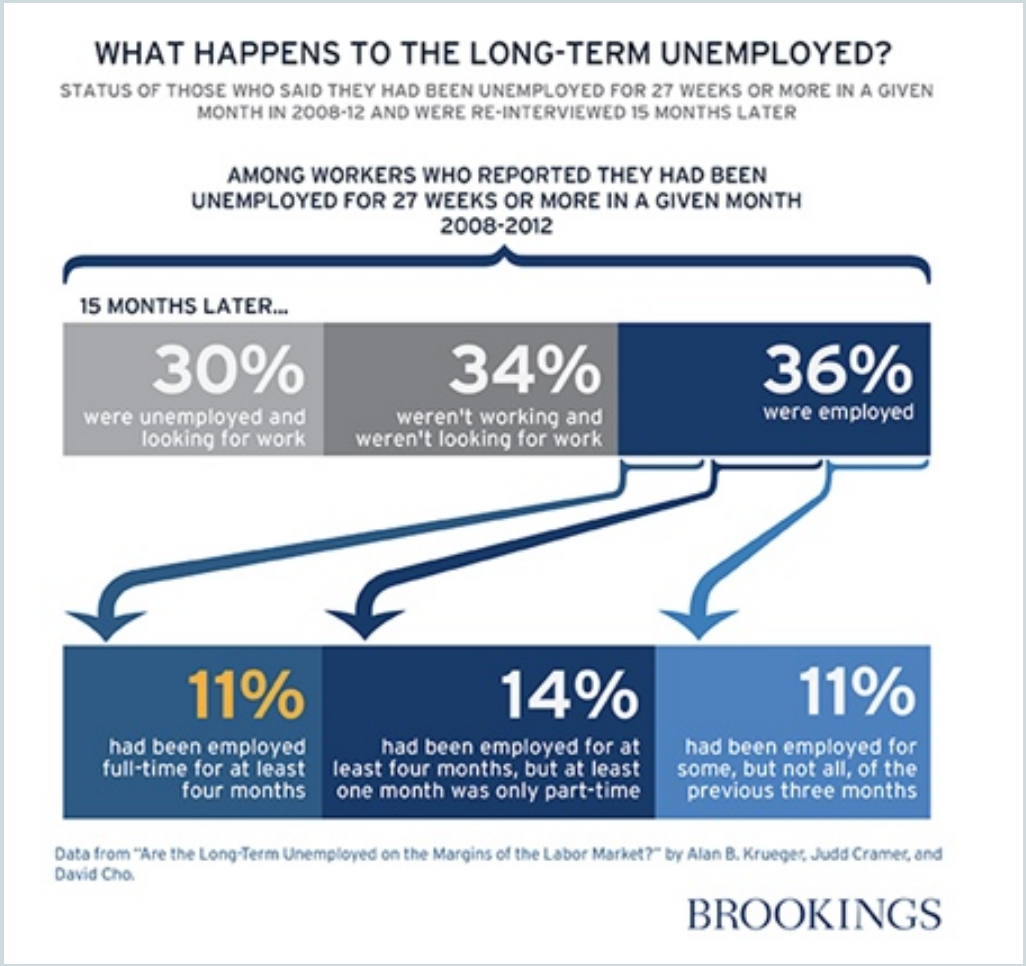


The recipe for health

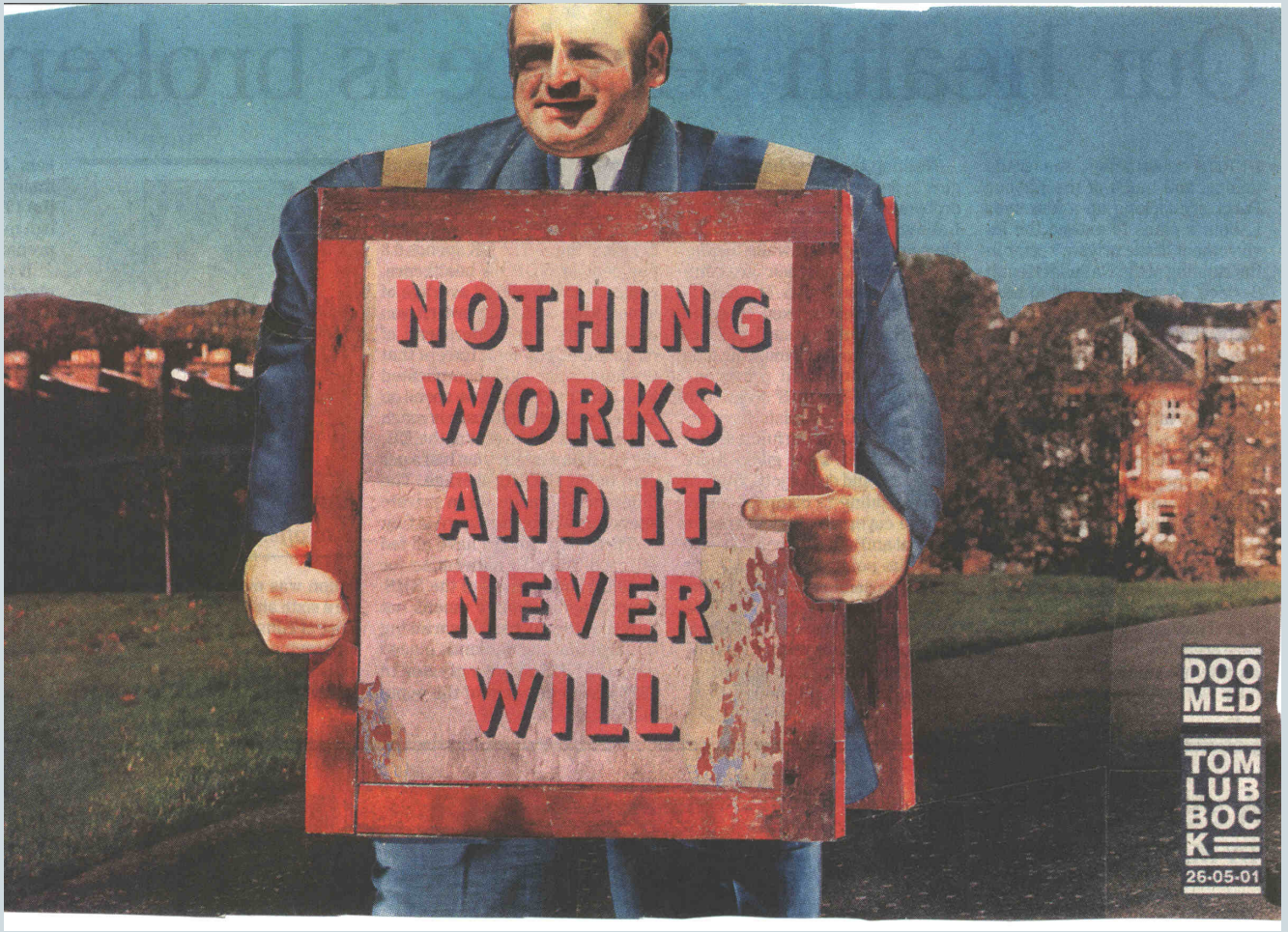
Keeping people well

- Exercise
- Eat well
- Drink moderately
- Don’t smoke

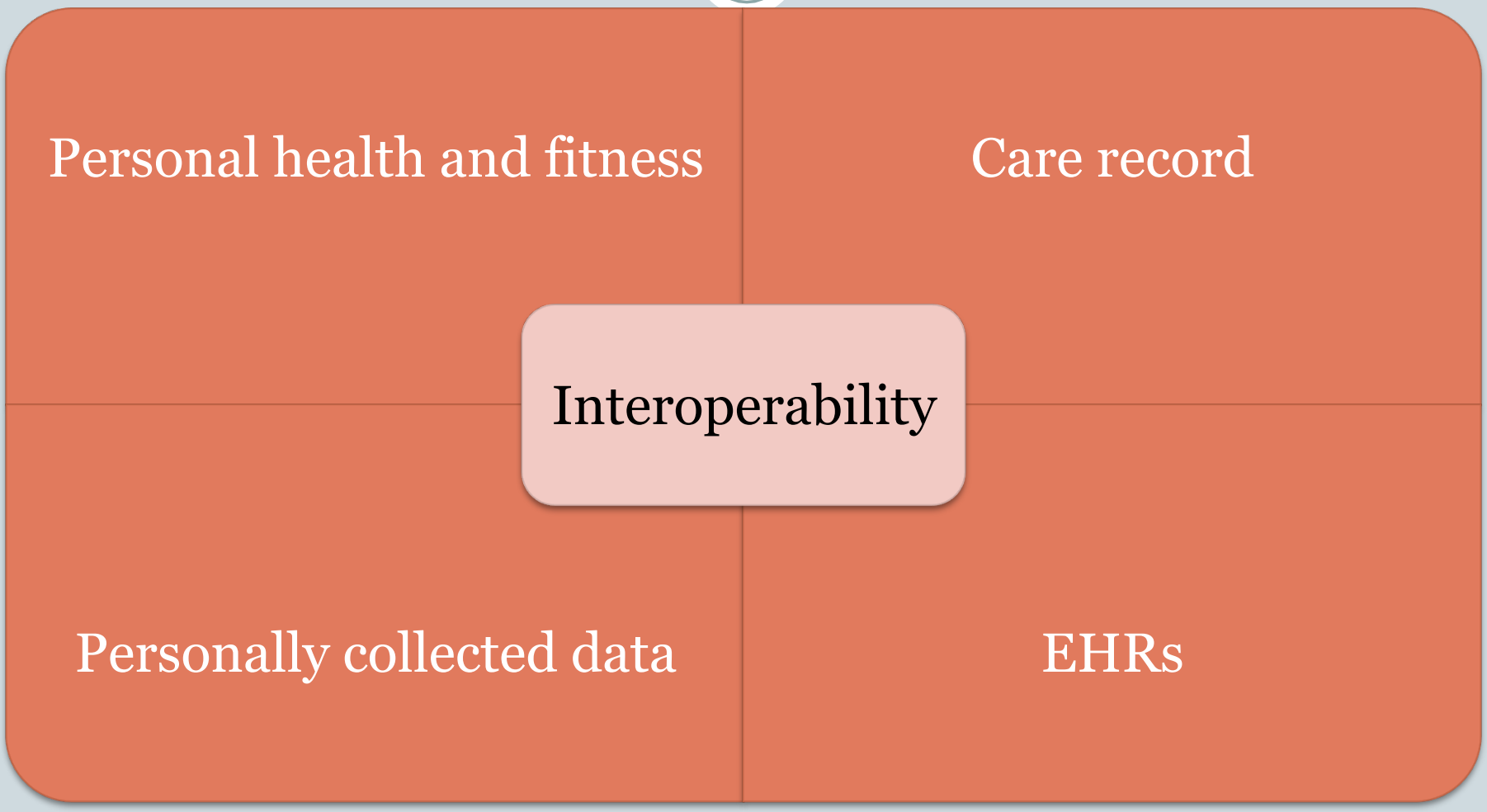
….and drive employment policies



Information revolution transforms culture



Co-create health using technology and data



Framework for innovation

Know

- Identify and predict what will happen within your population

Engage

- Your patients and health staff to take action

Manage

- Outcomes to improve health and care

3 routes to changing culture

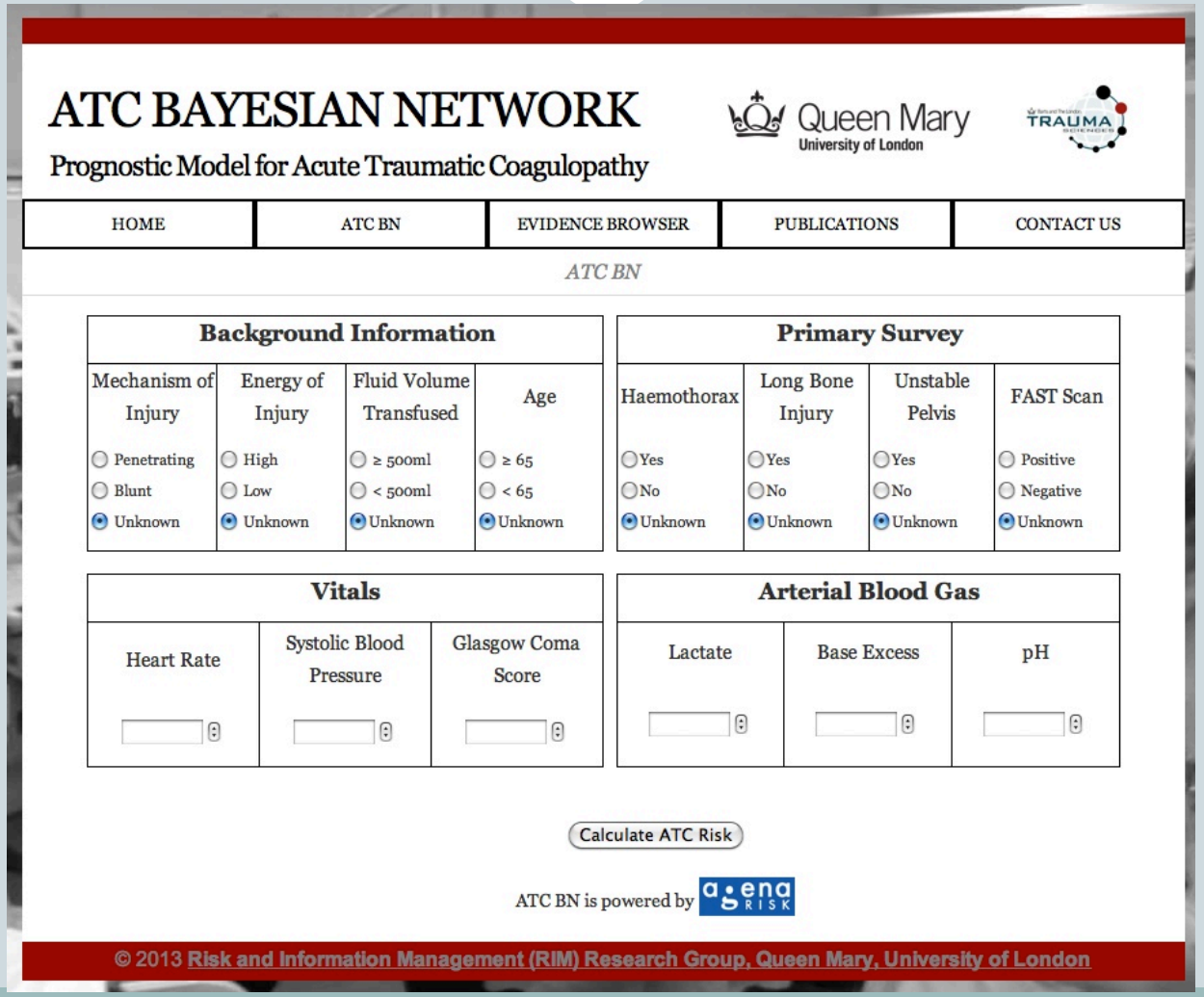
- Natural language processing and AI
- Use of social media for health
- Patient access to enterprise wide health IT systems

Identifying and predicting

- Knowledge and skill
- Long term conditions
- Use your registry data
- Visualise the data
- The cutting edge of computation

Turning dialogue into health

Decision support and AI



ATC BAYESIAN NETWORK

Prognostic Model for Acute Traumatic Coagulopathy

Queen Mary University of London

TRAUMA

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ATC BN

Background Information

Mechanism of Injury	Energy of Injury	Fluid Volume Transfused	Age
○ Penetrating	○ High	○ ≥ 500ml	○ ≥ 65
○ Blunt	○ Low	○ < 500ml	○ < 65
◉ Unknown	◉ Unknown	◉ Unknown	◉ Unknown

Primary Survey

Haemothorax	Long Bone Injury	Unstable Pelvis	FAST Scan
○ Yes	○ Yes	○ Yes	○ Positive
○ No	○ No	○ No	○ Negative
◉ Unknown	◉ Unknown	◉ Unknown	◉ Unknown

Vitals

Heart Rate	Systolic Blood Pressure	Glasgow Coma Score

Arterial Blood Gas

Lactate	Base Excess	pH

Calculate ATC Risk

ATC BN is powered by agena RISK

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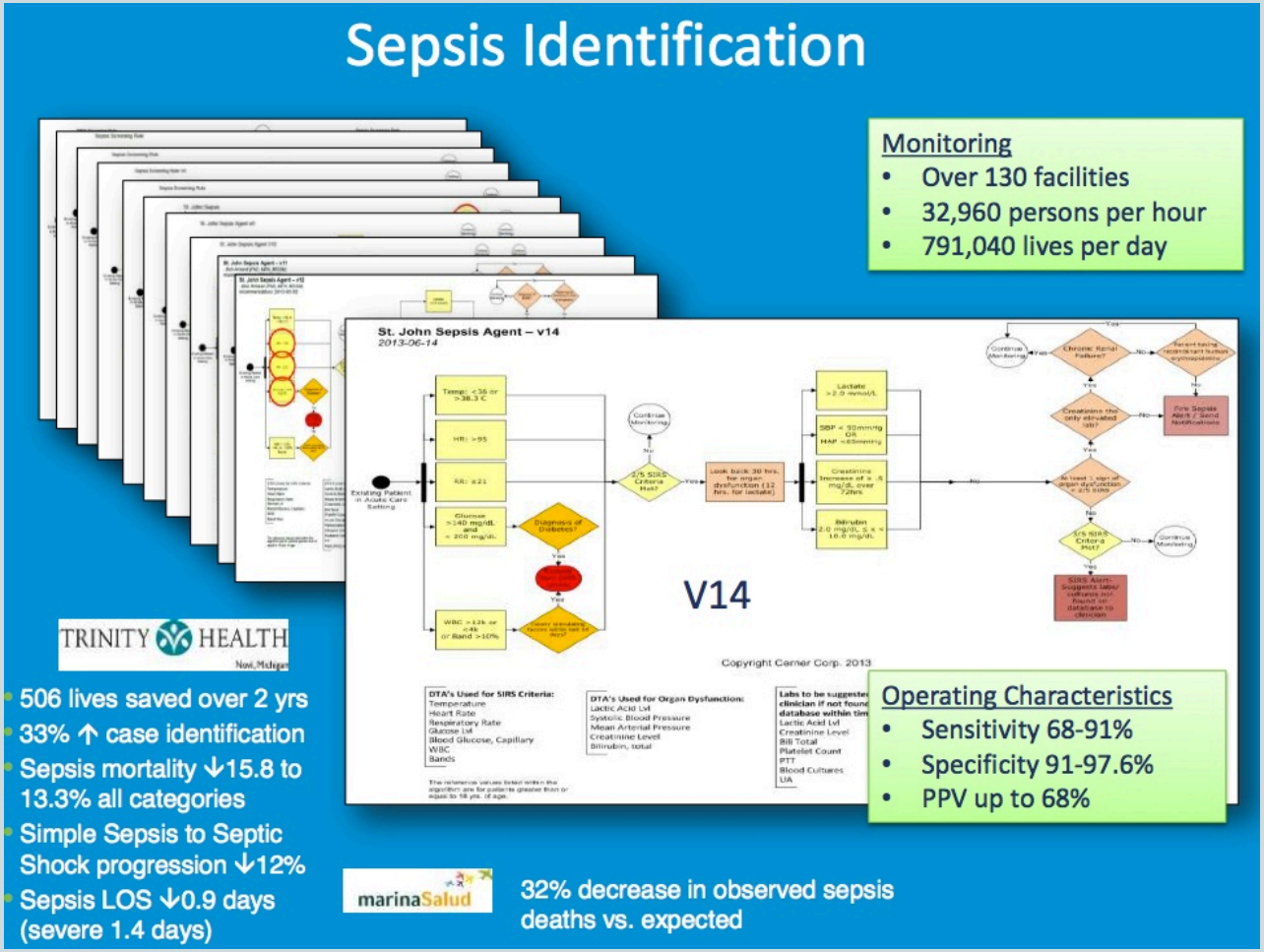
Data driven clinical management



Engage everyone

- Create virtual networks
- Get people together for purpose
- Simplify the data
- Ask patients
- Ask people
- Ask families
- Do not interfere with knowledge creation

People expect.....

Dear Charles,

Thank you so much for this. I will consider surgery and will go and see the GP. Hopefully the surgery will have access to the X-ray itself as well as to the report through the hospital's online system.

Warm regards,

Social media

Michael Seres @mjseres · Mar 27

@GutteridgeC absolutely, am very happy/keen to help

View conversation Reply Retweet Favorite More

Medical anxiety

Dustyn Saint @DustynSaint · Mar 22
@OsmanBhatti @GutteridgeC agree wholeheartedly but worry about practicalities of implementation

View conversation Reply Retweet Favorite More

Dustyn Saint @DustynSaint · Mar 22
@OsmanBhatti @GutteridgeC don't disagree, but would also shift large amount of work to primary care with no resources to follow it...

View conversation Reply Retweet Favorite More

Osman Bhatti @OsmanBhatti · Mar 22
@DustynSaint @GutteridgeC Would prevent patients having duplicate tests, duplicate appointments + reduce admin workload in chasing results

View conversation Reply Retweet Favorite More

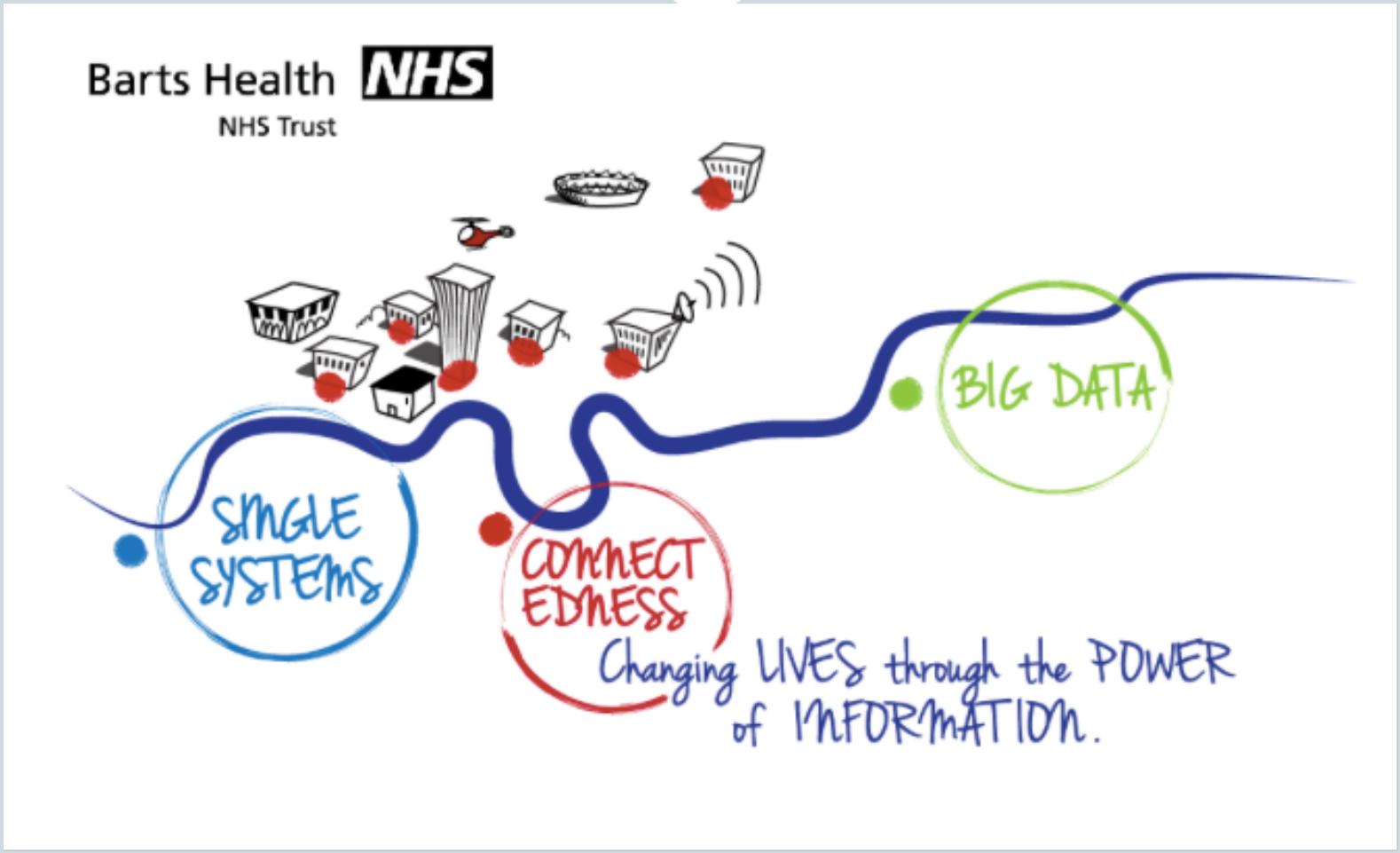
Social media for learning

Self service i-clinical care

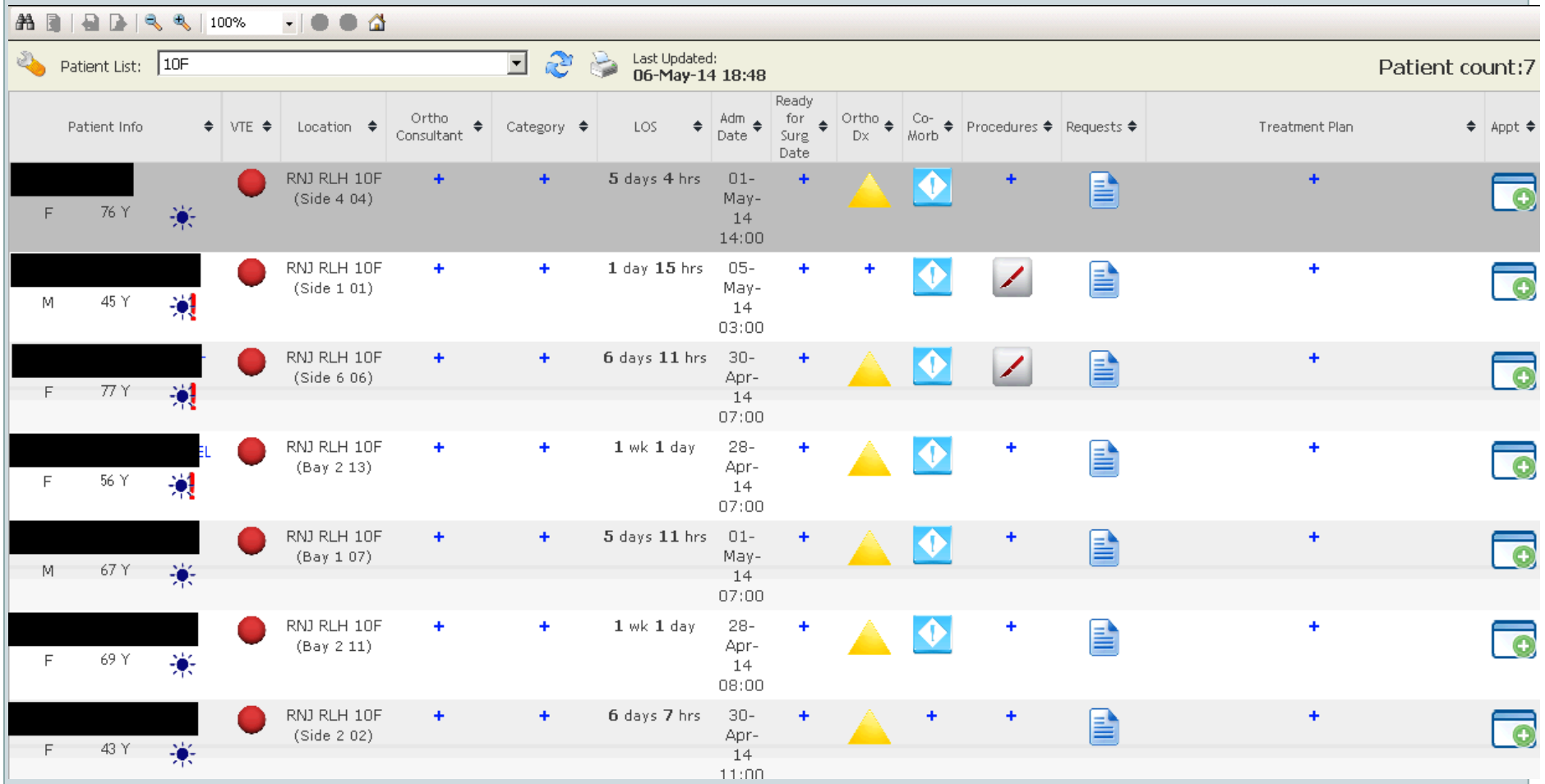
Manage outcomes using EHR data

- Single system
- Connectedness
- Big data

Bringing it all together for people and staff



Real time clinical performance management



100%

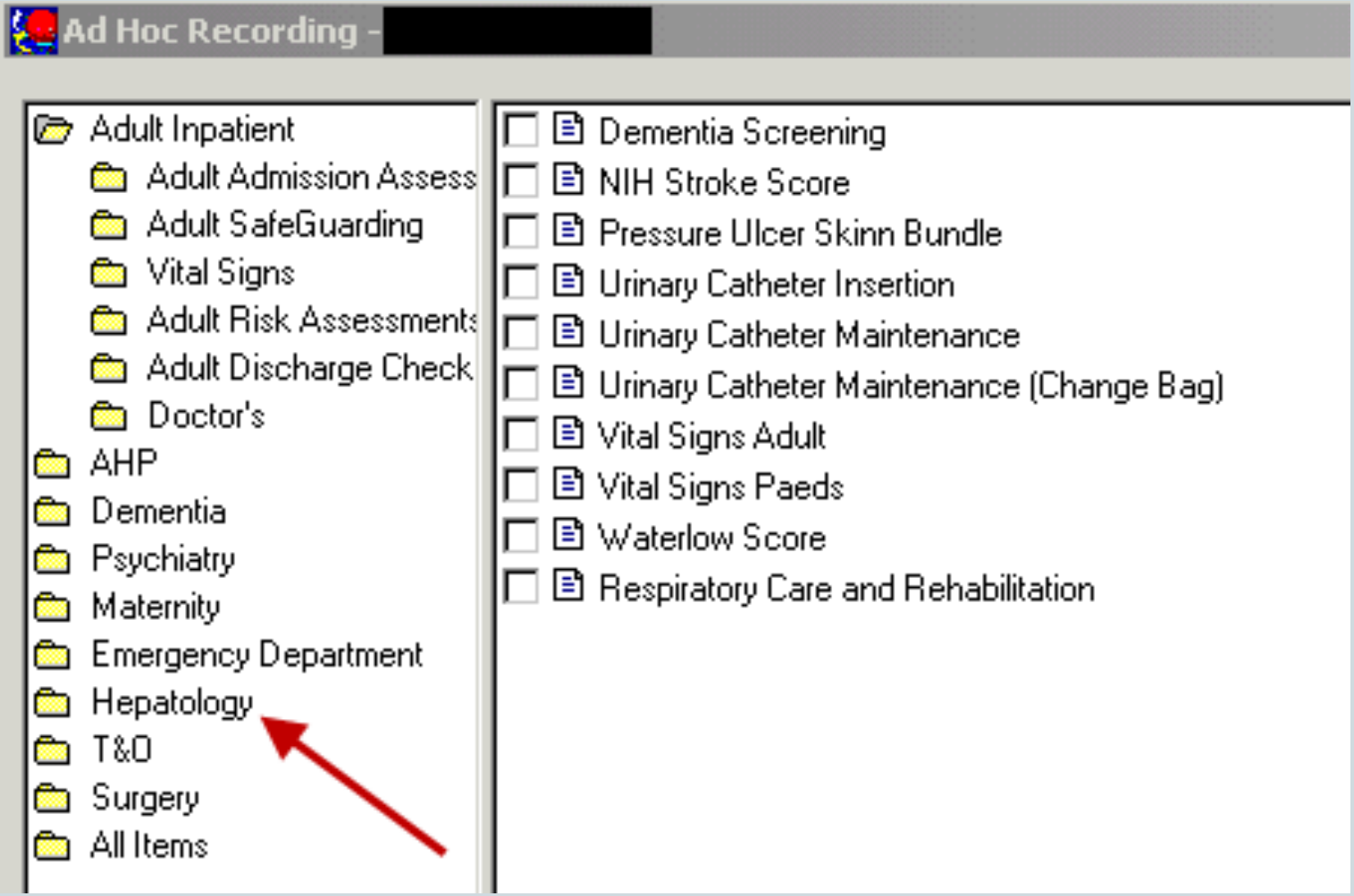
Patient List: 10F

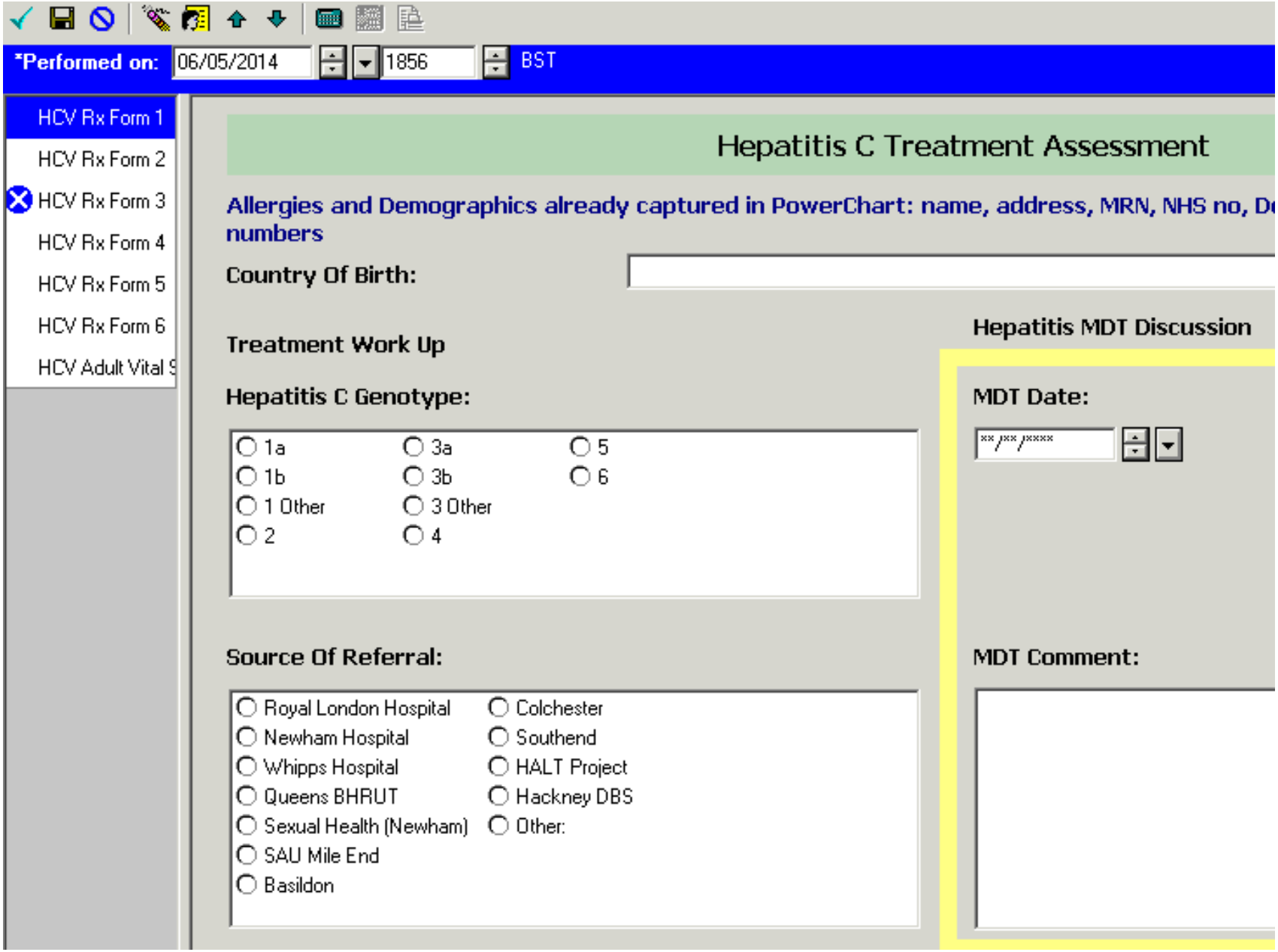
Last Updated: 06-May-14 18:48

Patient count:7

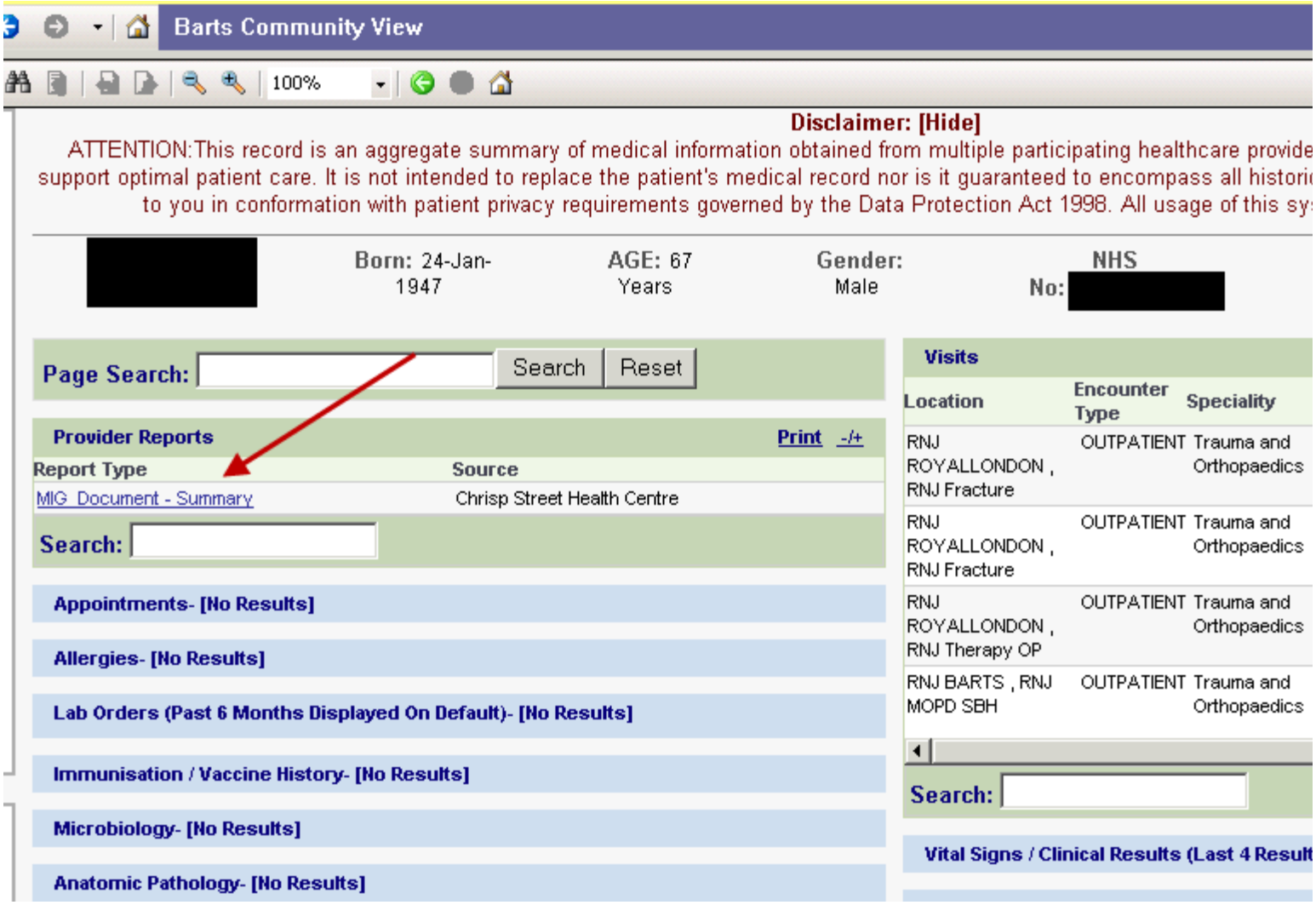
Patient Info	VTE	Location	Ortho Consultant	Category	LOS	Adm Date	Ready for Surg Date	Ortho Dx	Co-Morb	Procedures	Requests	Treatment Plan	Appt
[redacted] F 76 Y		RNJ RLH 10F (Side 4 04)	+	+	5 days 4 hrs	01-May-14 14:00	+			+		+	
[redacted] M 45 Y		RNJ RLH 10F (Side 1 01)	+	+	1 day 15 hrs	05-May-14 03:00	+	+				+	
[redacted] F 77 Y		RNJ RLH 10F (Side 6 06)	+	+	6 days 11 hrs	30-Apr-14 07:00	+					+	
[redacted] F 56 Y		RNJ RLH 10F (Bay 2 13)	+	+	1 wk 1 day	28-Apr-14 07:00	+			+		+	
[redacted] M 67 Y		RNJ RLH 10F (Bay 1 07)	+	+	5 days 11 hrs	01-May-14 07:00	+			+		+	
[redacted] F 69 Y		RNJ RLH 10F (Bay 2 11)	+	+	1 wk 1 day	28-Apr-14 08:00	+			+		+	
[redacted] F 43 Y		RNJ RLH 10F (Side 2 02)	+	+	6 days 7 hrs	30-Apr-14 11:00	+		+	+		+	

Real time data collection




*Performed on: 06/05/2014 1856 BST
HCV Rx Form 1
HCV Rx Form 2
HCV Rx Form 3
HCV Rx Form 4
HCV Rx Form 5
HCV Rx Form 6
HCV Adult Vital S
Hepatitis C Treatment Assessment
Allergies and Demographics already captured in PowerChart: name, address, MRN, NHS no, D
numbers
Country Of Birth:
Treatment Work Up
Hepatitis C Genotype:
1a
1b
1 Other
2
3a
3b
3 Other
4
5
6
Source Of Referral:
Royal London Hospital
Newham Hospital
Whipps Hospital
Queens BHRUT
Sexual Health (Newham)
SAU Mile End
Basildon
Colchester
Southend
HALT Project
Hackney DBS
Other:
Hepatitis MDT Discussion
MDT Date:
//****
MDT Comment:

Menu
Inpatient Summary
Outpatient Summary
Patient Information
Overview
Chart Review
Allergies
Add
Problems and Diagnoses
Procedures and Diagnoses
Histories
Requests
Add
Activity List
Results Review
Form Browser
Clinical Notes
Documentation
Add
Pregnancy
Add
iView
Pregnancy Summary
Newborn Summary
Appointments
Barts Community View


Barts Community View
100%
Disclaimer: [Hide]
ATTENTION:This record is an aggregate summary of medical information obtained from multiple participating healthcare provide
support optimal patient care. It is not intended to replace the patient's medical record nor is it guaranteed to encompass all histori
to you in conformation with patient privacy requirements governed by the Data Protection Act 1998. All usage of this sy
[redacted]
Born: 24-Jan-1947
AGE: 67 Years
Gender: Male
NHS No: [redacted]
Page Search:
Search
Reset
Provider Reports
Print -/+
Report Type
Source
MIG Document - Summary
Chrisp Street Health Centre
Search:
Appointments- [No Results]
Allergies- [No Results]
Lab Orders (Past 6 Months Displayed On Default)- [No Results]
Immunisation / Vaccine History- [No Results]
Microbiology- [No Results]
Anatomic Pathology- [No Results]
Visits
Location
Encounter Type
Speciality
RNJ ROYALLONDON , RNJ Fracture
OUTPATIENT
Trauma and Orthopaedics
RNJ ROYALLONDON , RNJ Fracture
OUTPATIENT
Trauma and Orthopaedics
RNJ ROYALLONDON , RNJ Therapy OP
OUTPATIENT
Trauma and Orthopaedics
RNJ BARTS , RNJ MOPD SBH
OUTPATIENT
Trauma and Orthopaedics
Search:
Vital Signs / Clinical Results (Last 4 Result

MIG Document

Close

Current Problems

28-Nov-2013	Lumbar spinal stenosis
11-Sep-2013	Vitamin B12 deficiency
11-Sep-2013	Aortic regurgitation alone, cause unspecified
24-Aug-2012	Standard chest X-ray abnormal
03-Jan-2012	Knee joint pain
17-Nov-2009	Asteroid hyalosis
28-Apr-2000	Essential hypertension
1999	Pain in lumbar spine

Current Medication

Acute Medication

Carmellose 1% eye drops 0.4ml unit dose | Sterimar Nasal spray

Repeat Medication

Tramadol 50mg capsules | Allopurinol 300mg tablets | Amlodipine 10mg tablets | Atenolol 50mg tablets | Atorvastatin 20mg tablets | Beclometasone 50micrograms/dose nasal spray | Bendroflumethiazide 2.5mg tablets | Enalapril 20mg tablets | Omeprazole 20mg gastro-resistant capsules | Hydroxocobalamin 1mg/1ml solution for injection ampoules

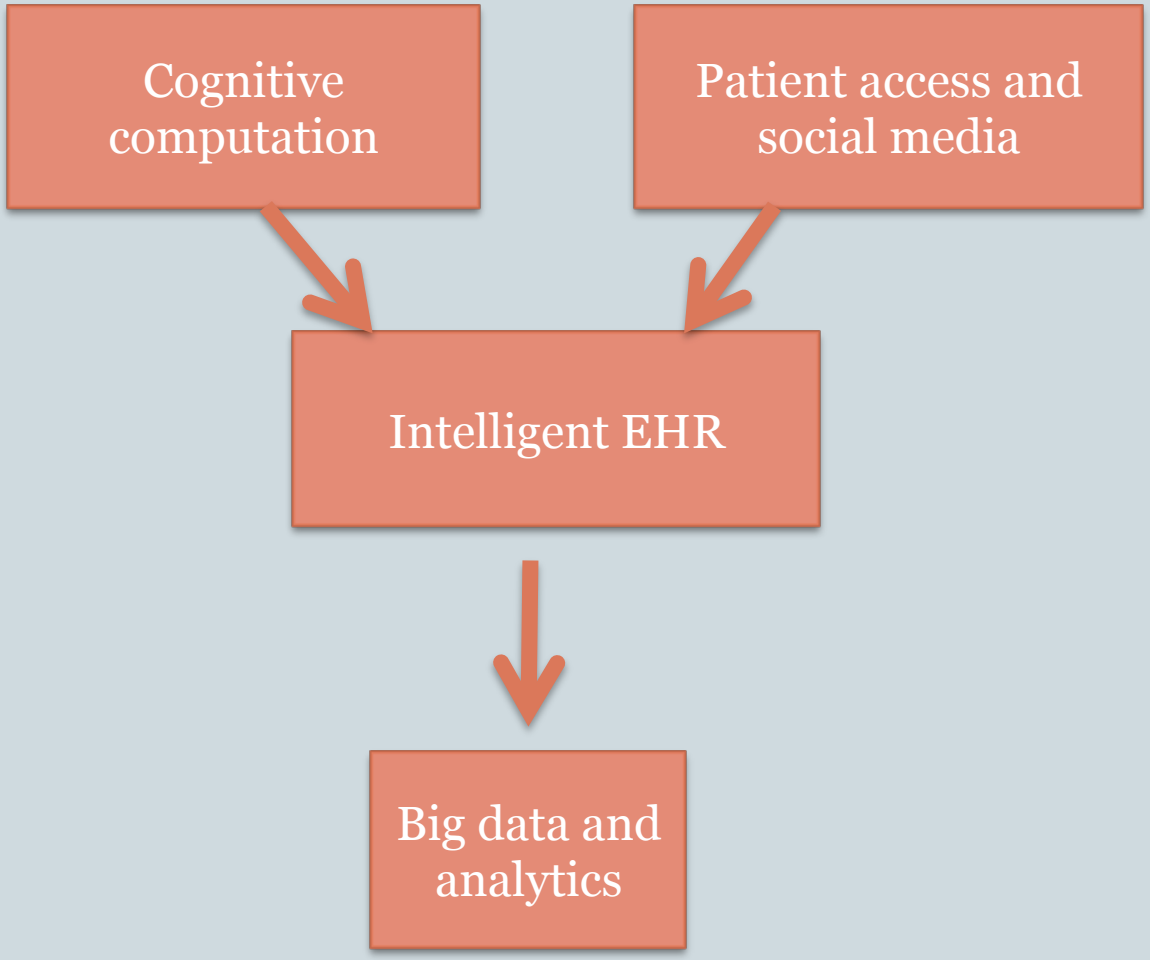
Allergies and Adverse Reactions

17-Jul-2007	Adverse reaction to Simvastatin

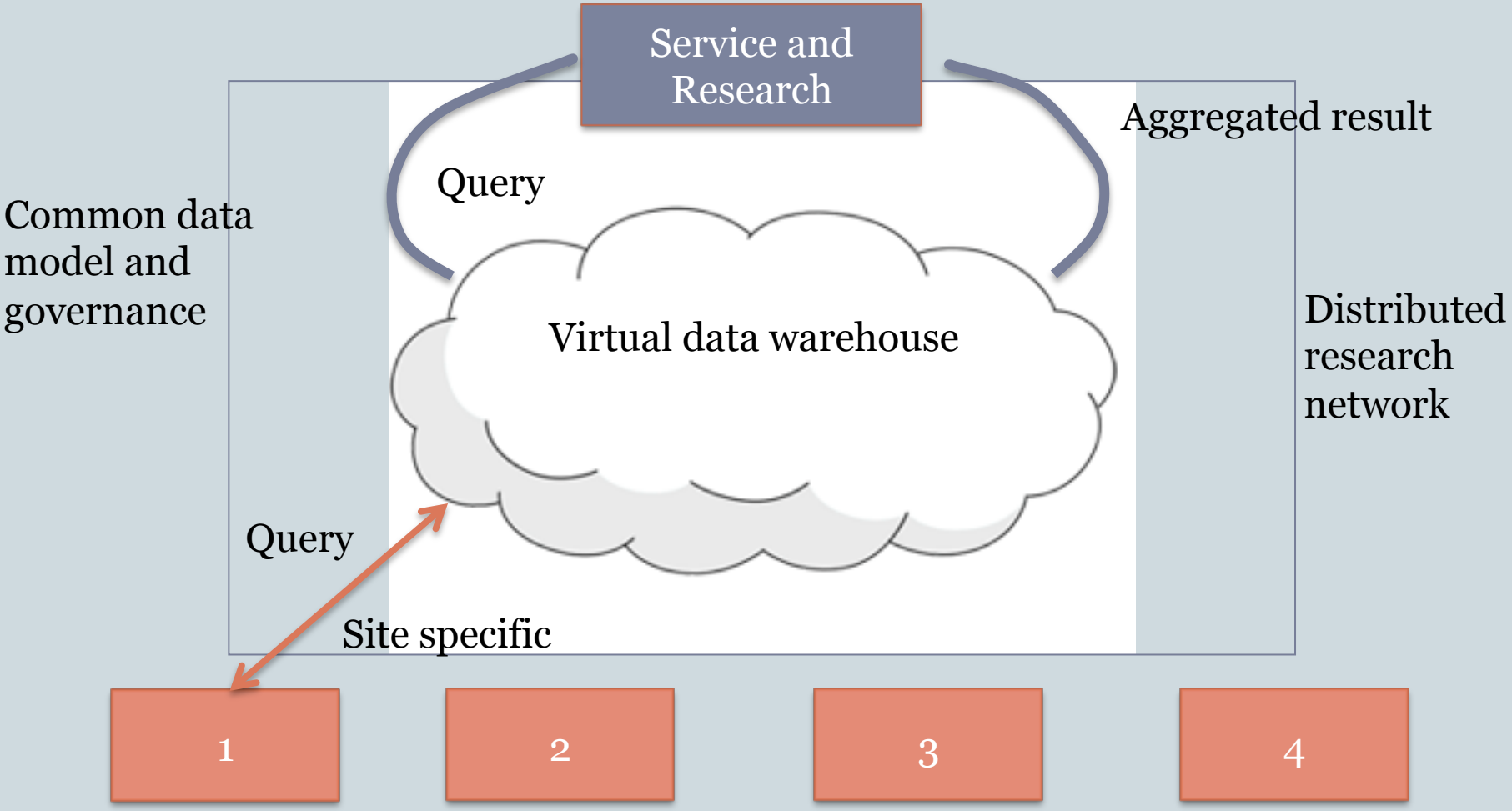
Recent Tests

24-Aug-2012	Standard chest X-ray abnormal	-	-

System map


Cognitive computation
Patient access and social media
Intelligent EHR
Big data and analytics

Towards population health delivery



Challenges

- Semantic interoperability
- Common data model
- Privacy/confidentiality
- System development

Issues

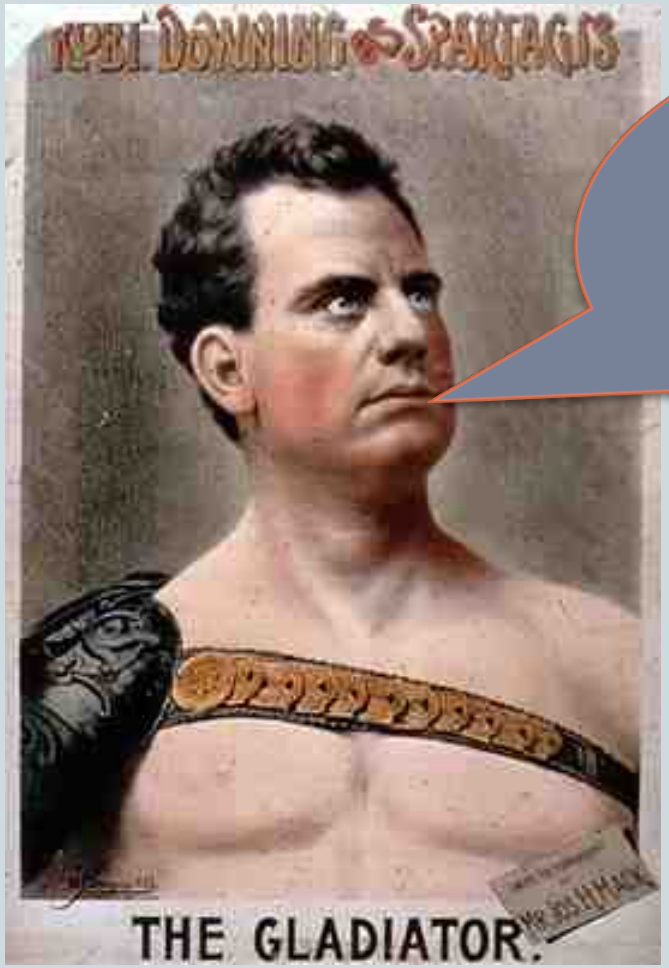
- Operating at scale
- Outcome measurements
- Analytics
- Connecting finance

Population Health development in East London

- National web based data on performance is available
- General practitioner has most influence on choice
- EHR data exchange is being implemented
- 50%+ patients are referred by digital channel
- 100% risk stratification of chronic disease in general practice

An EHR exchange is developing

Connecting to people



Make it simple and structure your data