Shared records: the dream and the reality

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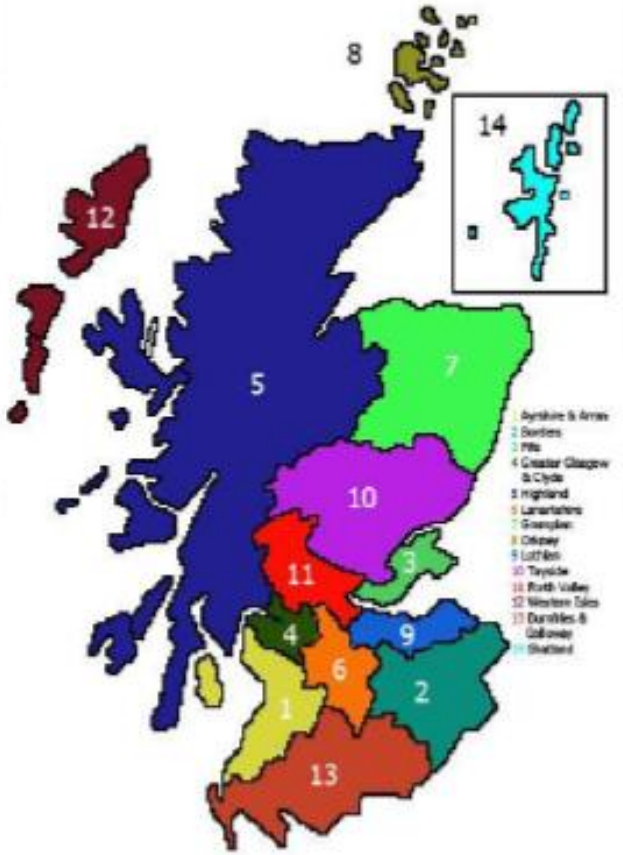
@teowinterandy

NHS Scotland's ICT Infrastructure

- Over 120,000 connected end devices
- 228 Hospital sites
- 980 General Practices
- 960 Dental Practices
- 1,253 Community Pharmacists
- Over 500 other sites including optometrists, clinics, data centres and administration sites



The eHealth Vision

By 2020 eHealth in Scotland will:

- Enable information sharing and communications that facilitates integrated health and social care across all settings from the patient's home to the hospital.
- Provide information processing, analysis and intelligence that complements the work of health and social care professionals and improves the safety and quality of care.
- Support people to manage their own health and live longer, healthier lives at home or in a community setting.
- Contribute to a partnership between the Scottish Government, NHS Scotland, the research sector and industry to enable Scotland to be a long term leader in digitally enabled care.

Calidcott 2

NHS Greater Glasgow and Clyde

INFORMATION to share or not to share

The Information Governance Review

3.6 Registered and regulated professionals

Professional standards and good practice

Personal confidential data needs to be shared between registered and regulated health and social care professionals who have a legitimate relationship with the individual for the purposes of the individual's direct care. A registered and regulated health or social care professional has a legitimate relationship with the patient or client when any or all of the following criteria are met:

- The patient or client presents themselves to the professional for the purpose of their care.
- The patient or client agrees to a referral from one registered and regulated health or social care professional to another.
- The patient or client is invited by a professional to take part in a screening or immunisation programme for which they are eligible and they accept.
- The patient or client presents to a health or social care professional in an emergency situation where consent is not possible.
- The relationship is part of a legal duty e.g. contact tracing in public health.
- The patient is told of a proposed communication and does not object e.g. the consultant in the ambulatory clinic says she will communicate with the patient's social worker to let them know of events in the clinic and the patient does not object.

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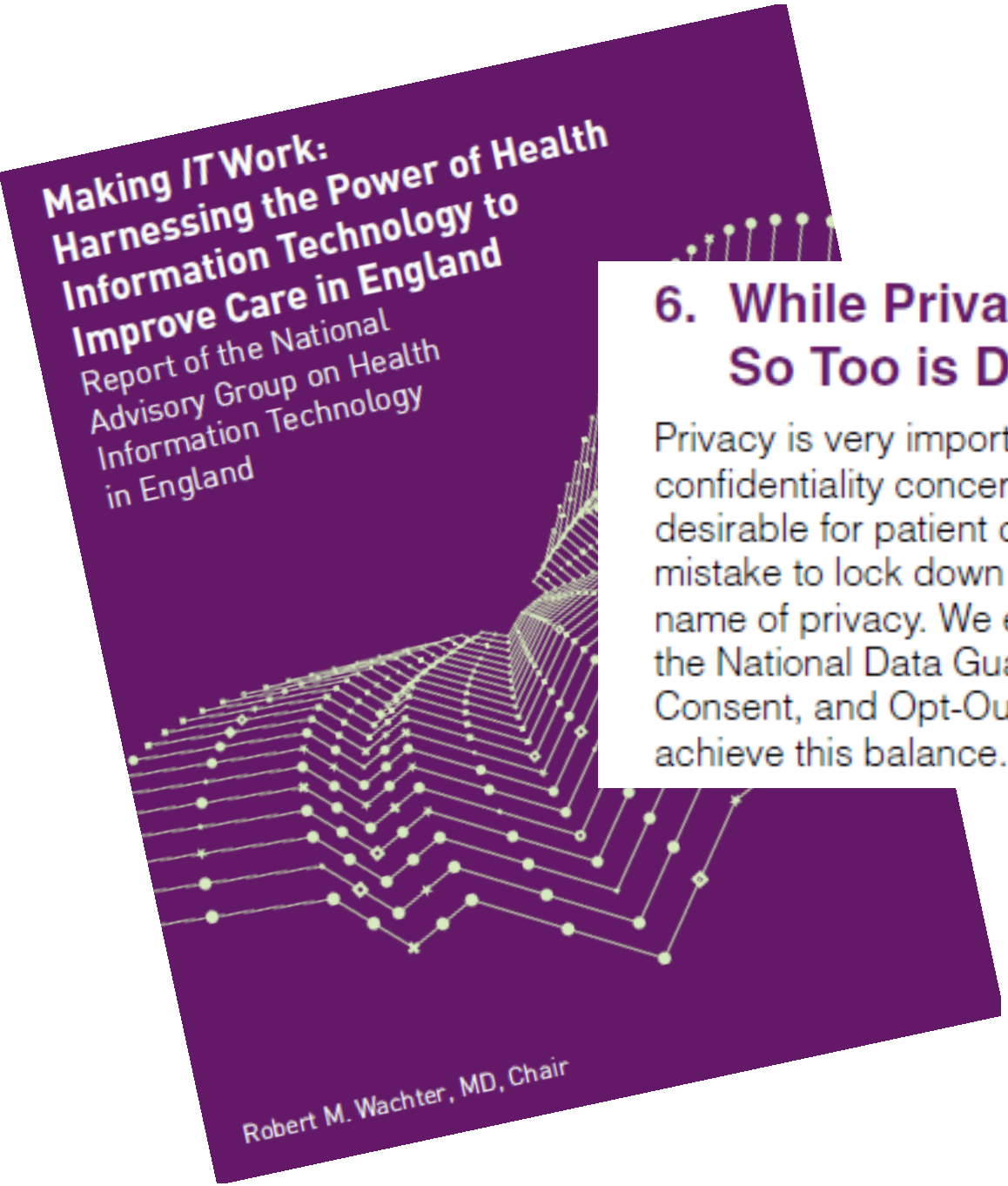
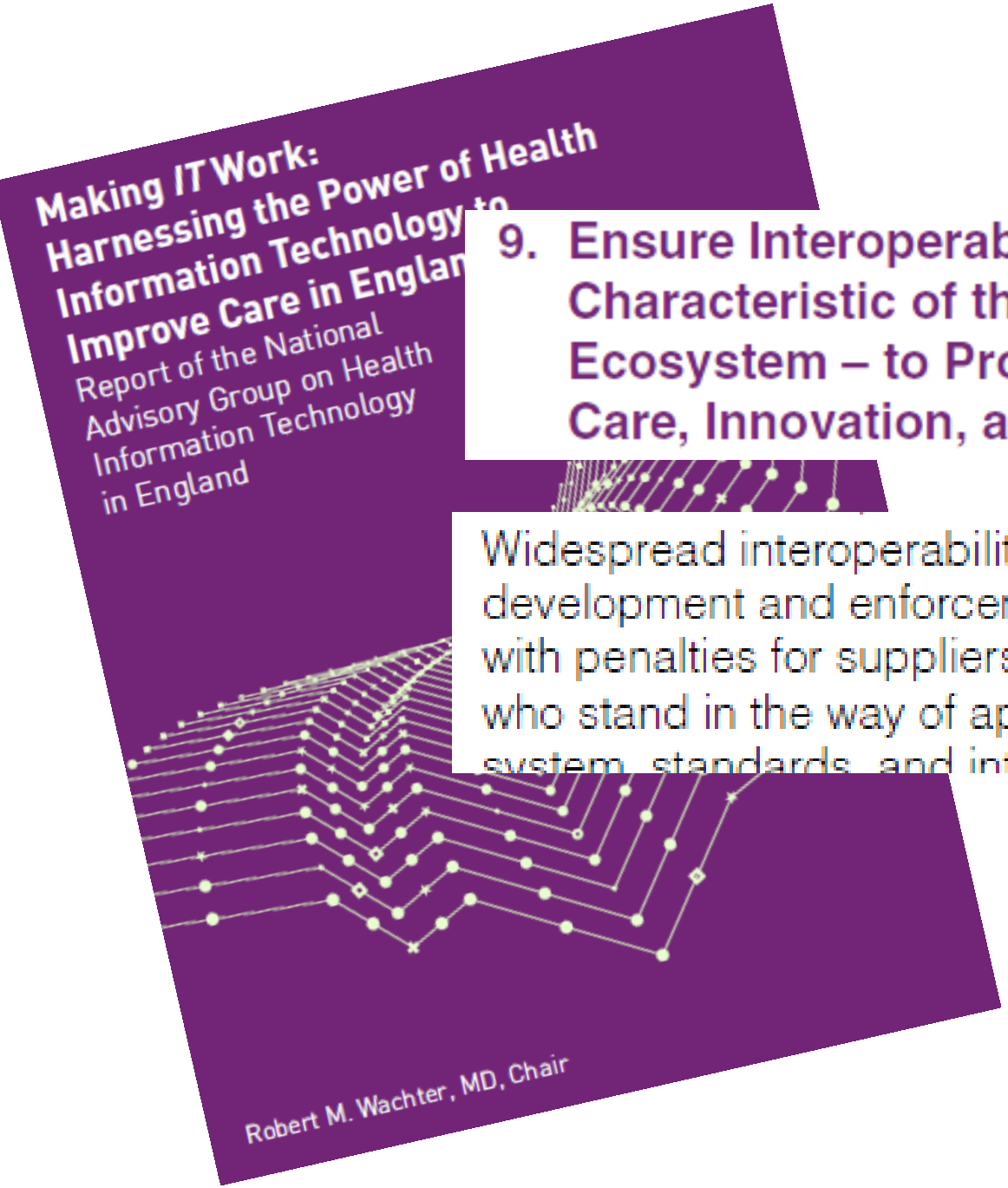


6. While Privacy is Very Important, So Too is Data Sharing

Privacy is very important, but it is easy for privacy and confidentiality concerns to hinder data sharing that is desirable for patient care and research. It would be a mistake to lock down everyone's healthcare data in the name of privacy. We endorse the recommendations of the National Data Guardian's Review of Data Security, Consent, and Opt-Outs, which was commissioned to achieve this balance.



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9. Ensure Interoperability as a Core Characteristic of the NHS Digital Ecosystem – to Promote Clinical Care, Innovation, and Research

Widespread interoperability will require the development and enforcement of standards, along with penalties for suppliers, trusts, GPs, and others who stand in the way of appropriate data sharing. The system, standards, and interfaces should enable a


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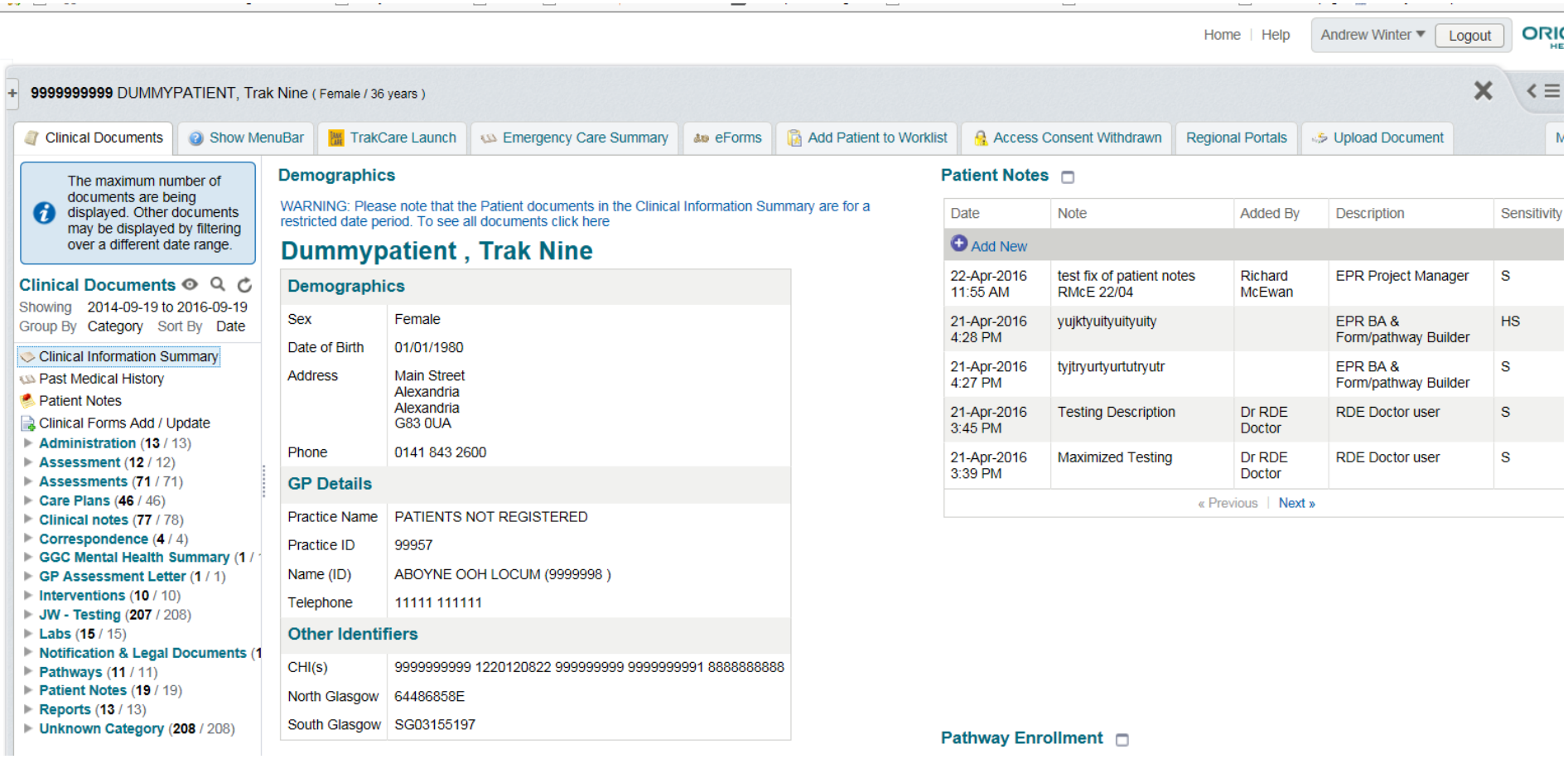
LEEDS CARE RECO
Shared information. Better care
Your Care Connected
HOME
ABOUT
PATIENT INFORMATION
GP PRACTICE INFORMATION
Welcome
0333 150 3388. Leave us a message on our freephone voicemail service and we will get back to you as soon as possible.
InfoMidlandsYourCareConnected@nhs.net
Select Language
NHS
SEARCH
act us
CONTACT US
SCW
Home
iLinks Innovations Retweeted
EMIS Health @EMISHealth
12m records shared in Merseyside - we're so proud to be helping make this happen @iLinksInnovator @digitalhealth2
ow.ly/ESJP302Gy2c
28 Jul
Saving
hospita
system makes th
wherever they are, making
accurate. HHR is managed by t
Commissioning Support Unit on behalf of hea
organisations in Hampshire.
Find out the benefits of HHR or contact us for more information
iLinks Innovations Retweeted
Saving Time
Protecting Information

The dream…

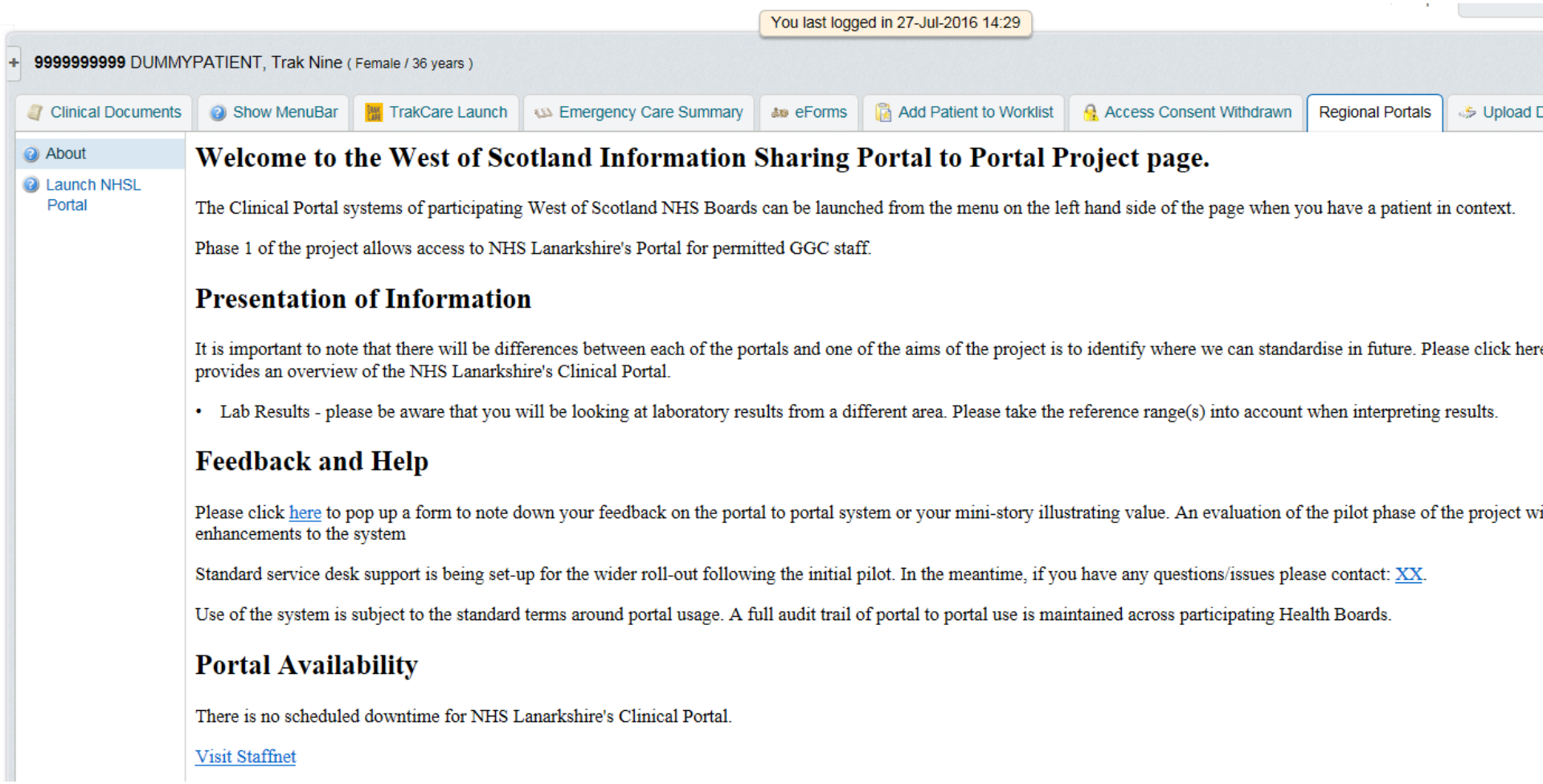
The reality….


And now
the
DREAM
is
OVER

Scale of information…



Portal-to-Portal



ISSUE 1 1 March, 2016

NHS GREATER GLASGOW & CLYDE

Clinical Portal Go Live, 28 March 2016

We are pleased to announce that the first phase of Health and Social Care data sharing will be Going Live 28 March.

NHS Greater Glasgow & Clyde has been working with six Health and Social Care partnerships to agree a shared dataset for viewing in the Clinical Portal.

The first phase will include West Dunbartonshire HSCP and Glasgow HSCP, with the others, East Dunbartonshire.

West Dunbartonshire's community Discharge and the NHS GGC's Acute Discharge Teams will pilot the data sharing.

Keith Redpath " Quote"….

The agreed dataset is aimed at Adult information sharing but will be extended to include Children and Families in a subsequent phase.

The information is real time to ensure it is as up to date and accurate for practitioners and provides:

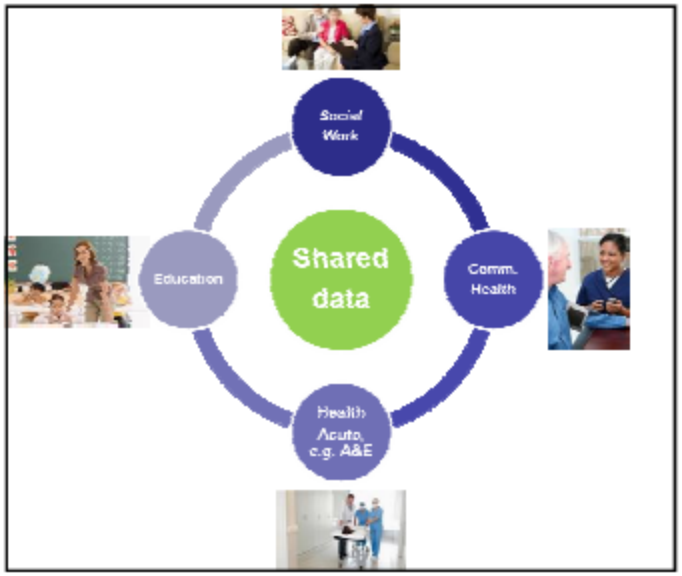
Single view of patient's record for practitioners

Helps improve wellbeing of vulnerable patients

A more comprehensive assessment of risk

Reduce duplication of effort and processing time

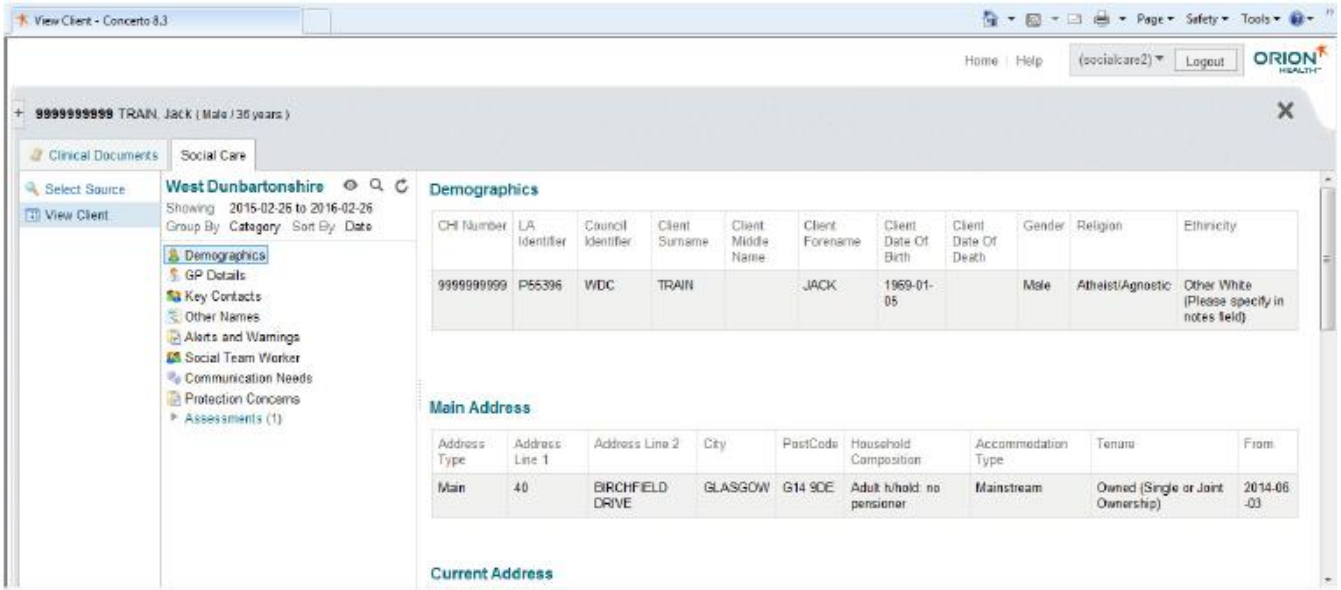
Enable better communication and collaboration



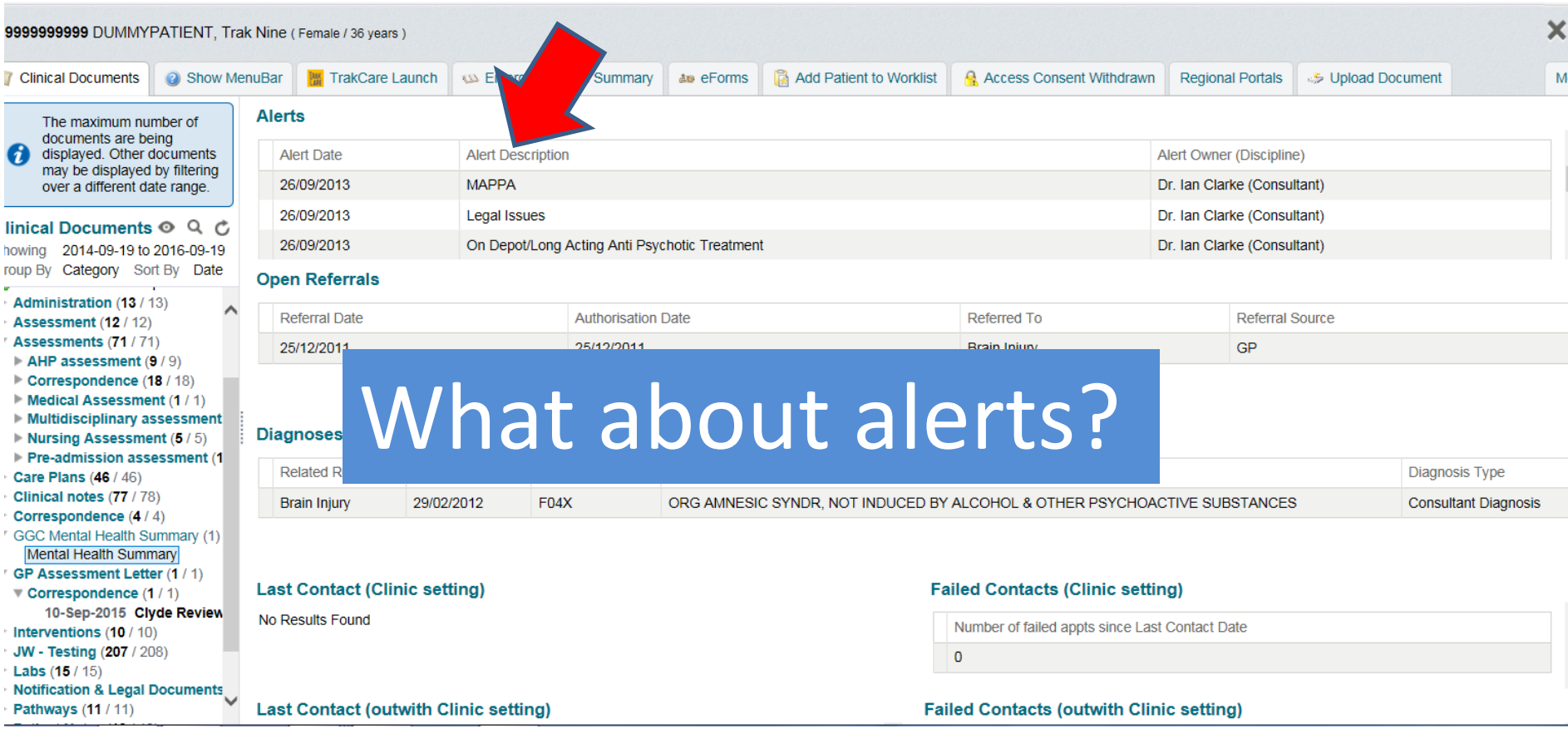
NHS Greater Glasgow and Clyde

Shared data - Social Care view

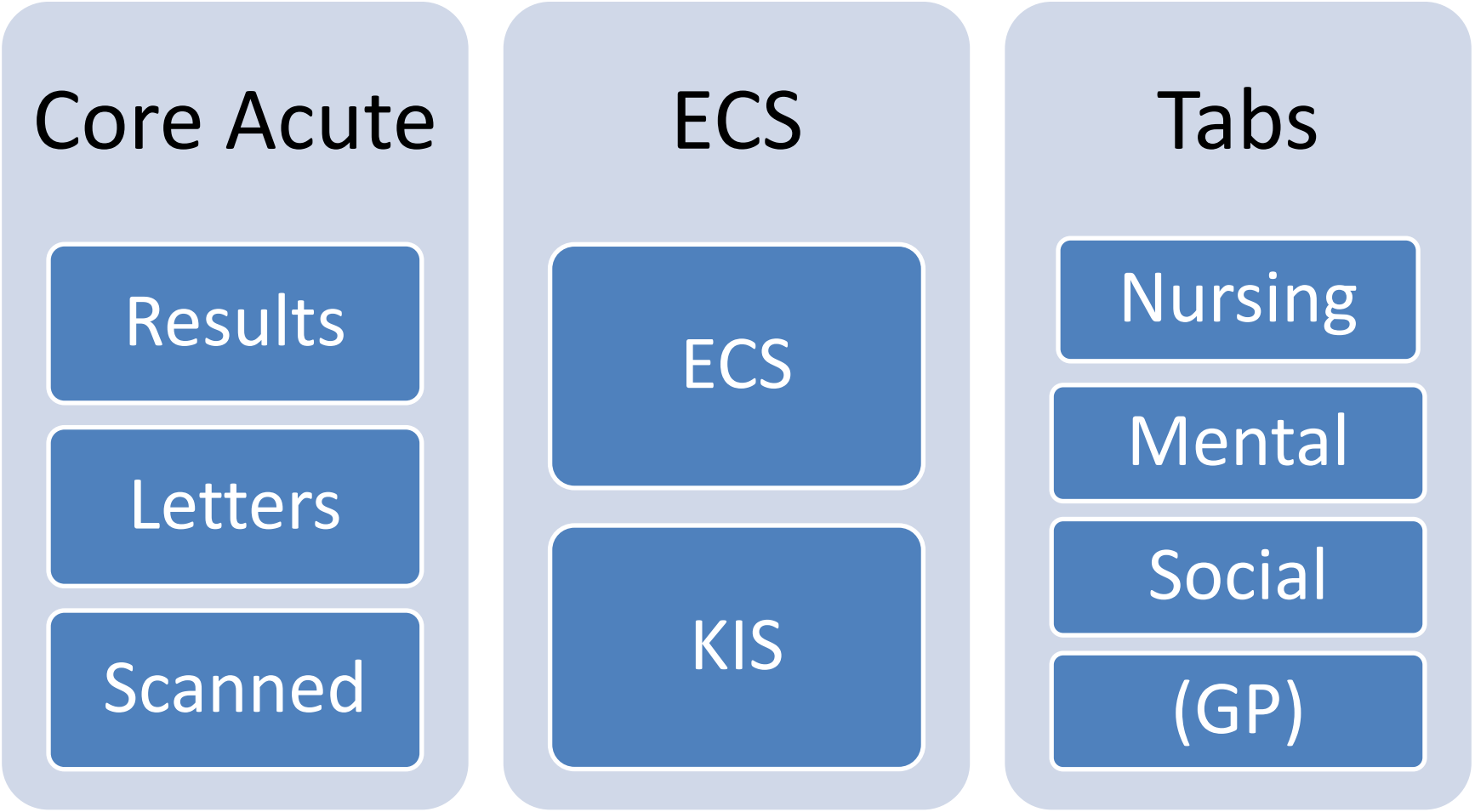
Real time integration with West Dunbartonshire's Care-first system.



Mental health data



Typical GGC portal view



- Free text from the GP record

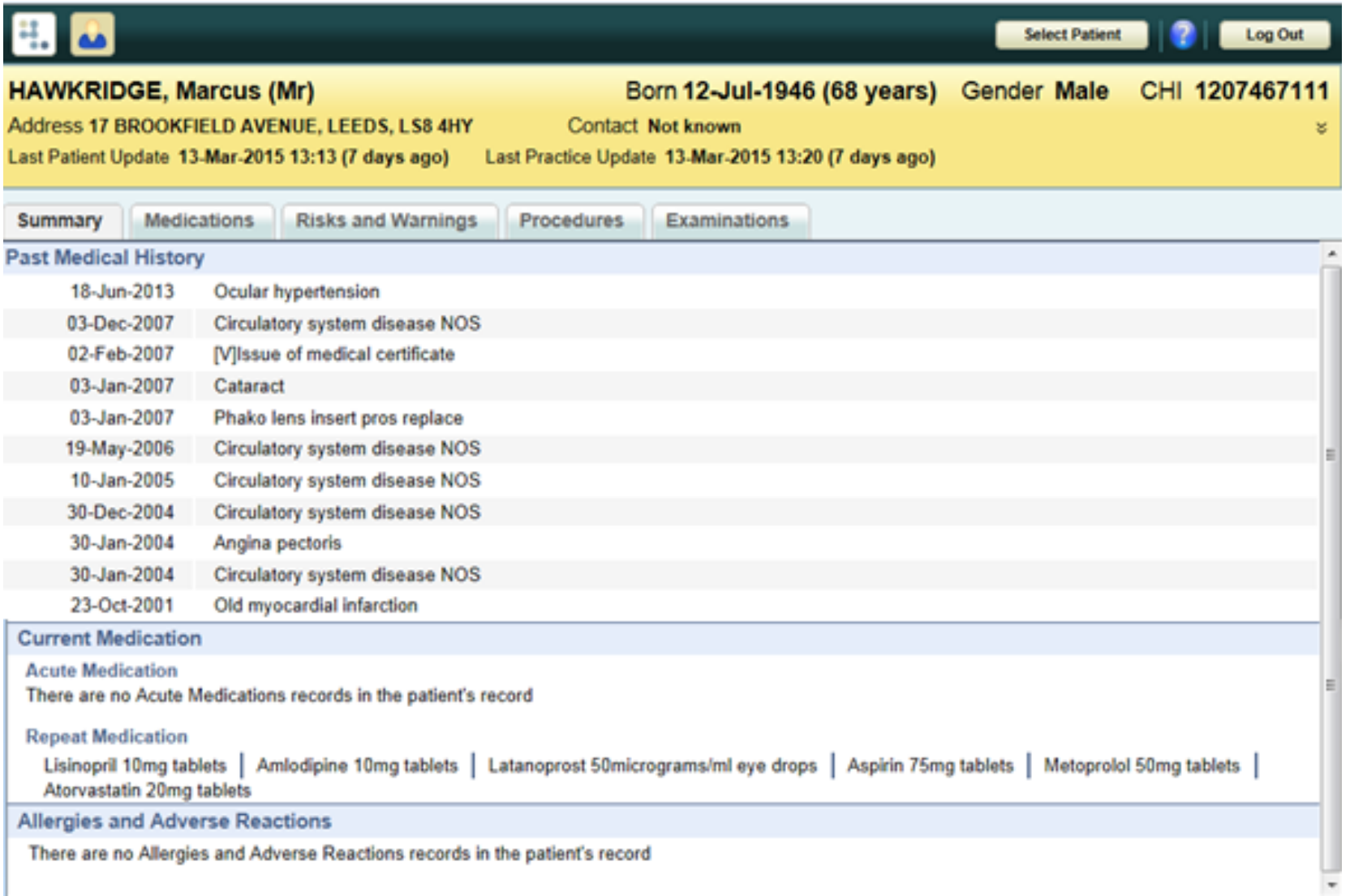
Your Care Connected displays the information across ten tabs

Demographics	Problems	Diagnosis	Medications	Risks & Warnings
• Name • NHS Number • Demographics • Current GP	• Current problems • Past problems • E.g. Leg bruise	• All diagnosis single list • E.g. Asthma	• Current medications • Past medications • Medication issues	• Allergies • Adverse reactions • Contraindications
Procedures	**Investigations**	**Examinations**	**Events**	**Summary**
• Operations • Immunisations • Vaccinations	• Recent tests • Biochemistry • ECG • Haematology • Imaging • Microbiology • Cytology • Physiology • Urinalysis • Others	• Blood pressure	• Encounters • Admissions • Referrals e.g. home visits	• Current problems • Recent tests • Current Medication • Allergies

Your Care Connected at Sandwell & West Birmingham NHS Foundation Trust

Lanarkshire portal GP summary

NHS Greater Glasgow and Clyde



Select Patient | Log Out

HAWKRIDGE, Marcus (Mr) Born **12-Jul-1946 (68 years)** Gender **Male** CHI **1207467111**

Address **17 BROOKFIELD AVENUE, LEEDS, LS8 4HY** Contact **Not known**

Last Patient Update **13-Mar-2015 13:13 (7 days ago)** Last Practice Update **13-Mar-2015 13:20 (7 days ago)**

Summary | Medications | Risks and Warnings | Procedures | Examinations

Past Medical History

18-Jun-2013	Ocular hypertension
03-Dec-2007	Circulatory system disease NOS
02-Feb-2007	[V]Issue of medical certificate
03-Jan-2007	Cataract
03-Jan-2007	Phako lens insert pros replace
19-May-2006	Circulatory system disease NOS
10-Jan-2005	Circulatory system disease NOS
30-Dec-2004	Circulatory system disease NOS
30-Jan-2004	Angina pectoris
30-Jan-2004	Circulatory system disease NOS
23-Oct-2001	Old myocardial infarction

Current Medication

Acute Medication

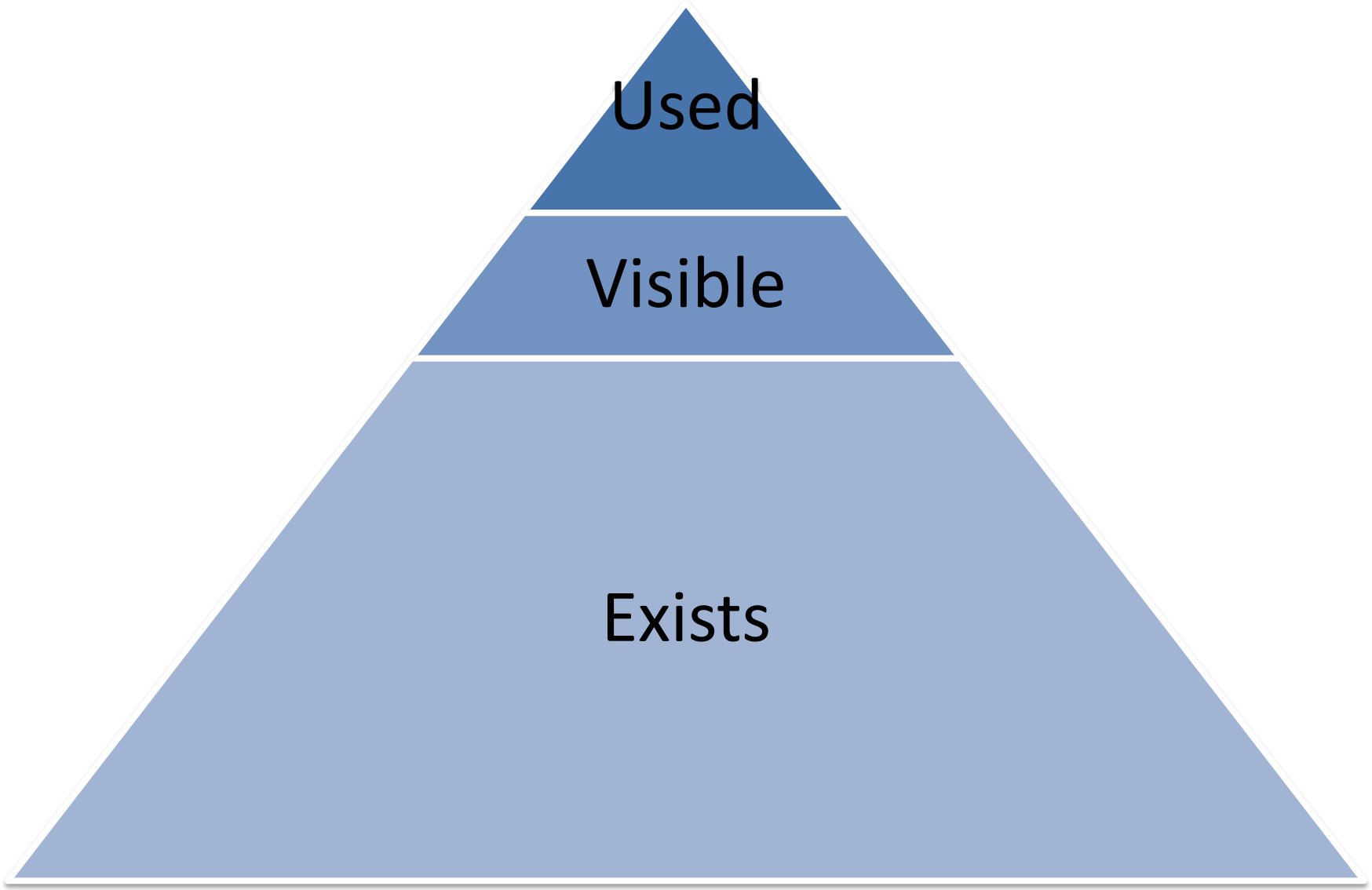
There are no Acute Medications records in the patient's record

Repeat Medication

Lisinopril 10mg tablets | Amlodipine 10mg tablets | Latanoprost 50micrograms/ml eye drops | Aspirin 75mg tablets | Metoprolol 50mg tablets | Atorvastatin 20mg tablets

Allergies and Adverse Reactions

There are no Allergies and Adverse Reactions records in the patient's record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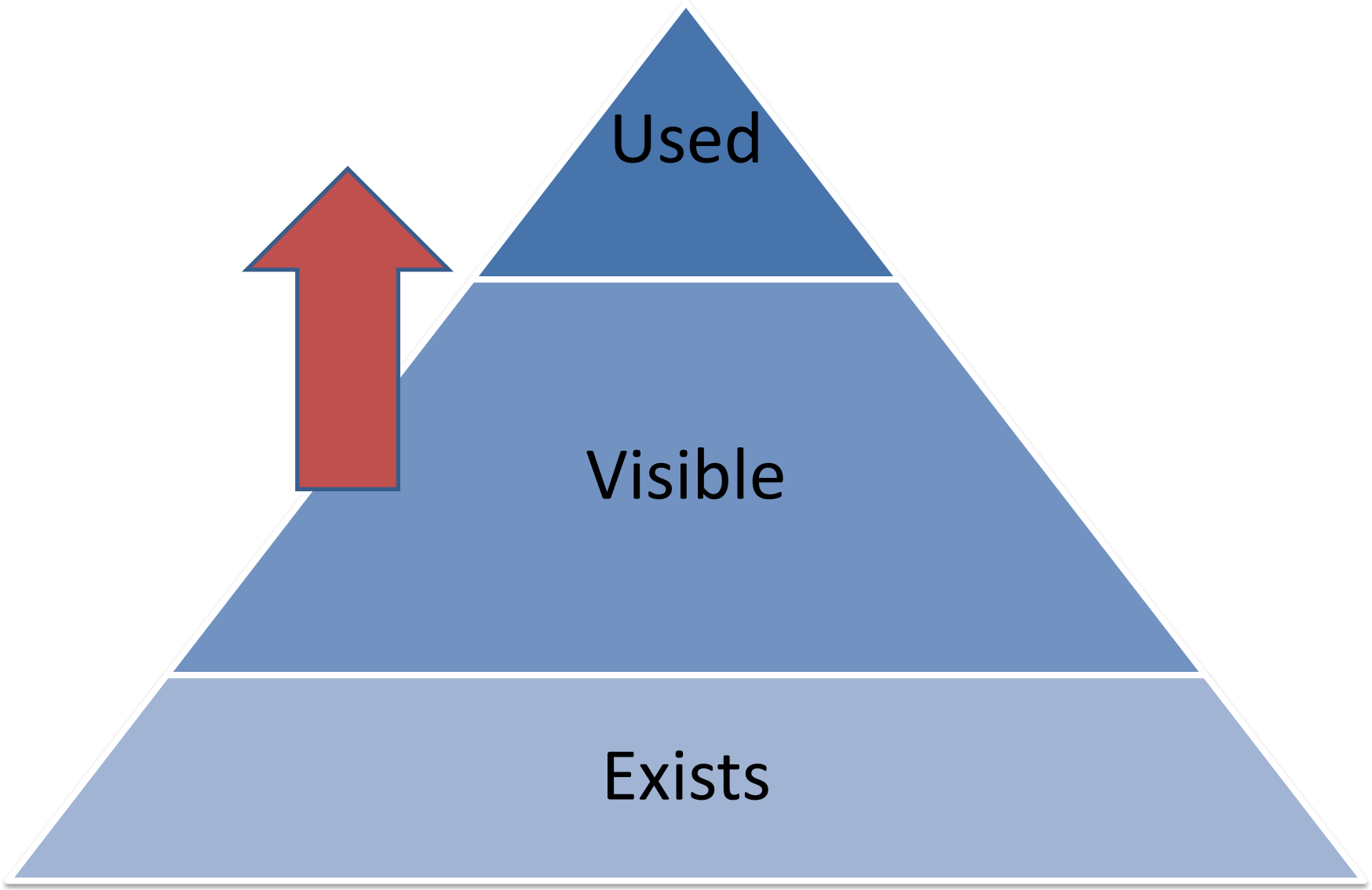
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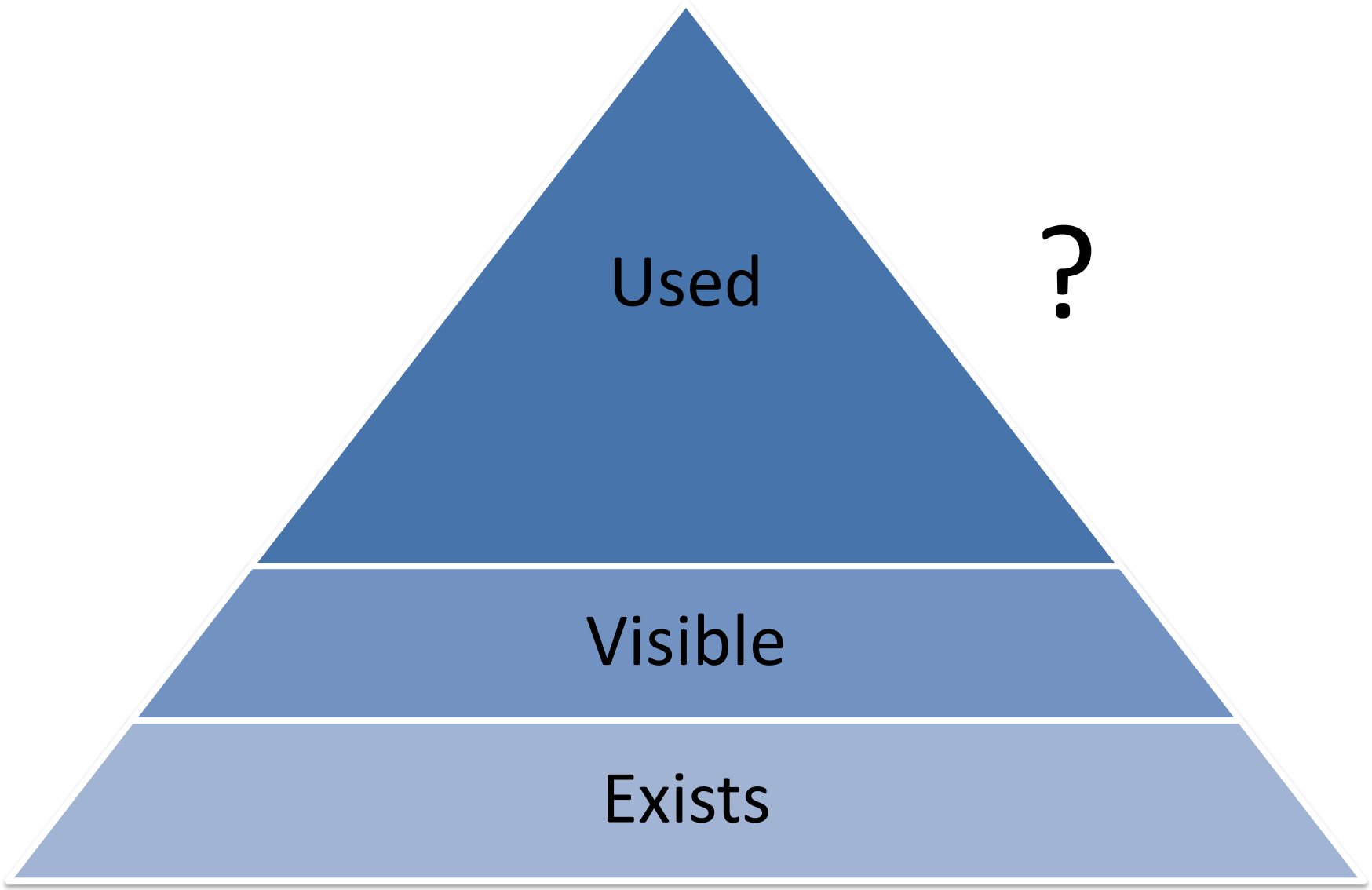
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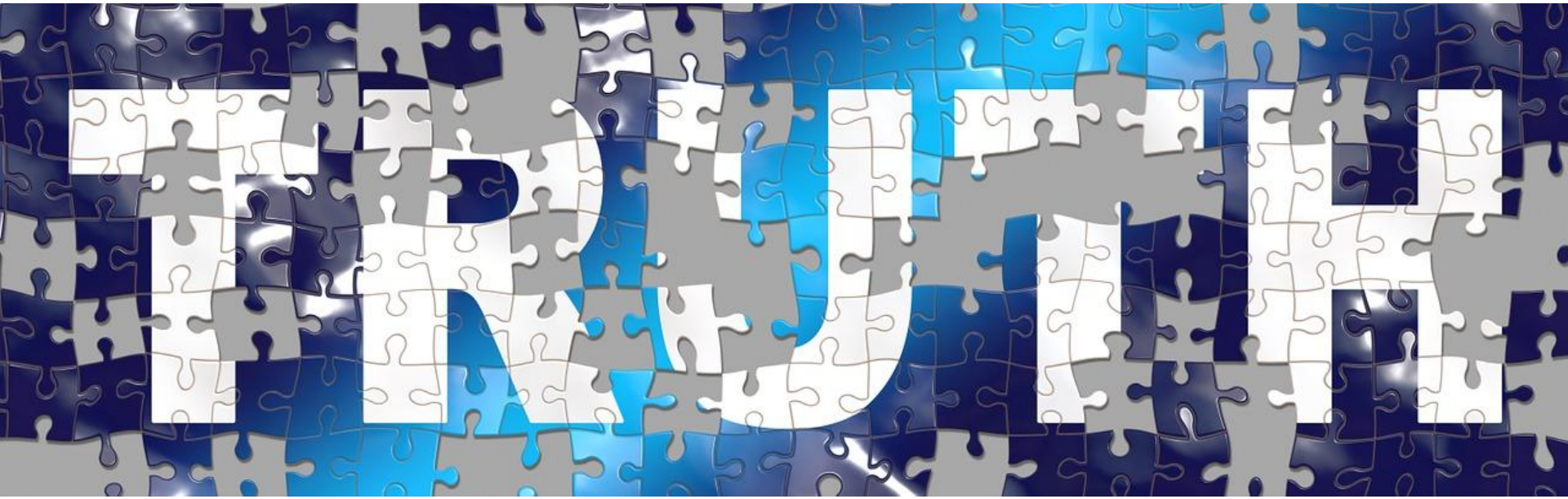

TRUTH

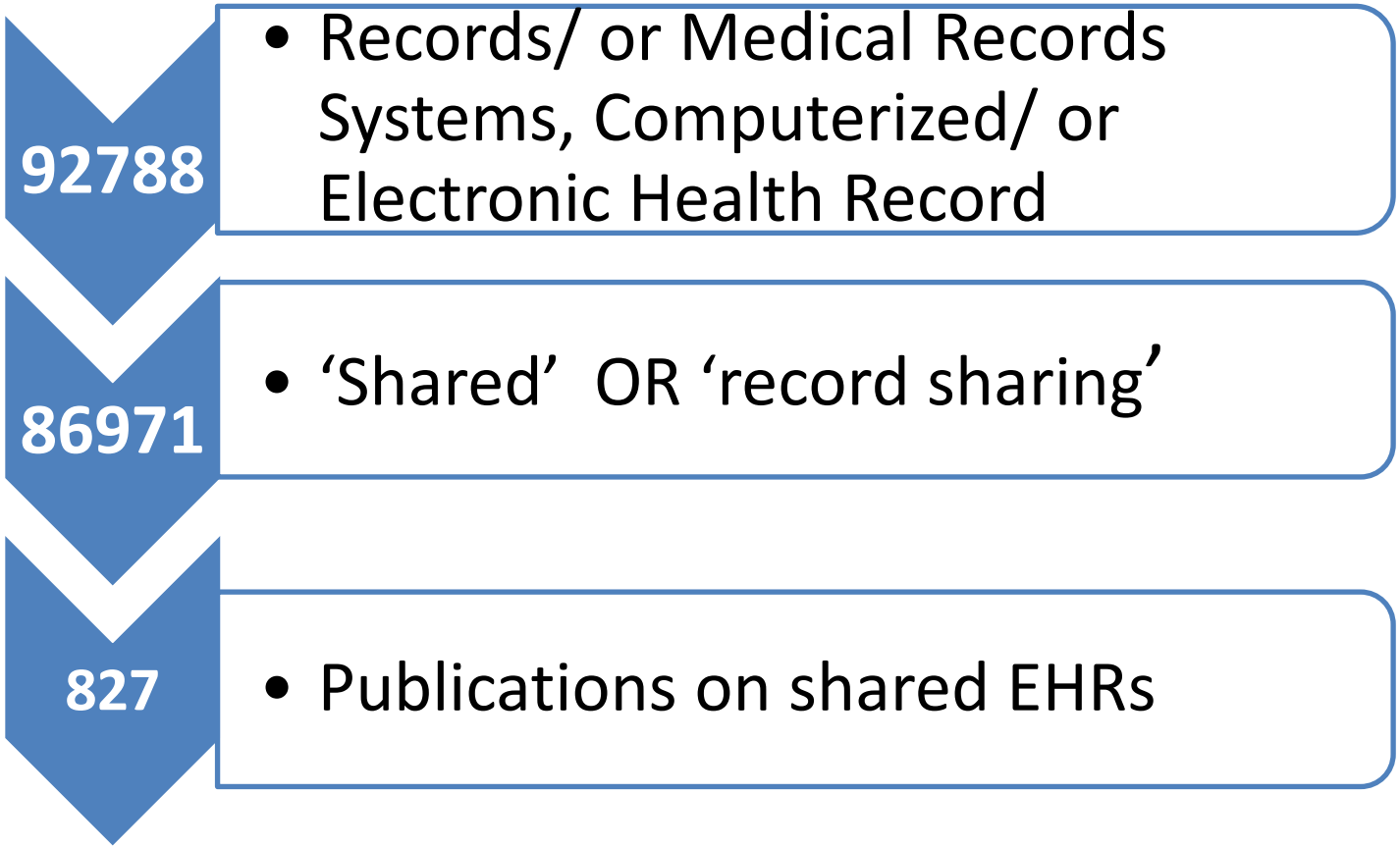
NHS Greater Glasgow and Clyde

Human factors in shared records

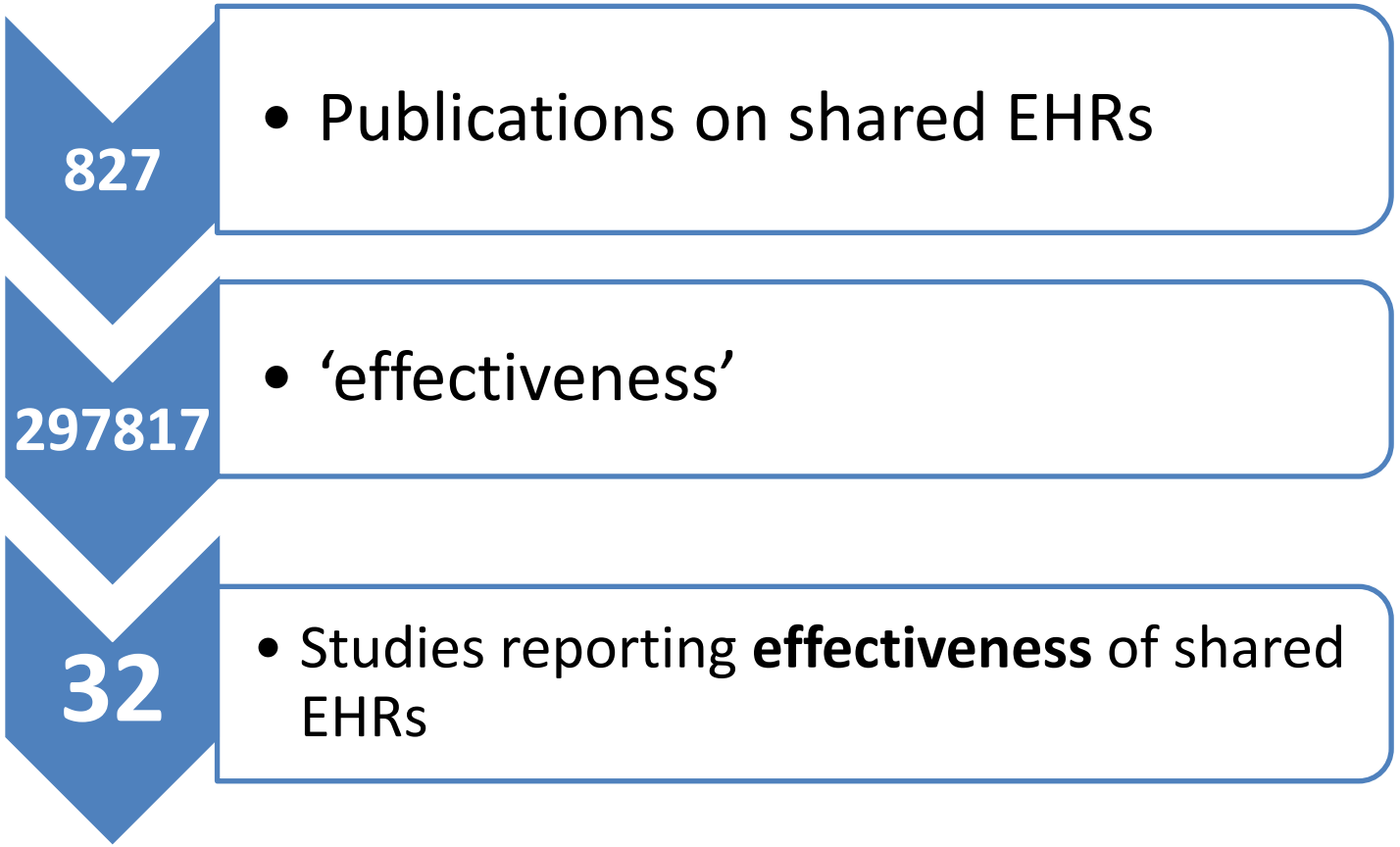
Visibility ≠ Use

How do clinicians assimilate, process and use information to alter decision making?

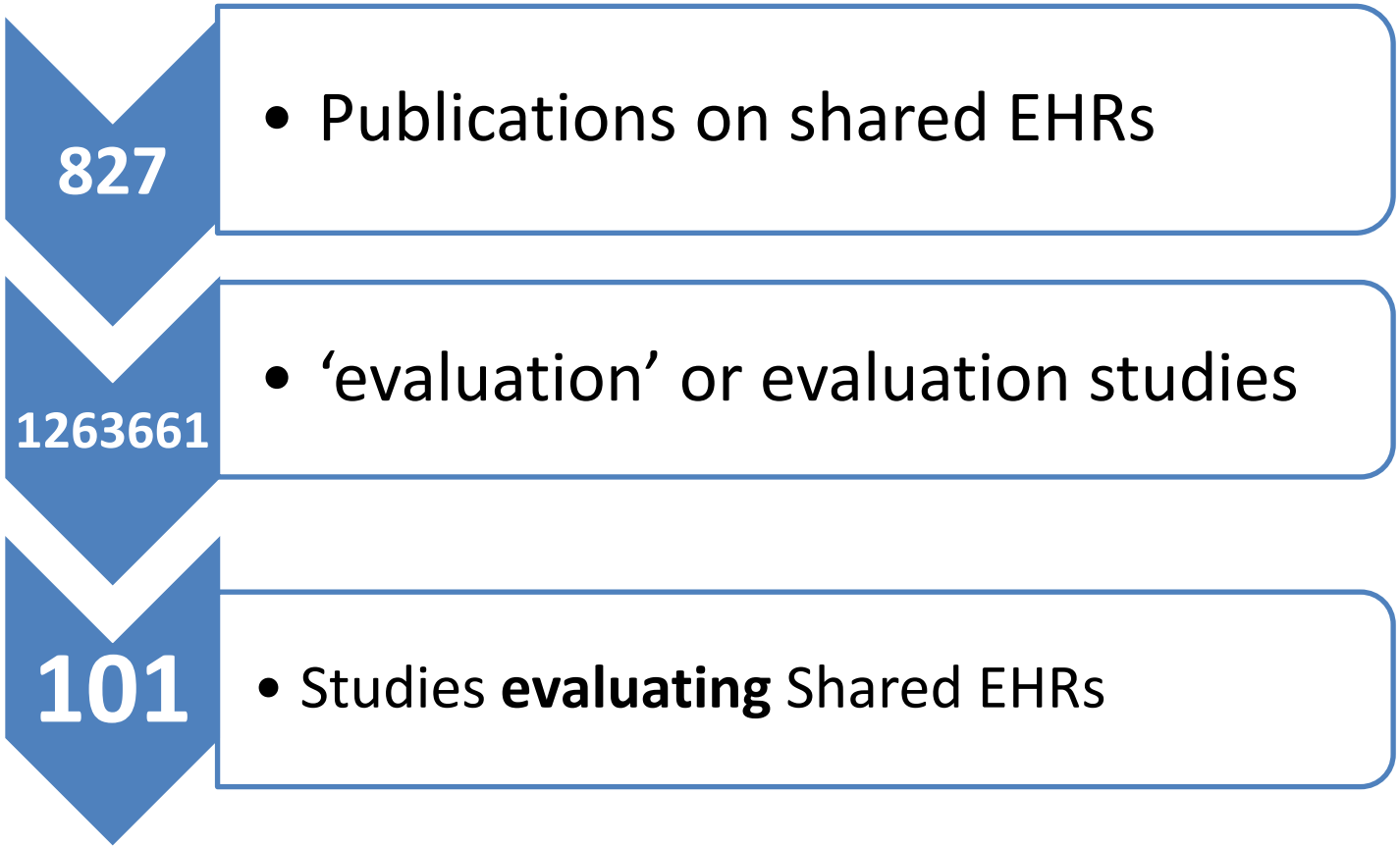
Shared records: the evidence



Shared records: the evidence



Shared records: the evidence



Lessons for implementation of national shared record summaries

NHS Greater Glasgow and Clyde

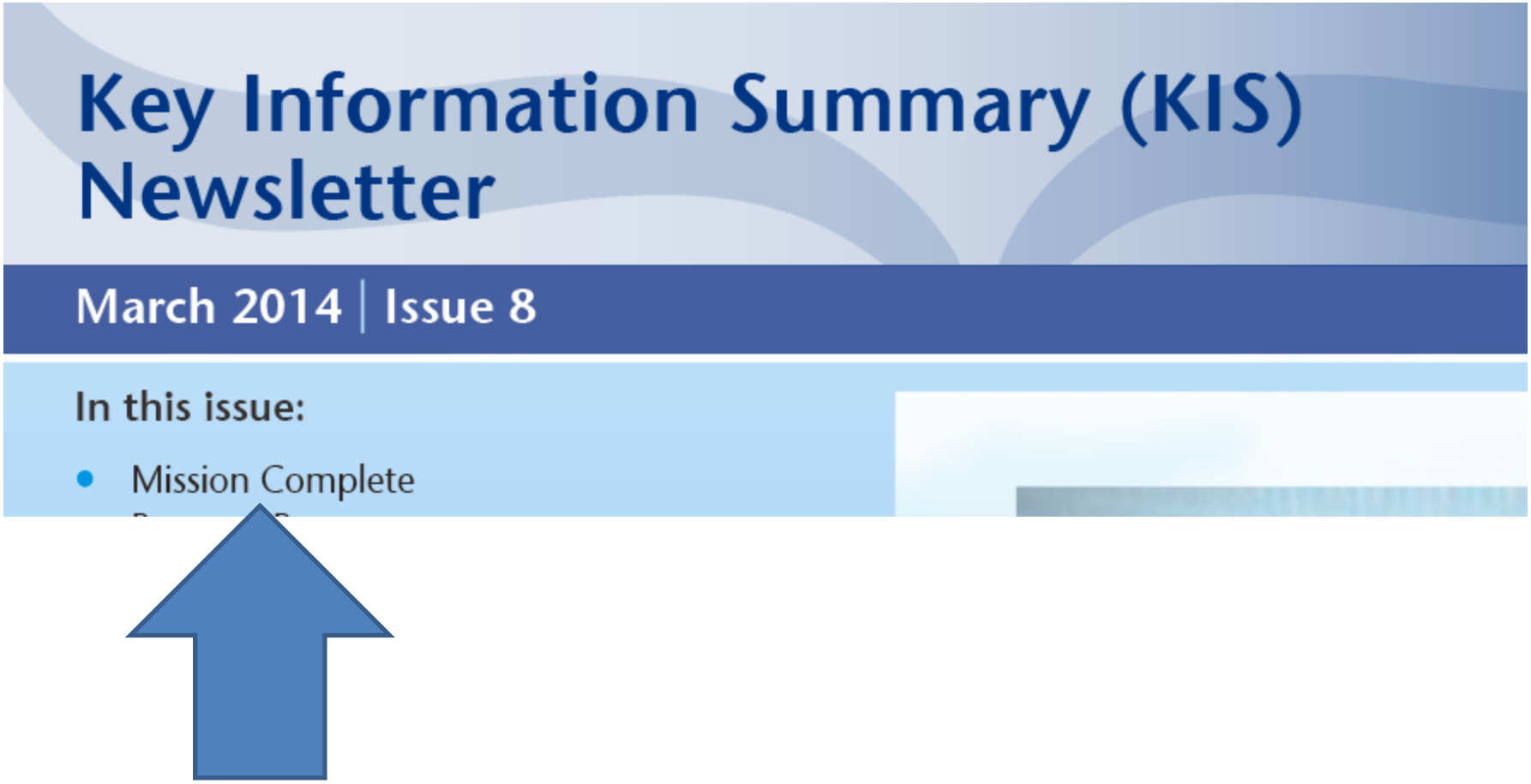
- Greenhalgh review across the UK

When designing and implementing complex technologies with pervasive implications, policymakers must consider not only technical issues but also the **personal**, **social** and **organisational** aspects of the programme.

A judicious blend of 'hard' and 'soft' management appears key to managing such programmes

Greenhalgh, Morris et al Int. J. Med. Informatics. 82(5):e125-38, 2013 May.

Key Information Summary



Key Information Summary

- ‘Special notes’, free text for important messages for out-of-hours (OOHs)
- Medical history and diagnoses
- Care plans
- Patient wishes on place of care and resuscitation
- Carer, social care and next of kin contact details.

Key Information Summary

- Craig review: Q1 2014
  - >90,000 records 2013-2014
  - Interviewed OOH clinicians (x14) and GPs
  - Respondents ‘agreed’ KIS enhanced safety , reduced admissions
  - Desire for
    - more (good-quality) data including social care
    - others to be able to input data

Key Information Summary

…" noting that patients **assume that the OOH GP knows everything** so that when she or he does not have all the information this is commented on and the patient is bemused or annoyed."

Craig et al KIS review

"we all know that **patients expect those who care for them to have details of their problems, tests and medication**. They are often surprised to learn how poorly this information is shared and frustrated by having to answer the same set of questions time and again."

Dr Neil Kelly Feb 14

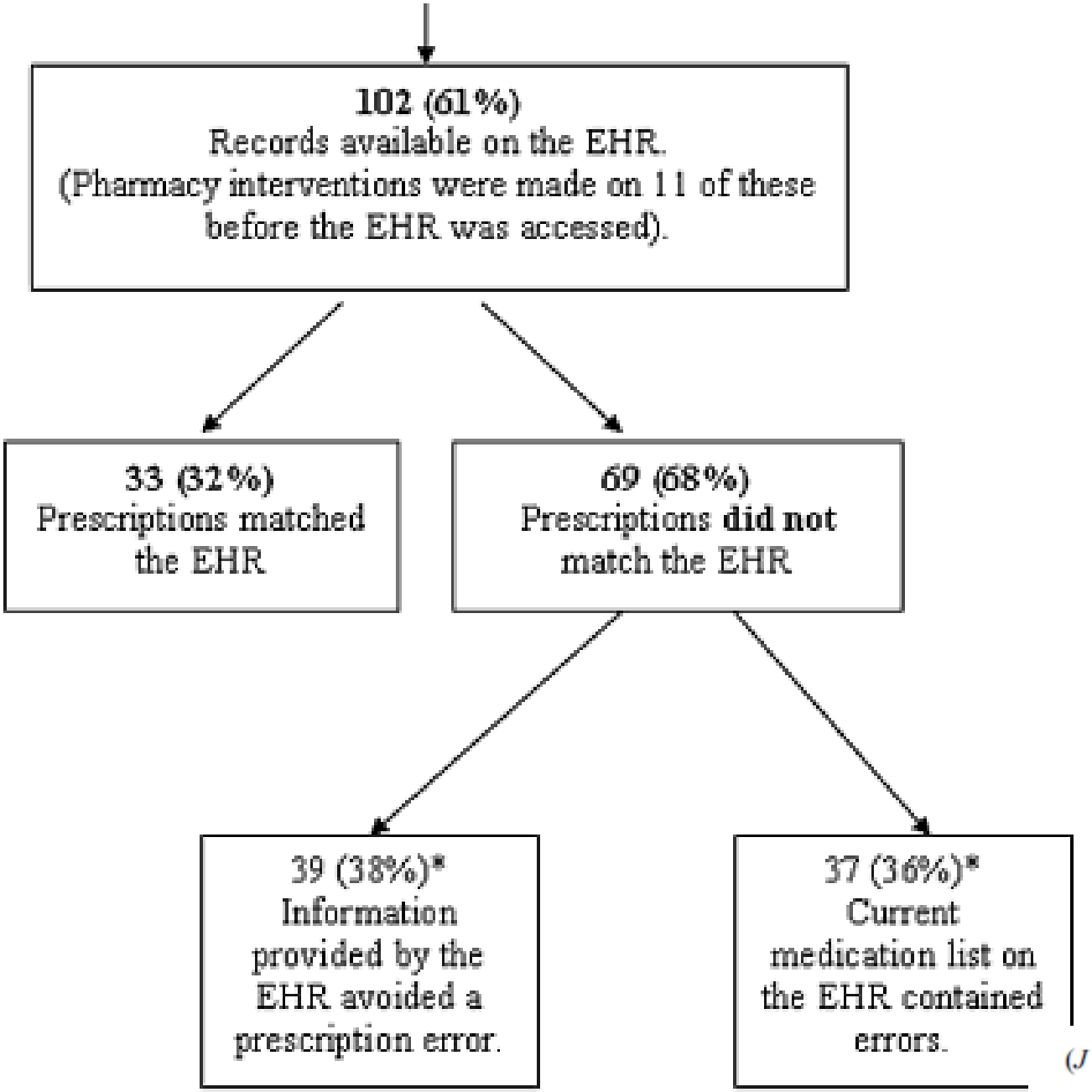
Medicines reconciliation

NHS Greater Glasgow and Clyde

- Surely safer with a shared record…
- Bradford,UK 39-bed IAU ; 6000 admissions/y
- Admitting staff had shared access to SystmOne GP system via smart cards (*note this was 2007/8)*
- Hypothesis:

"Access to a single , shared, contemporaneous patient record should lead to improved safety and quality of care…especially for certain groups such as the elderly"

(*J Patient Saf* 2011;7: 148–154)



(*J Patient Saf* 2011;7: 148–154)

Errors found	Discharge prescription	EHR
	Omission of drug	Wrong drug
	Unidentified allergies	

(*J Patient Saf* 2011;7: 148–154)

Examples

Drug omission

Eleven medicines were missed off the initial drug history on admission. The omission was detected by looking at the EHR. The missed medicines were aspirin, quinine sulfate, tiotropium inhaler, tramadol, spironolactone, beclomethasone inhaler, salbutamol inhaler, alendronic acid, felodipine, furosemide, and lactulose.

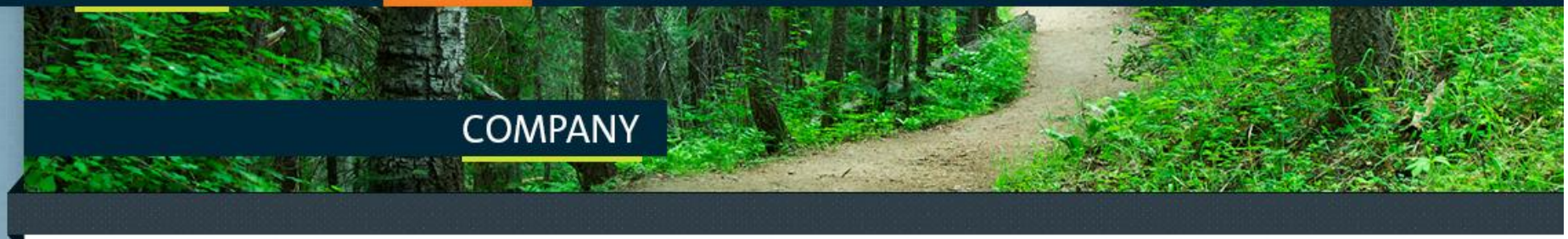
Wrong drugs in EHR

The EHR stated that the patient was taking aspirin and clopidogrel. However, these had been stopped previously as the patient was now taking warfarin.

(*J Patient Saf* 2011;7: 148–154)

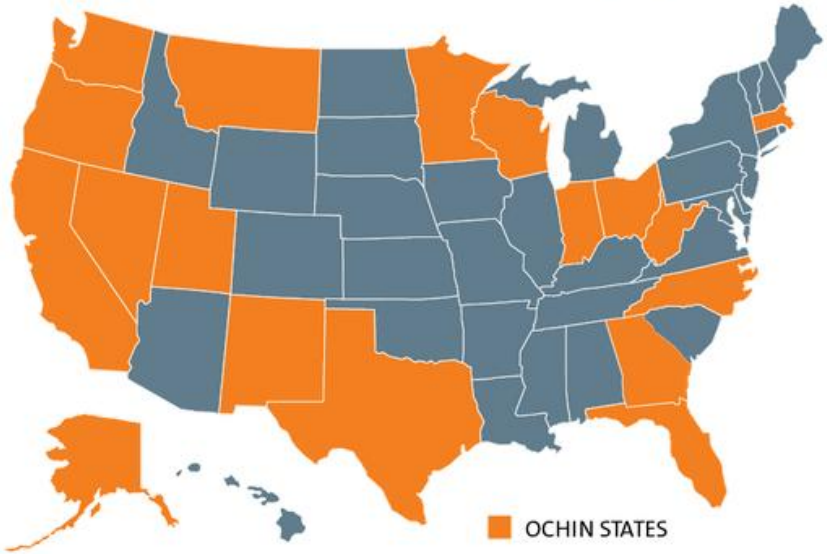
An American example..

Oregon Community Health Information Network



COMPANY

OCHIN is Currently in 18 States



We are known as one of the nation's largest and most successful health information networks, spanning 18 states and serving over 4,500 physicians. Our Health IT solutions improve the integration and delivery of health care services across a wide variety of practices—with an emphasis on safety net clinics and small practices as well as critical access and rural hospitals. OCHIN is focused on helping your practice use Health IT tools to achieve the core components of care quality improvement that are essential to realizing Institute for Healthcare Improvement's *Triple Aim* goals:

- (1) improving patient experience
- (2) enhancing population health
- (3) controlling costs.

About Us

Company
Purchasing
Our Values
Leadership
Board
Careers
Benefits

Recent Blog Posts

OCHIN Launches Acuere Health Care Data Aggregation System

HCCN Grant Award Announcement

Celebrating America's Health Centers: Innovators in Community Health – National Health Center Week 2016

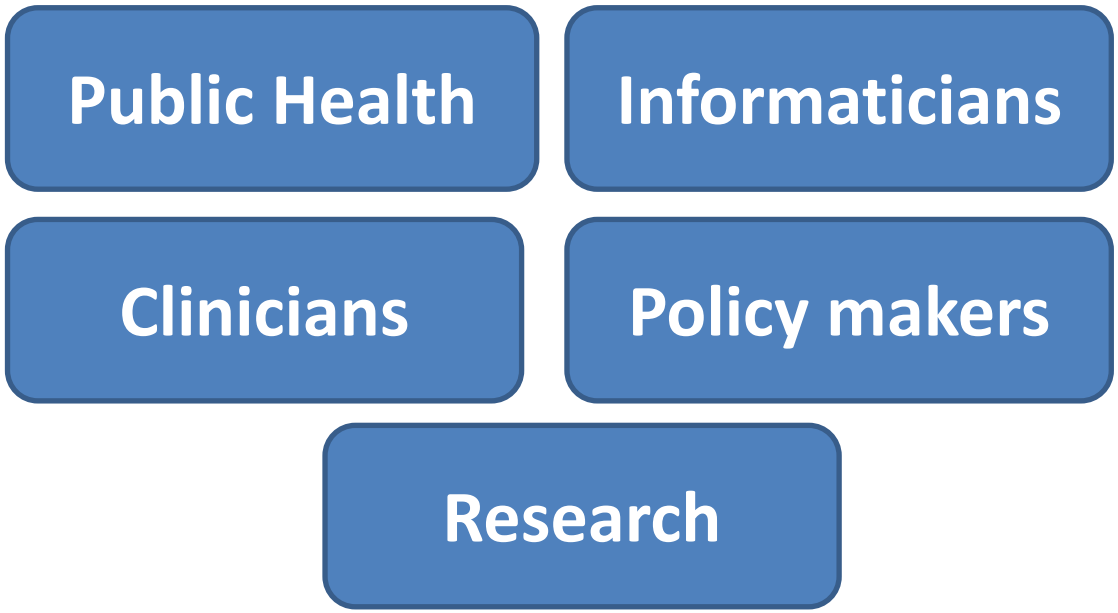
The OCHIN Values...

CONTACT US

OCHIN

- Patient-centred medical village
  - Shared linked EHR (Epic)
  - Centralised data warehouse and informatics
  - Improvement expertise

>40 organisations
>900,000 patients



OCHIN

NHS Greater Glasgow and Clyde

Published in final edited form as:
J Am Board Fam Med. 2013 ; 26(3): . doi:10.3122/jabfm.2013.03.120234.

Bringing Together Community Health Centers, Information Technology and Data to Support a Patient-Centered Medical Village from the OCHIN community of solutions

Jennifer E. DeVoe, MD, DPhil and
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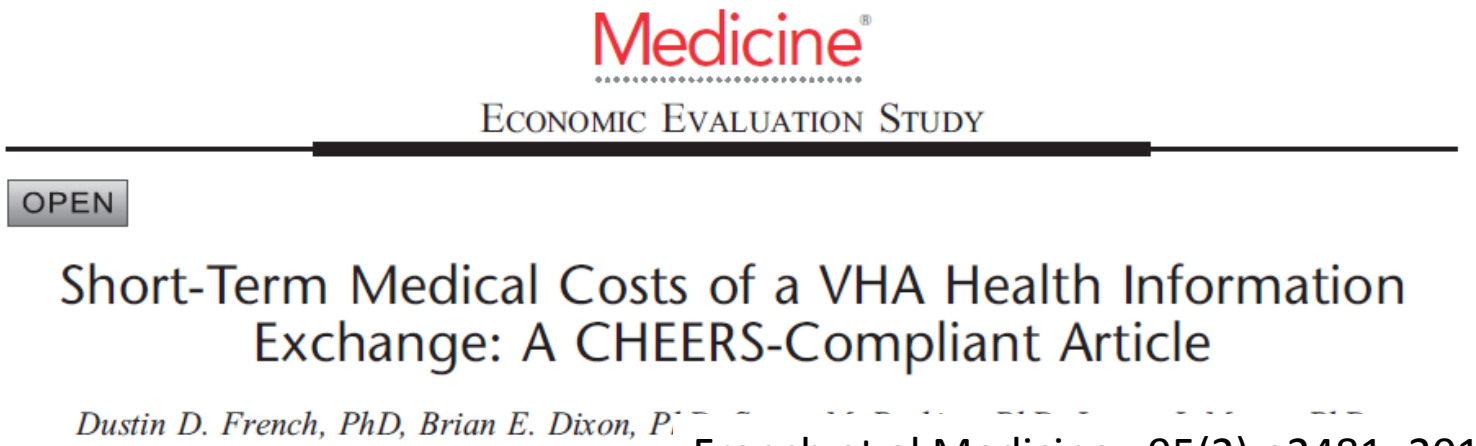
Evaluations: costs

- Virtual Lifetime Electronic Record for Veteran Affairs
  - French et al evaluated implementation of HIE in Indianapolis in controlled trial (n=6104 vs 45700)
  - Costs for VHA **increased** with information exchange by $1152/yr


Medicine®

ECONOMIC EVALUATION STUDY

OPEN

Short-Term Medical Costs of a VHA Health Information Exchange: A CHEERS-Compliant Article

Dustin D. French, PhD, Brian E. Dixon, P

Michael Weiner, MD, Allan J. Zillich,

French et al Medicine. 95(2):e2481, 2016 Jan

Evaluations: costs

- So why did costs increase?
  - Overall costs may have decreased – couldn't measure cost in non-VHA providers
  - Opt-in, so enrolled **sicker patients**… in spite of attempts to control. Affects all such studies (including eg KIS)
  - External medical information may have led to **more testing.**
  - Preliminary studies **no reduction** in medical utilization as a result of HIE

Evaluations: costs

- Were they too early in the **adoption curve**?
- Previous studies suggested HIE cost saving in emergency departments

17. Rahurkar S, Vest JR, Menachemi N. Despite the spread of health information exchange, there is little evidence of its impact on cost, use, and quality of care. *Health Aff (Millwood).* 2015;34:477–483.

Health Information Exchange

- Hersh et al 2015
  - Around 76% US hospital now have HIE
  - HI-TECH act allocated **$563m** for HIE
  - Systematic Review Jan 90 – Feb 15
    - **34** studies on outcomes of HIE
    - **No data** on clinical outcomes or harms
    - Low quality evidence of reduced costs / admissions (but not re-admissions)
    - ‘e-health leaders’ effect

(JMIR Med Inform 2015;3(4):e39) doi:10.2196/medinform.5215

Hersh review

- Not ‘whether’ but ‘how’

How can HIE be implemented in order to result in the greatest benefit for patients , clinicians and health systems with the least cost and harm?

Tharmalingam et al. BMC Medical Informatics and Decision Making (2016) 16:93
DOI 10.1186/s12911-016-0330-3

BMC Medical Informatics and Decision Making

RESEARCH ARTICLE Open Access

The value of connected health information: perceptions of electronic health record users in Canada

Sukirtha Tharmalingam*, Simon Hagens and Jennifer Zelmer

- iEHRs
  - 250,000 Canadian HCPs access health information outside their main practice
  - 91,000 actives users in previous month
  - 2,318 respondents in 6 jurisdictions

iEHR survey, Canada 2014

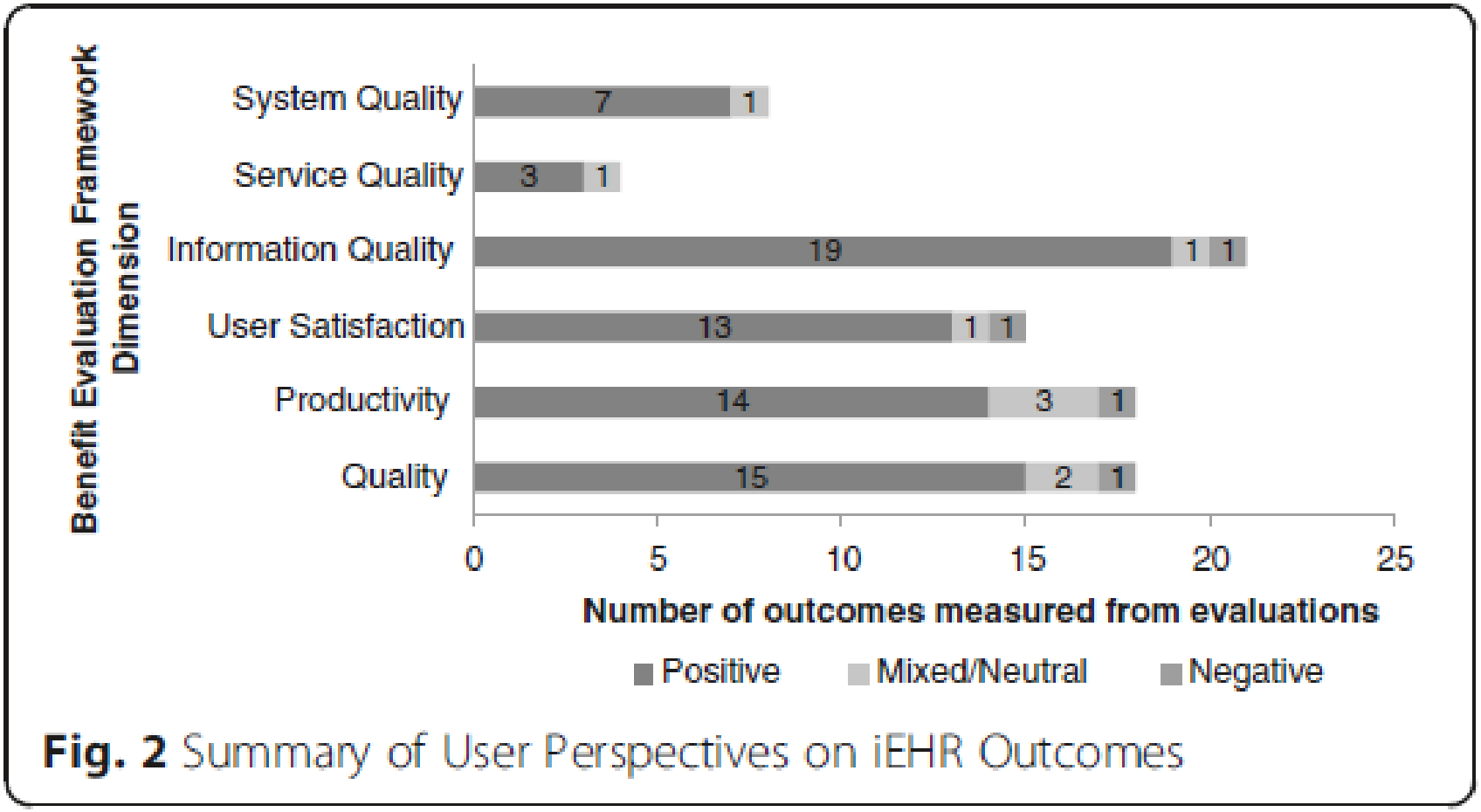


Fig. 2 Summary of User Perspectives on iEHR Outcomes

EHRs and collaborative work routines

International Journal of Medical Informatics 94 (2016) 100–111

Contents lists available at ScienceDirect

International Journal of Medical Informatics

journal homepage: www.ijmijournal.com

The impact of electronic health records on collaborative work routines: A narrative network analysis

Chia-An Chao

Scott College of Business, Indiana State University, 30 North 7th Street, Terre Haute, IN 47809, USA

Collaborative work routines

- **Organisational routines** are how we achieve much of what we do (Stene 1940)
- Feldman 2003: argued that routines can help us change things as well
- Chao: used '**narrative networks**' rather than workflow diagrams to review implementation of a perinatal record in a midWest US hospital

Feldman Admin Science Quarterly 2003
http://www.jstor.org/stable/3556620

Chao: findings

- Three main routines: shift change, computerised documentation, interprofessional communication
- Functional properties of EHR limited its support for clinician collaboration and **increased cognitive load.**
- Staff used more **personal notes** to amplify cognition
- Preference remained for '**synchronous**' communication to assure receipt

Some user quotes…

In some ways, it seems less structured b/c there are different ways to chart items and **everyone seem to be doing it differently.**

Difficult to navigate between screens, especially during delivery or c/s. There is **information missing** and other information is **not relevant** to our unit."

Chao conclusions:

- **Availability of information** did not automatically improve **communication** and **coordination**
- Implementation resource is required to **contextualise to local needs**
- EHRs need to expand beyond passive information repository and offer **stronger cognitive support**

Other concerns

Fears of wider sharing…

- Fear of liability under data protection law

- Sensitive codes..
  - ‘Sensitive’ information – huge restrictions…
  - Prescription exclusions e.g. contraception, aciclovir, voriconazole
  - Non-accidental injury to child

What can we do?

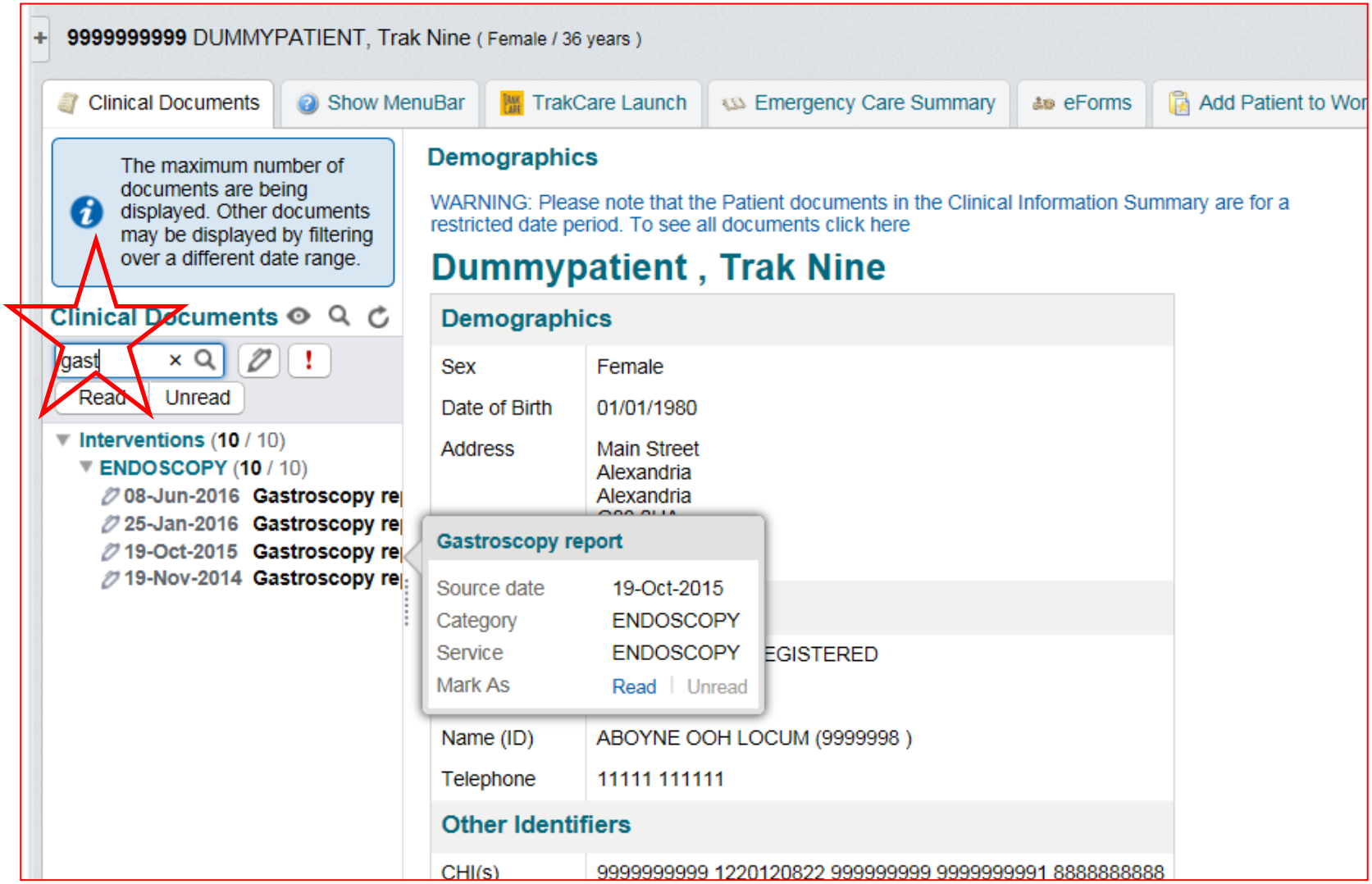
NHS Greater Glasgow and Clyde

Stop clinicians drowning in information

Get two-way interoperability

Engage clinicians and patients in co-creation

Tech tools to help find info..



Beyond PDFs..

- EHR-ARCHE
  - Can we get beyond a ‘Document-Oriented Architecture’ (IHE-XDS)?
  - Identified 446 frequently-needed diabetes care items
  - Content-based searching:
    - reduced **time** to find information (8min from 20min)
    - increased **success** of finding information (from 80% to 100%)

Duftschmid et al International Journal of Medical Informatics. 82(12):1195-207, 2013 Dec.

What can we do?

Stop clinicians drowning in information

Get two-way interoperability

Engage clinicians and patients in co-creation

Data quality – out of context

- Dutch network: compared cancer coding in 250,000 records in 52 practices to the cancer registry
- Used Standardised Incidence Ratios
  - 71.% colon cancer
  - 103% breast cancer (up to 230% in one EMR)

Sollie et al int J Med Informatics Aug 2016
http://dx.doi.org/10.1016/j.ijmedinf.2016.08.00

Data quality – a shared problem

- Better visibility of coded data in context in all settings will act to improve quality
  - All clinicians need to be able to flag questioned items

Examples

Drug omission

Eleven medicines were missed off the initial drug history on admission. The omission was detected by looking at the EHR. The missed medicines were aspirin, quinine sulfate, tiotropium inhaler, tramadol, spironolactone, beclomethasone inhaler, salbutamol inhaler, alendronic acid, felodipine, furosemide, and lactulose.

Wrong drugs in EHR

The EHR stated that the patient was taking aspirin and clopidogrel. However, these had been stopped previously as the patient was now taking warfarin.

(*J Patient Saf* 2011;7: 148–154)

What can we do?

Stop clinicians drowning in information

Get two-way interoperability

Engage clinicians and patients in co-creation

Key Information Summary

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- What happened to **co-creation**?
  - Patient or carer ability to access and amend or vary consent / contact details etc.
  - Could we use experienced community-based or secondary care staff esp for long-term conditions..
  - Would this help data quality?
- Would this reduce **overheads of curation**?

Patient-centred Health Information

Table 1

Model for functionalities of a Patient-Centered Health Information System

Functionalities	
Level 1 Functionality: patient reported information	Collect information, such as self-reported demographic and risk factor information as well as patient reported outcomes
Level 2 Functionality: existing clinical information	Integrate patient reported information with existing clinical information from electronic health records and/or claims data
Level 3 Functionality: interpretation of information	Interpret information for the patient by translating clinical findings into lay language and delivering health information through a user-friendly interface
Level 4 Functionality: individualization of information	Provide individualized recommendations to the patient, such as screening reminders, based on the patient's risk profile and on evidence-based guidelines
Level 5 Functionality: patient activation and engagement	Facilitated informed patient action integrated with primary and specialty care through the provision of vetted health information resources, decision aids, risk calculators, personalized motivational messages, and logistical support for appointments and follow-up

LEGEND. Adapted from Krist AH, Woolf SH. A vision for Patient-Centered Heath Information Systems. *JAMA* 2011; 305(3):300-301.

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- Direct you to information on the internet that your doctor wants you to see to help you learn more about your health
- Send both you and your doctor reminders when you need certain tests

https://secure.mypreventivecare.com/

Shared records: the dream and reality

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- Conclusions
  - We need to do far more to address **cognitive load** and human factors
  - Clinicians need **better training** for a new era of vast information accessibility
  - Need much better research to inform **evidence base** for clinical benefit

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