



UCLPartners Informatics Strategy

Partnership map

Trusts

1. Barking, Havering and Redbridge University Hospitals NHS Trust
2. Barnet, Enfield and Haringey Mental Health NHS Trust
3. Barb Health NHS Trust
4. Basildon and Thurrock University Hospitals NHS Foundation Trust
5. Camden and Islington NHS Foundation Trust
6. East London NHS Foundation Trust
7. Great Ormond Street Hospital for Children NHS Foundation Trust
8. Hertfordshire Community NHS Trust
9. Homerton University Hospital NHS Foundation Trust
10. Luton and Dunstable University Hospital NHS Foundation Trust
11. Mid Essex Hospital Services NHS Trust
12. Moorfields Eye Hospital NHS Foundation Trust
13. North East London NHS Foundation Trust
14. North Middlesex Hospital NHS Trust
15. The Princess Alexandra Hospital NHS Trust
16. Royal Free London NHS Foundation Trust
17. Royal National Orthopaedic Hospital NHS Trust
18. South Essex Partnership University NHS Foundation Trust (SEPT)
19. Southend University Hospital NHS Foundation Trust
20. The Tavistock and Portman NHS Foundation Trust
21. University College London Hospitals NHS Foundation Trust
22. West Hertfordshire Hospitals NHS Trust
23. Whittington NHS Trust

Clinical Commissioning Groups

1. Barking and Dagenham
2. Barnet
3. Basildon and Brentwood
4. Camden
5. Castle Point and Rochford
6. City and Hackney
7. Enfield
8. Haringey
9. Havering
10. Hertfordshire Valley
11. Islington
12. Luton
13. Mid Essex
14. Newham
15. Redbridge
16. Southend
17. Thurrock
18. Tower Hamlets
19. Waltham Forest
20. West Essex



Higher Education Institutions

1. Anglia Ruskin University
2. City University London
3. Institute of Education
4. London Metropolitan University
5. London School of Hygiene and Tropical Medicine
6. London South Bank University
7. Middlesex University London
8. Queen Mary University of London
9. UCL
10. University of East London
11. University of Essex

Other affiliated organizations

1. Anglia Ruskin Health Partnership
2. NIHR Clinical Research Network North Thames
3. NIHR Collaborators for Leadership in Applied Health Research and Care (CLAHRC) North Thames
4. Health Education East of England
5. Health Education North Central and East London

Our vision

Our vision is to harness the strengths of the Partnership to develop a model of informatics innovation and adoption that will transform benefit for patients and citizens across the geography we serve, add value to health care organisations locally, nationally and internationally through improved health care delivery and enable more rapid translation of innovation into practice.



**LONDON
HEALTH
COMMISSION**

**SUPPORTED BY
MAYOR OF LONDON**

UCLPartners
Academic Health Science Partnership



The graphic features a network of colored lines (red, blue, green, orange, brown) connecting various icons: a red cross, a pill, a brain, an apple, and a factory. The lines are set against a solid green background.

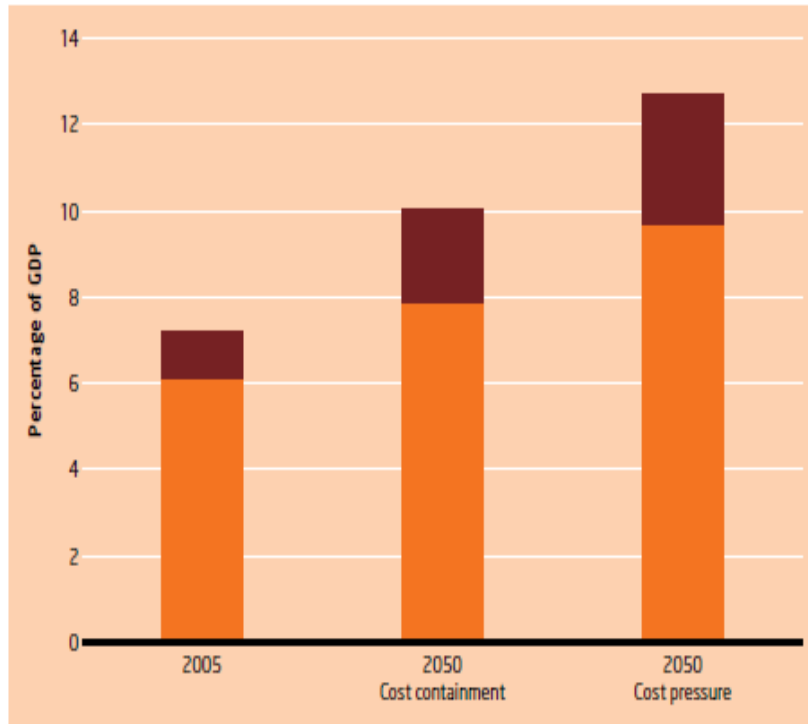
BETTER HEALTH FOR LONDON

The report of the
London Health Commission



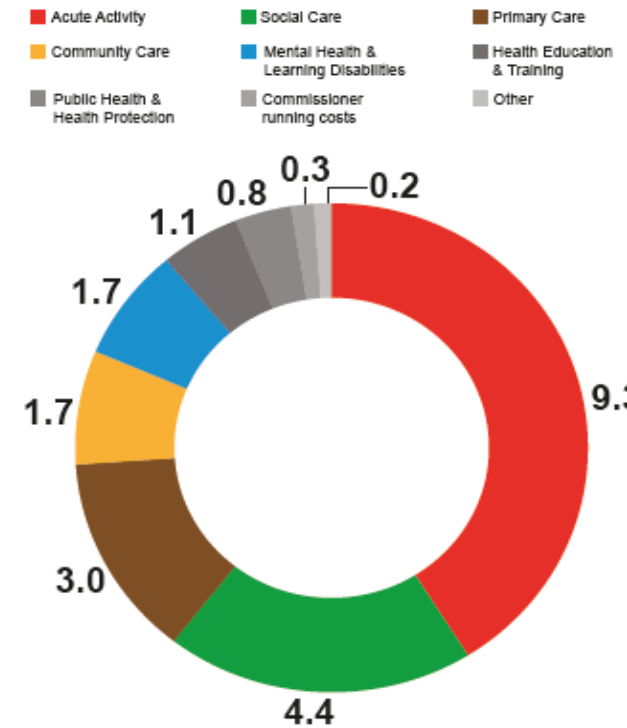
Healthcare spend

Figure 28 OECD's health and long-term care projections: United Kingdom, 2005-50



Source: OECD (2006)

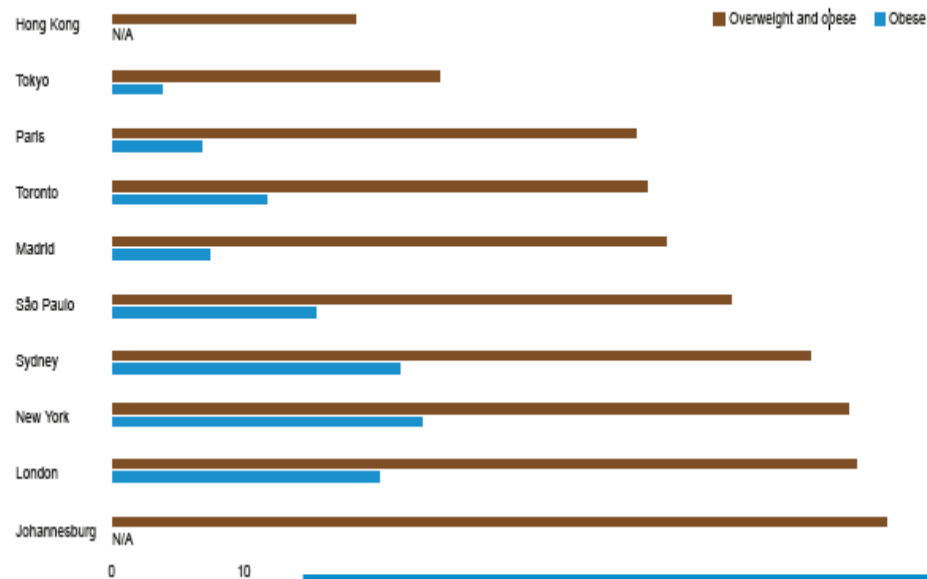
Total health and social care spend: £22.5bn



London

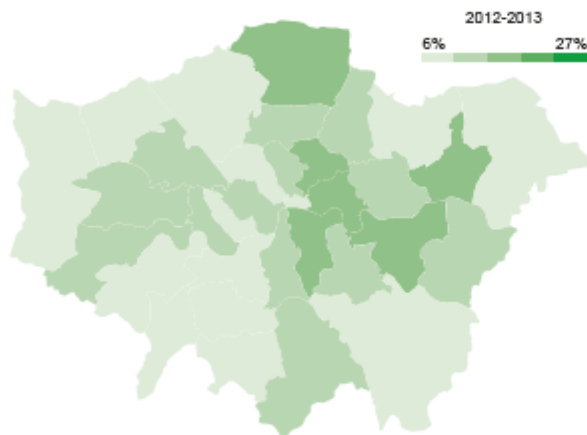
Lifestyle choices

Percentage of obese and overweight adults in 10 world cities

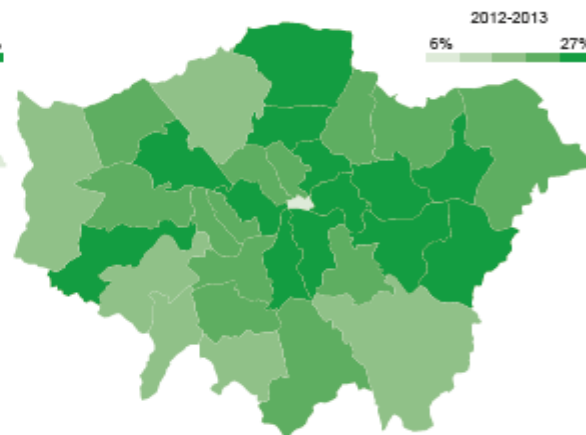


In parts of London a quarter of children leaving primary school are obese

Percentage of reception children classified as obese



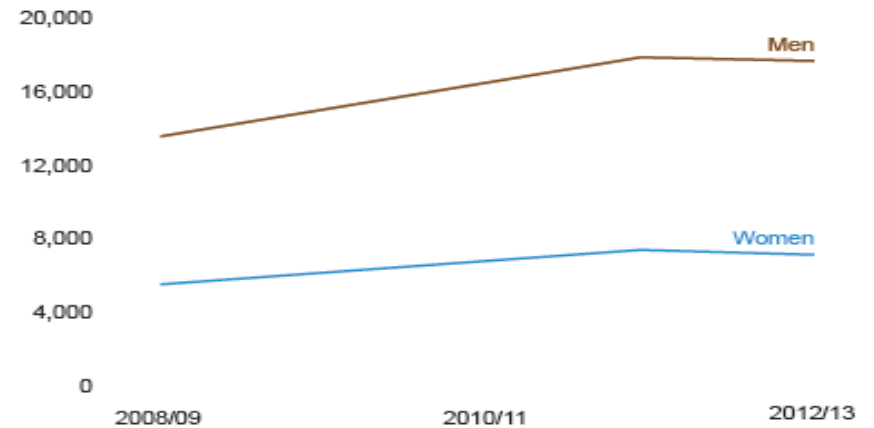
Percentage of Year 6 children classified as obese



Need to focus on prevention

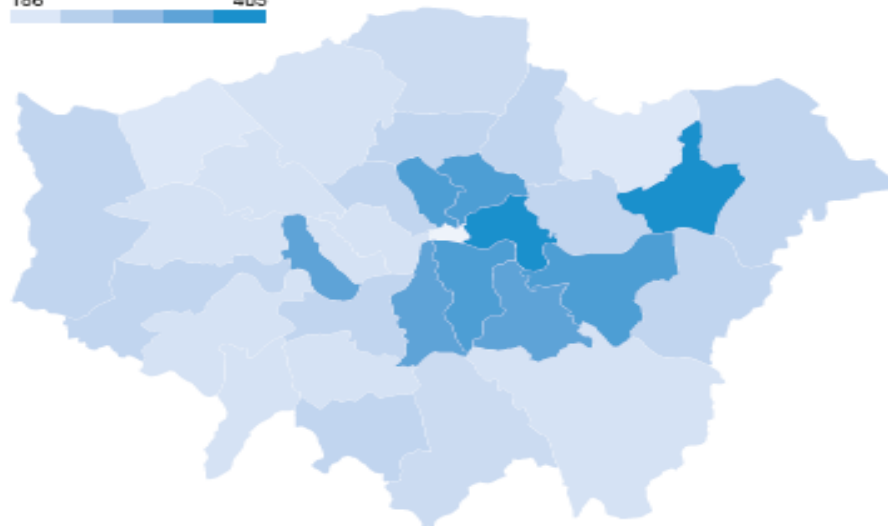


Total number of alcohol related hospital admissions in London by gender/year



Deaths attributable to smoking in London boroughs

Rate per 100,000 people, 2010-2012
186 405



System failures



- **Failures are common (13-19%)**
- **Real risk to patients**
 - 1 in 7 Rx records contained an error. 20% of which could have serious harm
 - 1 in 7 outpatient appointment proceeded with incomplete medical record. 1.5% with no record at all.
- **Wide variation in reliability**
 - 1 in 5 operations involved wrong, faulty or missing equipment or staff didn't know where it was or how to use it.



Our goals

Single system approach

- Common goal and purpose
- Share experience and expertise
- Culture of trust and duty to share information responsibly across the Partnership
- Collaboration between Partners

Big data

- Collect data once and use multiple times in multiple settings
- Use insights from data analysis to reduce variation, waste and harm and drive improvement

Connectedness

- Common framework of harmonised approaches to enable effective and responsible data sharing
- Exploit benefits of current local systems and connect using open data and interoperability standards
- Harmonise and standardise data collected across the Partnership as much as possible



Our Objectives



UCLP as a single connected system

Use information to drive population health improvement

Use the connected system to enable research participation

Develop workforce capability

Innovation

Governance and leadership to deliver the strategy




Why focus on connectedness?

Care quality and outcomes

- Enable care to be delivered in the most appropriate place for the patient
- Monitor outcomes across whole pathways of care and identify which interventions add most value
- Reduce risk to patients by ensuring information is available to all who need it at the point of care
- Reduce duplication of radiology and laboratory investigations because results are not accessible to care providers

Patient and staff satisfaction

- Avoid the need for patients and their carers to have to repeat the same information numerous times
 - Provide reassurance to patients that their health and social carers are working in a joined up manner
 - Share information about patients' preferences and wishes between health and social care professionals so that unnecessary admissions to hospital can be avoided
 - Enable staff to spend more time with their patients rather than searching for information
- 

Benefits of connected Partnership

Efficiency

- Reduce movement of paper between organisations and provide faster access to information
- Reduce duplicate laboratory and radiology tests
- Identify and reduce variations in practice across whole pathways of care

Information Governance

- Provide patients and the public with reassurance that access to their information can be monitored in a way that is not possible with paper-based records
- Consistent approach to data sharing

Financial

- Efficiency savings from admission and appointment avoidance, reduction in duplicate diagnostic tests and more effective use of the workforce.
- Potentially reduce litigation costs related to patient harm resulting from lack of complete and comprehensive information
- Potential financial benefits for UCLPartners would be in the region of £56M per annum based on PwC projections for DH

Evidence of benefits from other health systems

Northern Ireland Electronic Care Record (pilot phase)

- 74% of doctors reported that the ECR had enabled them to make a more rapid diagnosis
- 97% of clinicians reported that the ECR had improved how quickly they could access information needed for direct patient care
- 6.8% reduction in review appointments
- 3.6% reduction in outpatient diagnostic imaging
- 21.6% reduction in outpatient laboratory investigations

NHS Greater Glasgow and Clyde clinical portal programme

- 2600 fewer lab tests per week
- ~ £15m savings from reduced need to move paper between organisations



Programme building blocks

Map the landscape

- Environment scan to assess maturity of the digital landscape and assess requirements to enable connectivity across the Partnership

Involve the public in everything we do

- Maintain the trust of the public and data controllers through pro-active engagement and ensure coordinated best practice of information governance

Define a model for change

- Develop a federated network model of local health economies which are enabled to integrate and link data to generate a digital care record centred on a patient rather than an organisation

Define the currency of care

- Define datasets that map across journeys of care that will be shared between local health economies and with different groups of healthcare professionals

Promote interoperability of existing systems

- Support adoption of consistent standards for data and common interoperability standards that will facilitate connectivity between local health economies

Support research development and innovation

- Define principles and best practice of the use of data for research through development of a federated network of accredited safe havens.

Support capacity building across the Partnership

- Provision high value training and continued professional development opportunities for a broad range of clinical and professional staff groupings

Collaborate and learn from the best

- Showcase programmes already delivering value within the Partnership and collaborate with national and International centres of informatics innovation

Informatics Priorities Q4

2014

October

November

December

Digital Maturity

- Environment Scan

Digital Maturity

- NHS England maturity model

Genomics Medicine Centre

- Support development of the data and informatics section for Genomics Medicine Centre proposal and project plans
- Support implementation of the project within the consortium trusts

Cancer Informatics

- Provide support to Renal Cancer pilot and informatics support to London Cancer team
- Support development of informatics plan for Genomics Medicine Centre and 'Case for Change' programme

Join Dementia Research

- Support creation of commercial business model; working group to take forward phase 2 SBRI requirements

Supporting Integrated Care programmes

- WELC Transforming Services Together informatics group – data analytics for population health and quality improvement
- Islington CCG informatics steering group

Information Sharing

- Link with regional and national IG and PPI groups; develop Information Assurance Strategy
- Generic consent models

Innovation

- Provide support to Care City innovation hub
- Provide input to LifeKIC fund bid

The EMR Adoption Model an 8 scale IT maturity model

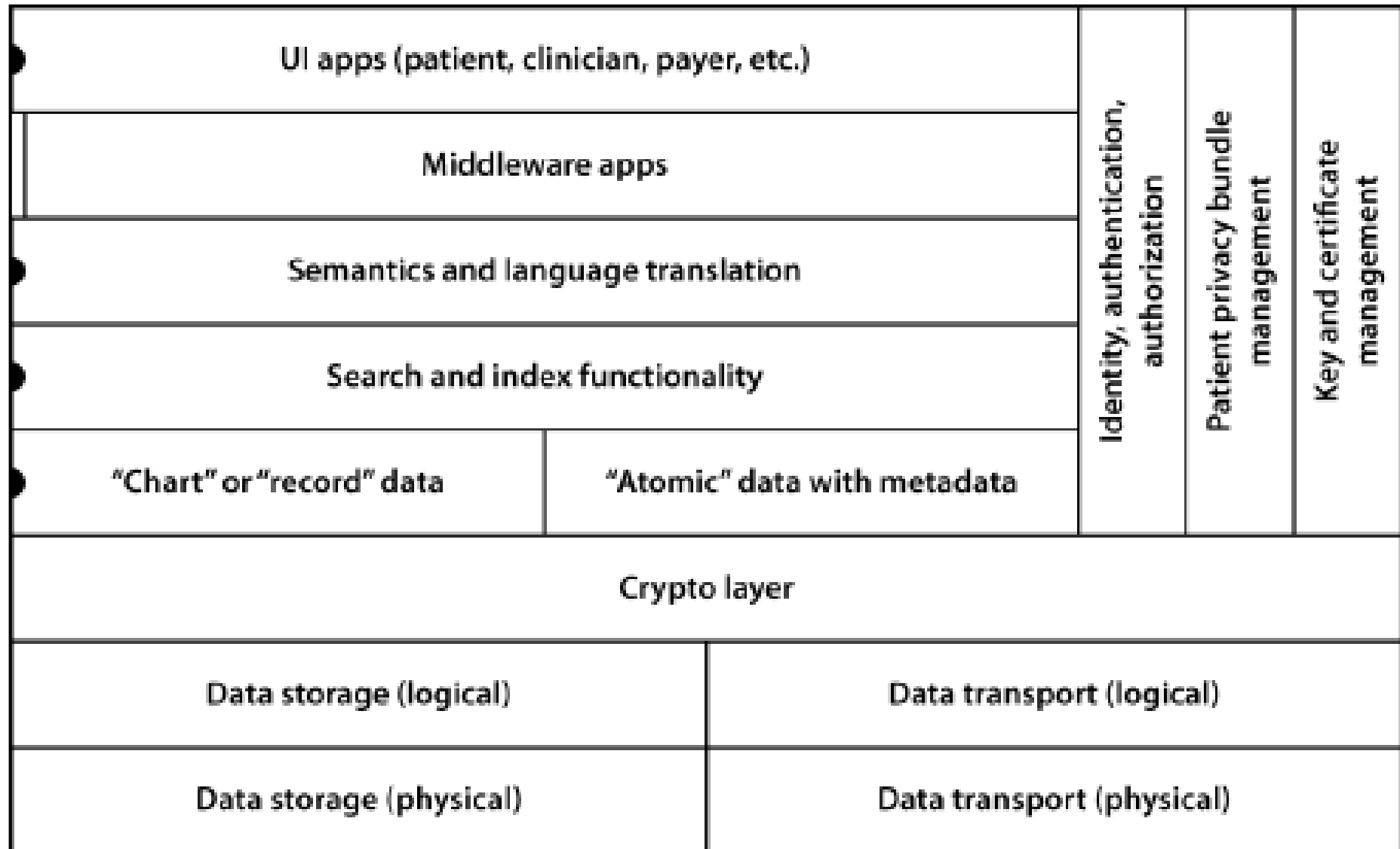
European EMR Adoption Model SM		
Stage	Cumulative Capabilities	
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing feeding outcomes reports, quality assurance, and business intelligence; Data continuity with ED, ambulatory, OP	Paperless environment enabling data continuity to deliver and manage patient care for all hospital services and supporting data sharing with all care delivery stakeholders → Optimized quality of care and patient safety → Optimal clinical operational and business process efficiency
Stage 6	Physician documentation interaction with full CDSS (structured templates related to clinical protocols trigger variance & compliance alerts) and closed loop medication administration	Optimized diagnostic and care delivery efficiency by standard treatment protocols; Further reduction / elimination of medical errors → improved patient safety; Reduced / eliminated paper-based documentation and dictation and transcription costs; Improved billing and coding
Stage 5	Full complement of PACS displaces all film-based images.	Elimination of film, sharing images, avoiding redundant imaging
Stage 4	CPOE in at least one clinical service area and/or for medication (i.e. e-Prescribing); may have Clinical Decision Support based on clinical protocols	Improved care delivery efficiency and reduced medical errors
Stage 3	Nursing/clinical documentation (flow sheets); may have Clinical Decision Support for error checking during order entry and/or PACS available outside Radiology	Optimized collection of nursing and clinical information; Standardized care delivery → first improvements of care quality
Stage 2	Clinical Data Repository (CDR) / Electronic Patient Record; may have Controlled Medical Vocabulary, Clinical Decision Support (CDS) for rudimentary conflict checking, Document Imaging and health information exchange (HIE) capability	Optimized access to diagnostic results, sharing of patient-information
Stage 1	Ancillaries – Lab, Radiology, Pharmacy – All Installed OR processing LIS, RIS, PHIS data output online from external service providers	Improved key dept. operations and access to diagnostic information
Stage 0	All Three Ancillaries (LIS, RIS, PHIS) Not Installed OR Not processing Lab, Radiology, Pharmacy data output online from external service providers	Low clinical value; mainly patient administration and hospital management

Digital maturity

- Baseline assessment of digital maturity of acute providers
- Opportunity to share learning and identify where UCLP can add value
- Identify where technologies exist to enable health information exchange across local health economy
- Future work with NHS England to develop new Digital Maturity Index
 - Census of digital progress
 - Track effective use of information technology, digital data and services
 - Support commissioning decisions
 - Key indicators published via NHS Choices
 - Incorporate into CQC inspection regime and Health Education England's training accreditation requirements

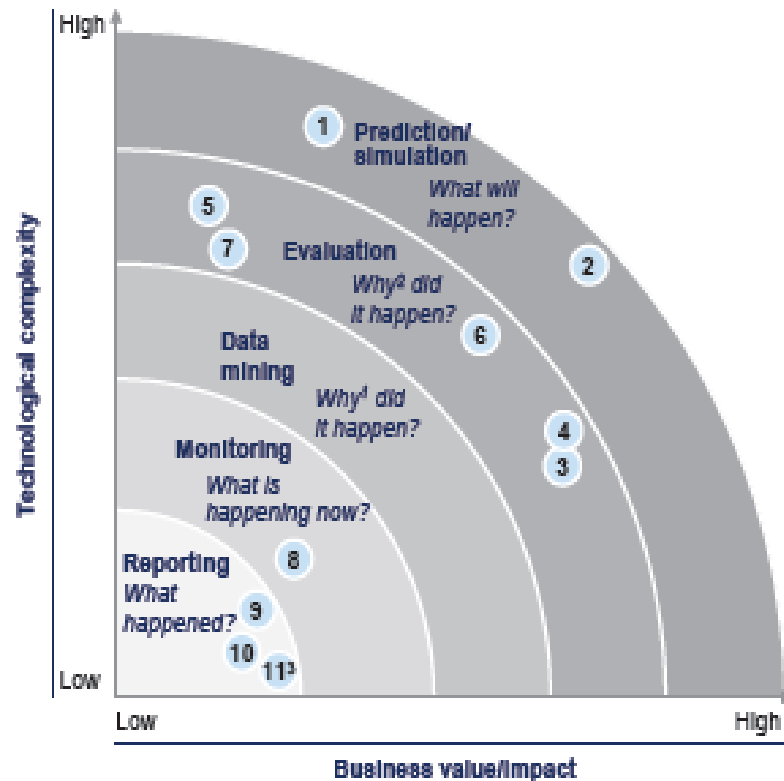


Technical architecture



Minimum dataset

Information Type	NHSS Clinical Portal phase 1	NI ECR	Health Foundation Outpatient consultations	US Stage 1 Meaningful Use
Demographics	✓	✓		✓
Past medical history/procedures	✓		✓	✓
Current active diagnoses/problem list	✓			✓
Current medications	✓	✓	✓	✓
Immunisations				✓
Allergies	✓	✓	✓	✓
Lifestyle choices (smoking status, alcohol consumption)				✓
Healthcare encounters (dates and details of hospital admissions and appointments with care providers)		✓		
Care/Treatment plan				
Alerts and notifications e.g. end of life wishes	✓			
Referral letter	✓	✓	✓	
Outpatient clinic letter	✓	✓	✓	
Hospital discharge letter	✓	✓	✓	
ED/Urgent Care/Out of hours letters		✓		
Other clinical correspondence		✓		
Laboratory results	✓	✓	✓	✓
Radiology reports	✓	✓	✓	✓
Radiology imaging	✓	✓	✓	
Other diagnostic test reports e.g. endoscopy, pulmonary function tests, echocardiography	✓		✓	✓
Other diagnostic test images e.g. ECG, echo, retinal images				
Vital signs/measurements <ul style="list-style-type: none"> ○ Blood pressure ○ Weight ○ Height ○ BMI 				✓
Operation/procedure notes			✓	
Anaesthetic assessment				
Surgical pre-assessment notes				
Clinical decision support e.g. local guidelines, NICE guidelines	✓			



Examples

- 1 Risk stratification/patient identification for integrated-care programs
- 2 Risk-adjusted benchmark/simulation of hospital productivity
- 3 Identification of patients with negative drug-drug interactions
- 4 Identification of patients with potential diseases ("patient finder")
- 5 Evaluation of clinical pathways
- 6 Evaluation of drug efficacy based on real-world data
- 7 Performance evaluation of integrated-care programs and contracts
- 8 Identification of inappropriate medication
- 9 Systematic reporting of misuse of drugs
- 10 Systematic identification of obsolete-drug usage
- 11 Personal health records

1 Machine based: evaluation of data correlations only.

2 Hypothesis based: integration of advanced analytics to determine causation, interdependencies.

3 Higher business value expected if further enhanced and rolled out as personal health record.

Source: McKinsey Big-Data Value Demonstration team

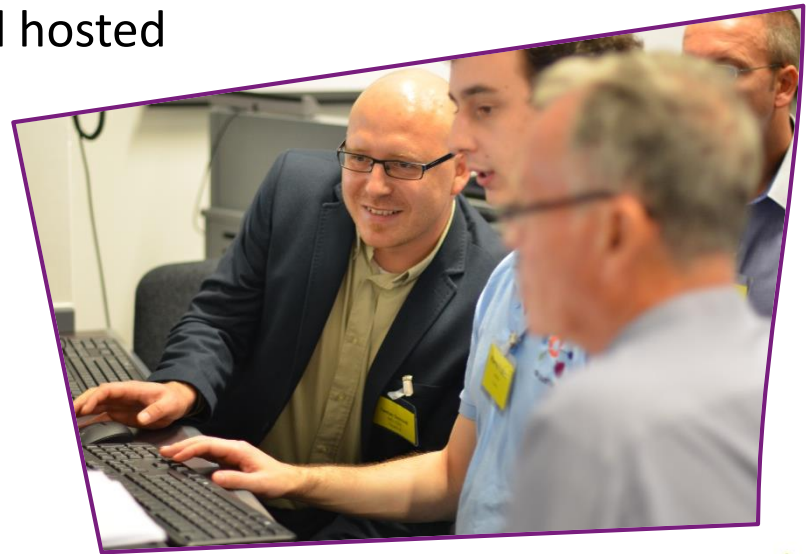
Data Challenge Day : Objectives

- To explore data already collected and available through the WELC Integrated Care Pioneer Programme and to begin to answer some key questions being raised within the programme.
- To link up local NHS, Public Health and academic data specialists with clinicians and commissioners across the WELC programme to build local relationships and mutual support mechanisms.
- To support the development of local analysts
- To generate hypotheses for further testing and identify areas of research within integrated care that could be further supported by academic grants and research proposals to consolidate work done on the day.



The data challenge event

- 57 people took part with representation from WELC CCGs and Local Authorities, NEL CSU, QMUL Clinical Effectiveness Group, Farr Institute, UCLP, Barts Health, London Health Commission, Public Health England, Nuffield Trust, NHSIQ & NHS England
- Five core teams established with mixture of data scientists, analysts, researchers, clinicians and commissioners
- Each team had its own workspace on cloud hosted commercial data platform
- Analysis supported by data science team
- 5 hours for analysis and 30 mins wrap up
- 10 minute presentation by each team to whole audience and judging panel



Data provided

- NEL CSU linked primary care data to hospital data to form a joined-up picture of activity for all patients in WELC registered between 1/4/2011 and 31/03/2013
- Additional clinical attributes were calculated, including:
 - Risk scores for each patient
 - Whether the patient is on a disease register
 - History of patient measurements (e.g. cholesterol and blood pressure readings)
 - Lower Super Output Area of the patient, which could be used to see how services relate to geography;
 - Prescriptions among classes of medications (e.g. Asthma drugs, Diabetes drugs, etc)
 - Pre-calculated aspects from the Better Care Fund including ambulatory care sensitive conditions
- Participants were given access to 1.2 million anonymised patient records and 180 million rows of data



Comments and tweets

- *“Great day. Very successful. The bringing together of people was the most useful”*
- *“An excellent example of rapid work and relationship building”*
- *I think this was a really valuable day. It is great to see what is possible with this data and to meet people who are able to manipulate data and provide results for us in an interactive way. Definitely worth doing again”*
- *“Great to see so many people come together to discuss [#welcdata14](#) today”*
- *“Team presentations underway, great to hear what's been achieved in only 5 hours [#welcdata14](#)”*
- *“One of the largest NHS data exploration events ever held! [#welcdata14](#) ”*
- *“When’s the next one?”*



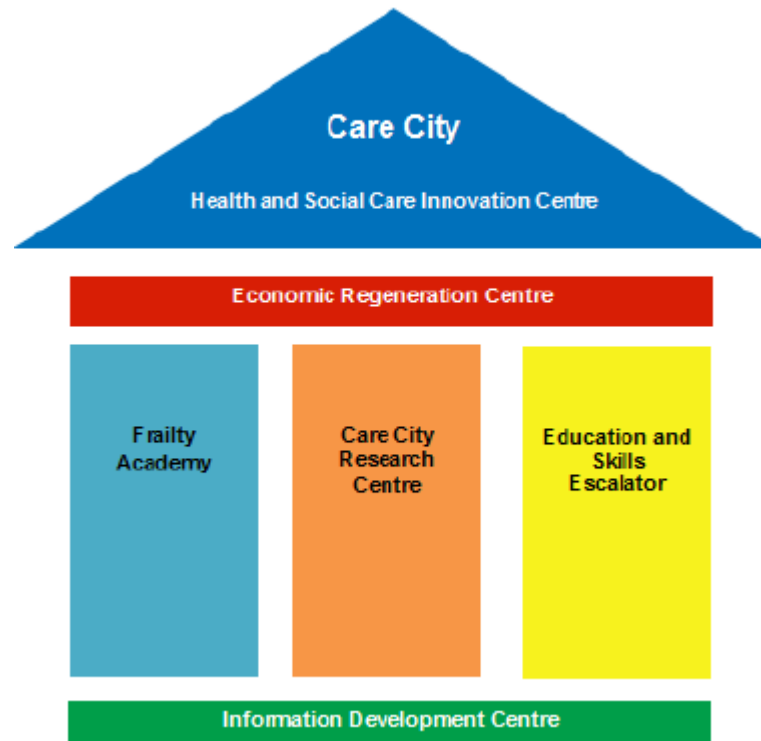
Join Dementia Research

- Prime Minister's Challenge to increase the number of dementia patients involved in clinical trials
- Public website to provide consent for approach
- Phase 1 live beta launch of the public website, launch of a telephone helpdesk service and implementation in 12 NHS memory clinics.
- Data linkages and applications to increase the functionality and value through use of NHS clinical data have been piloted
- Service being promoted through 12 memory services and by limited, targeted email marketing to Alzheimer's Society and Alzheimer's Research UK members
- 500 people registered in 14 weeks (70% via the website; 15% each by telephone and post)
- Survey of the first 320 users indicates broad acceptability of the approach and provided key feedback for phase 2 developments
- Phase 2 SBRI funding approved to extend the minimum viable products and services into a sustainable, commercialisable service



Innovation: Care City

- UCLPartners is supporting North East London Foundation Trust to create an innovation hub located in partnership with a local borough
- Focus on technology solutions to enable patients with dementia and frailty to remain in their own homes and local communities, supported by their network of care providers.



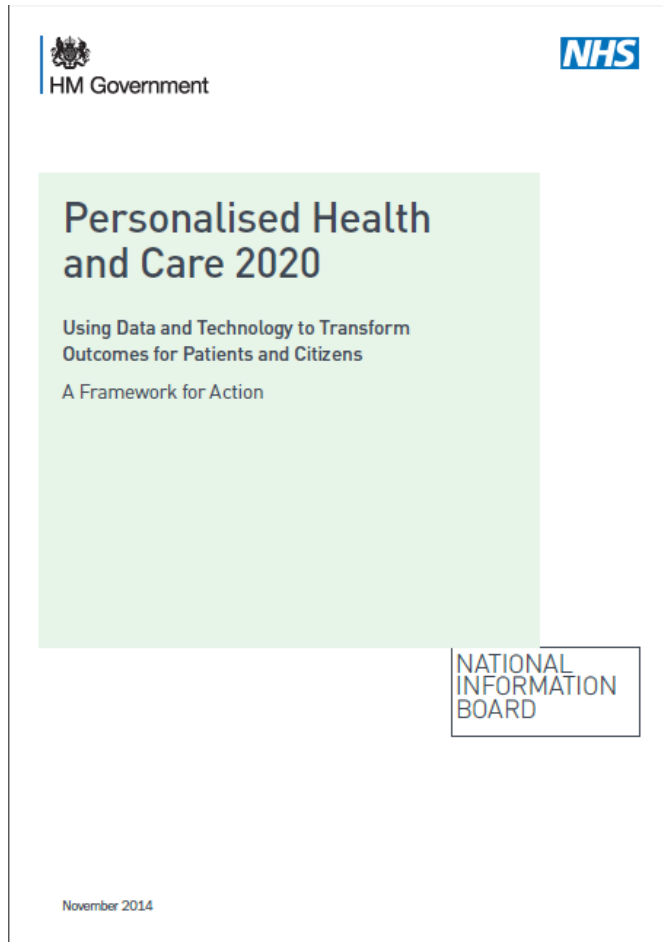
Drivers for change



- Health and wellbeing gap
- Care and quality gap
- Funding and efficiency gap
- Need for integration across care services
- New models of care e.g. Accountable Care Organisations

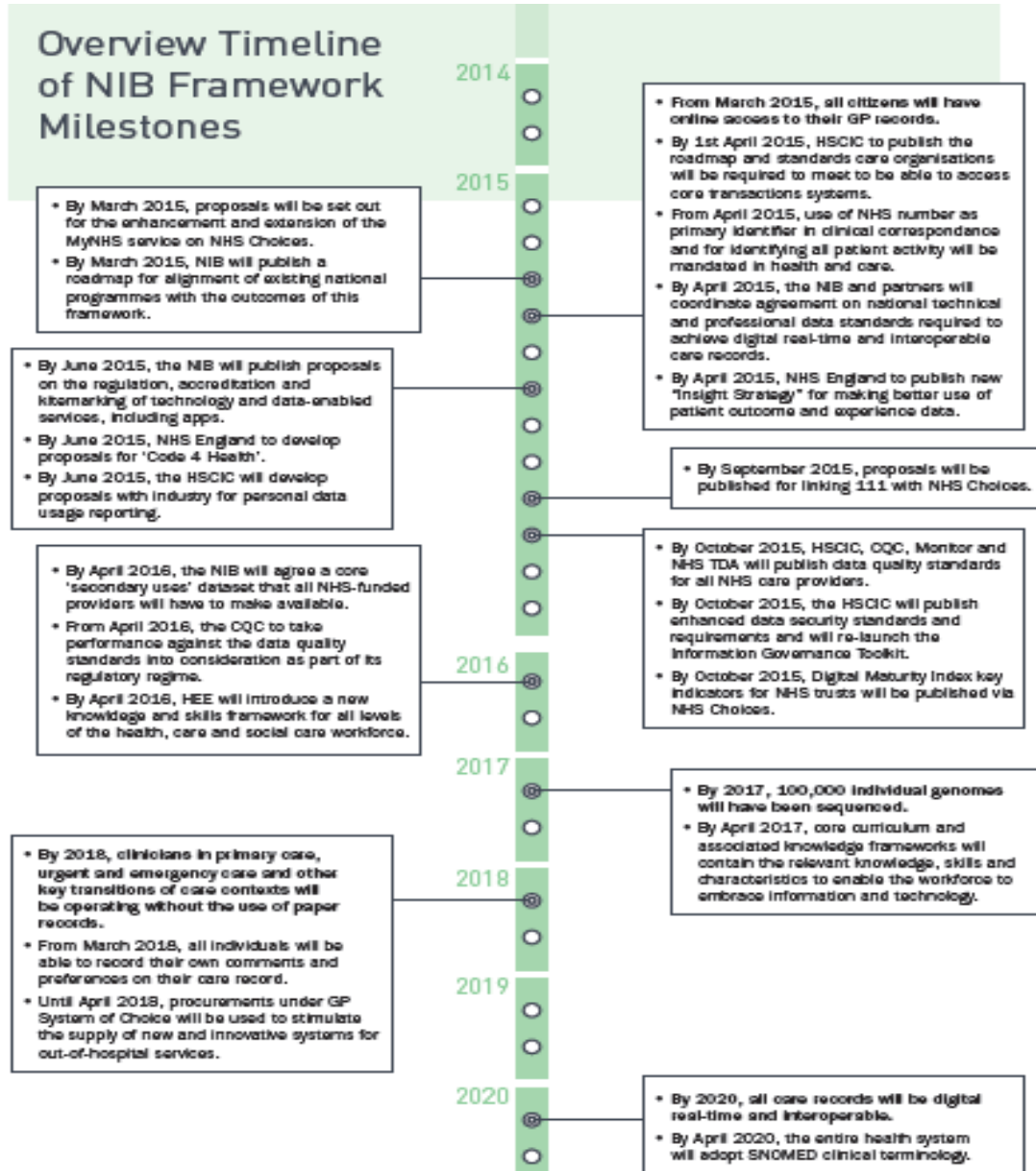


Personalised Health and Care 2020



- Real time digital information by 2020
- Citizen access to care records, digital information services and NHS accredited health and care apps
- Transparency of quality of care
- Ensure citizens are confident about sharing their data to improve care and health outcomes
- Targets for adoption of standards and interoperability
- Commissioner roadmaps for interoperable digital records
- Workforce development
- Executive and clinical leadership

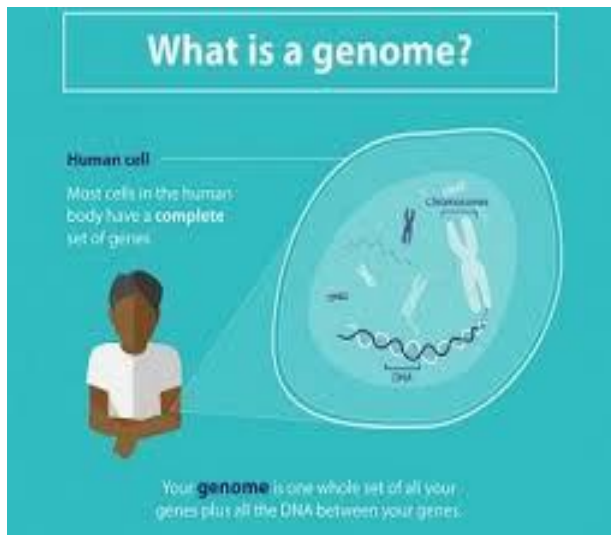
Personalised Health and Care 2020



100,000 Genome Project



- NHS Genomics Medicine Centres
- Transformational for NHS
- Collaboration between providers with data sharing and common research infrastructure platform
- Promotes data capture for research at point of care
- Establishes pathway to translational and personalised medicine





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