Using data and data standards to deliver better, safer care

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Our mission

To harness the power of information and technology to make health and care better
NHS Digital Organisation

Organisation Transformation Underway
• New skills and capabilities
• Restructuring
We do this together...

Academia partners:
- Royal College of General Practitioners
- Big Data Institute
- University of Oxford
- University of Leeds
- 200+ research studies

Citizens and media:

Providers/places:

Other key partners:
- National Data Guardian
- Office for National Statistics
- UK Statistics Authority
- medConfidential
- Understanding Patient Data
- Information Commissioner's Office

Research partners:
- AMRC
- National Institute for Health Research
- HDRUK
- MRC
- abpi
- Genomics England
- NICE
- MHRA
- Infrastructure and Projects Authority
- Department of Health & Social Care
- Department for Health & Social Care
- Local Government Association
- NHS Improvement
- NHS England

Government:
We are committed to play our part for UK plc...
Mainly in infrastructure theme, working with partners:

- With Medicines and Healthcare products Regulatory Agency to test and validate algorithms used in AI + medical devices
- Core standards on technology and data for NHS IT systems and digital services to ensure joined-up and safer system
- Remote Data Access Environment enabling customers to remotely and appropriately access data
- Streamline legal and ethical approvals meaning easier, secure access for researchers
- Health Data Research UK – NHS Digital Strategic Partnership
- £43m investment to enhance NHS Digital’s core data services
- With Oxford University data services to support a 21st century clinical trials
- NHS App from autumn 2019 to enable patients to become more directly engaged in clinical research
Harnessing data science and AI in healthcare

“Health systems will require five features to be successful:

1. Organization-wide data repositories
2. Data governance and security
3. Interoperability of data within and across health systems
4. Data science capabilities
5. Use and repeated reuse of data to improve decision-making and care.”

Introduction

Today we have some truly remarkable data-driven innovations, apps, clinical decision support tools supported by intelligent algorithms, and the widespread adoption of electronic health records. In parallel, we are seeing advancements in technology and, in particular, artificial intelligence (AI) techniques. AI is being used on this data to develop novel insights, tools to help improve operational efficiency and machine learning driven
Ministerial foreword
Perils and pitfalls…

1. Politicians and policymakers should avoid thinking that AI is going **to solve all the problems** the health and care system is facing.

2. **Patient safety must remain paramount** and AI must be developed in a regulated way in partnership between clinicians and computer scientists.

3. **Clinicians can and must be part of the change** that will accompany the development and use of AI.

4. For those who meet information handling and governance standards, **data should be made more easily available** across the private and public sectors.

5. **Joined up regulation** is key to make sure that AI is introduced safely.

6. **External critical appraisal** and transparency of tech companies is necessary for clinicians to be confident that the tools they are providing are safe to use.

7. Artificial intelligence should be **used to reduce, not increase**, health inequality – geographically, economically and socially.

AI vs. Doctors...

Artificial intelligence is challenging doctors on their home turf. We're keeping score.

A.I. Wins  It's a Tie  Doctors Win

ICU
TUMOR MUTATIONS
HACKED IMAGES
BREAST CANCER
HEART SCANS
PNEUMONIA
MICROSCOPY
SURGERY: CUTTING
BRAIN CANCER
HEART ATTACKS & STROKES
OPHTHALMOLOGY
SKIN CANCER
GENERAL DIAGNOSIS
ALZHEIMER'S
SURGERY

AI in practice…

Source: Cambridge University Hospitals NHS foundation Trust
Using standards to support care

**Direct Care:** Building blocks of standardised recording and semantic interoperability:
- NHS #
- SNOMED CT
- dm+d
- HPO
- Unified Pathology Test List (based on the National Laboratory Medicine Catalogue)
- GS1
- FHIR profiles
- ...

**Secondary Uses:** The national and international (WHO) standards for retrieving information for longitudinal and cross-sectional analysis for improved commissioning, research (academic and clinical) and public health management:
- Above plus...
- OPCS4
- ICD-10
- Healthcare Resource Groups (HRGs)
- ...
Practical example: Electronic Prescription Service

The flow of an electronic prescription in Release 2

Electronic Prescription Service

Prescriber

Patient

Dispenser

Electronic prescription
Scanned barcode (if prescription token is presented)
Electronic prescription
Confirm what has been dispensed
Electronic prescription & endorsement message

Reimbursement agency

NHS UK
Search for EPS Release 2 enabled dispensing contractors

Not required for all electronic prescriptions
Implementing standards

- Set, agree and manage *international* -> *national* data standards
- Shelf-ware if not adopted to deliver benefit -> needs enablement
- Enabled ‘top down’ via national infrastructure
- Enabled ‘bottom up’ - Scan4Safety
  - Good example of a programme of implementation and incremental change
  - Achieved by creating a foundation for the reduction of some ‘never events’ and instances of clinical error
  - Potential to reduce incidents of harm has been recognised by the Healthcare Safety Investigation Branch
- Investment cases, and investment cycles key adoption points
- Role of NHS-X
Data standards - supporting implementation

ODS → OPCS4 → Procedure → Patient → Place → Product → ISB 1077 → dm+d → ODS
In conclusion…

➢ We collaborate, to create the right delivery environment

➢ ‘Exciting time’ for UK plc – Life Sciences + LTP

➢ We all have a key role in co-setting, and supporting adoption of key standards

➢ NHS Digital is a key enabler in delivery of better, safer care
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