The long and winding road...
Findings from an independent evaluation of England’s national implementation of electronic health records in hospitals

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Overview

• Reasons underpinning drive to implement EHRs
• The central position of EHRs in the National Programme for IT
• Our evaluation
  • Background
  • Aims
  • Findings
  • Conclusions and recommendations
Challenges for healthcare systems internationally

- Ageing populations
- Increasing numbers of people living with long-term conditions
- Spiralling healthcare costs
- Ongoing concerns about the safety, quality and inefficiency of healthcare
Drive to implement EHRs

• A compilation of patient information in digital format that can be shared between care settings.
• EHRs being introduced throughout the world: North America, Europe, Australasia, Middle East, etc.
• Many initiatives have tended to be small-scale, increasingly national-scale
• Anticipated benefits: patient safety, clinician benefits, service benefits
Background to start the National Programme

• In 1990’s: many different, small-scale, IT systems

• National Programme in 1998: aims were universal EHRs for ~50 million patients by 2010…

• Cost estimates: ~£6.2 billion
Delivery structure: Local Service Providers, Developers and Software

- Lorenzo Regional Care
- RiO, Cerner Millennium
- A mixture
Aim

To generate insights that can support the implementation of the NHS’ (Detailed) Care Record Service in early adopter hospitals (formative assessment) and the future roll-out to other settings (summative assessment)
Work Package 1 (qualitative, longitudinal)
Implementation, deployment and organisational learning
LSP roll-out teams, software suppliers, members of the NHS Trust implementation team and trainers/support staff. Relevant documents

Work Package 2 (qualitative, longitudinal)
Attitudes, expectations and experiences of NHS stakeholders
Interviews with patients, carers, healthcare professionals, managers, IT service providers, IT support personnel, administrative staff

Work Package 3 (mixed methods, longitudinal)
Organisational consequences: organisational workflow, professional roles and data quality
Record review; interviews with healthcare professionals and administrative staff involved in patient pathways; relevant documents; survey

Work Package 4 (mixed methods)
Assessment of costs of NHS CRS implementation
Estimating local implementation costs; NHS CRS cost categories. Relevant documents; interviews

Work Package 5 (quantitative, pre-post)
Assessing error, safety and quality of care
Quantitative measures of missing information in outpatient clinic records

Work Package 6
Organisational consequences and implications for future IT deployments and evaluations
Integration and summary of case study findings/conclusions; interviews with additional NHS CRS stakeholders; conclusions and recommendations for NHS policy and practice and future evaluations

Coordinated recruitment of participants for interviews
Feed into
Evolving methods

• **Design:** Prospective, longitudinal, multi-site evaluation (data collection from Feb 2009 - Jan 2011)

• Where possible and relevant, data collection at each site took place in **two phases** with a six to nine months gap.

• **Sampling of cases:** Purposive sampling of a range of hospitals in England implementing centrally-procured applications.

• **Settings:** 12 English, secondary care NHS “early adopter” hospitals conceptualised as case study sites.
The complete dataset

- 431 interviews
- 590 hours of observations
- 234 notes from observations, field notes and conferences
- 809 documents
- 130 questionnaires on use and views of clinical systems
- 4,684 questionnaires on case note availability.
Key findings

1. Local consequences of implementation
2. Economic consequences of implementation
3. Assessing error, safety and quality of care
4. Wider contextual considerations
1. Local consequences of implementation (i)

• **Multiple local visions:**

• **Complex supply chains:**
  hospitals-LSPs-software suppliers-government

• **Lack of local control:** budgetary, contractual arrangements, customising software
Complex supply chains and convoluted communication processes

“...it takes much longer to do anything than you think it’s going to take and there’s so many people involved, so many committees involved to get anything done at the supply side that it takes a long time to get things sorted and that’s unfortunate” (Interview, IT Manager, Site H).
1. Local consequences of implementation (ii)

- Tensions between standardisation and localisation: needs of individual organisations - NHS more generally
- Clinical focus: but direct users were frequently allied health professionals and admin staff
- Systems often presented usability problems.
Usability problems

“Two fundamental criticisms remain that the system is not, and what you see on the screen is not intuitive…the other criticism of it is the speed of the system that you don’t, when you expect to move from one field to another it is not instant and that is a big concern in a system where one feels instinctively that it ought to be” (Interview, Healthcare Professional).
1. Local consequences of implementation (iii)

- **Influence on user work practices**: Increasing workloads, work practices did not become “paperless”, some re-distribution of responsibilities.

- **Benefits**: Enhanced data availability, data management tools, legibility.

- **Organisational learning**: e.g. capacity development.
User work practices

“What they [referring to healthcare professionals] usually do while they are in with the patient is, they make the notes as they go along and they are the record. They’ve raised concerns that they will be in with the patient and they are then going to have to come and type those notes up.” (Interview, Healthcare Professional, Site M).
2. Economic consequences of implementation

- **Start-up costs**: in part met by support from national structures (e.g. ‘one-off’ payments, additional expertise), not sustainable in the long-term and over a larger scale.

- **Maintenance and upgrading**: likely to be borne by local hospitals.

- **Commercially sensitive information**: difficulty obtaining information.
3. Assessing error, safety and quality of care

- Controlled before-and-after study
  - outpatient management software
- No improvements in availability of clinically important information.
4. Wider contextual considerations

- **Progress slower than anticipated**: clinically-rich functionality limited, of 377 sites 78 (21%) had begun the process of implementing.

- **Gradual move from the initial top-down implementation model** to increase local involvement in decision making, coherent approach to interoperability still lacking.

- Significant **turnover amongst the senior staff** within the government coordinating the strategy.

- **Highly political and public** nature of the project.
“...you’ve got bits of functionality implemented in very small areas....but you’re not seeing the rollout of that functionality to the rest of an organisation and how on earth are you going to progress if they’re not doing that...” (Interview, Independent Sector)
Implications - international community

• **Procurement decisions:** should not be based on achieving cost-savings or returns on investment, but on introducing clinical functionality and benefits early.

• Primary initial concern should not be **systems integration** but use and **local ownership**.

• **Main benefits:** likely to accrue in the longer term, from both local re-invention and secondary uses.

• **Policy needs to be integrated** with concurrent initiatives and reflect dynamic environment (flexibility and whilst working towards a coherent vision).
Conclusions

• **Top-down and politically driven nature of the Programme:** ensured high level leadership and support, but contributed to a lack of local involvement in decision making.

• **Early EHR systems:** difficulty fulfilling organisational and user needs, significant cost implications, no improvement in availability of information in outpatient clinics.

• **Move towards a more locally autonomous model:** welcomed by hospitals, needs to be balanced with national requirements for systems interoperability and implementation scale.
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