

1.25 Million Electronic Patient Records in XML at Poole

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Abstract

Poole hospital have implemented an electronic patient record using an XML repository, which now stands at 12 million XML documents. This was intended as and has proved an exploration as much of investigating and changing historic practice as an IT project. Andy will share their experience with delegates.

1. Introduction

- XML Based Electronic Patient Records ([EPR](#))
- why we did it
- how we did it
- what we learned
- the future

2. Why we did it

Information for Health

- Department of Health Strategy 1998-2005
- Frank Burns, CE Wirral Hospital
- Electronic Patient Records (EPR) - episodes

- Electronic Health Records (EHR) - lifelong
- Messaging between care providers
- Building on 1992 strategy
 - unique ID, Network

The Upton Decision 1997

Essential elements of a medical record

- any previous discharge letters
- pathology and radiology results
- the referral from primary care

With these and no paper records, the clinicians felt reasonably comfortable to treat without casenotes.

To aid culture change

- Doctors are our least IT literate group
- To move from all paper to all electronic will be
 - very difficult,
 - time consuming
 - traumatic
- Exploring issues that arise
- solving real problems for junior doctors

Advantages of electronic record

- Available in several places at once
- 24 hour access - and remote from home
- self sorting - different views of data
- avoid loss of records (dependant on resilience)
- audit trail of use of documents
- capture legible information
- completeness of requests
- link to evidence based medicine

3. How we did it

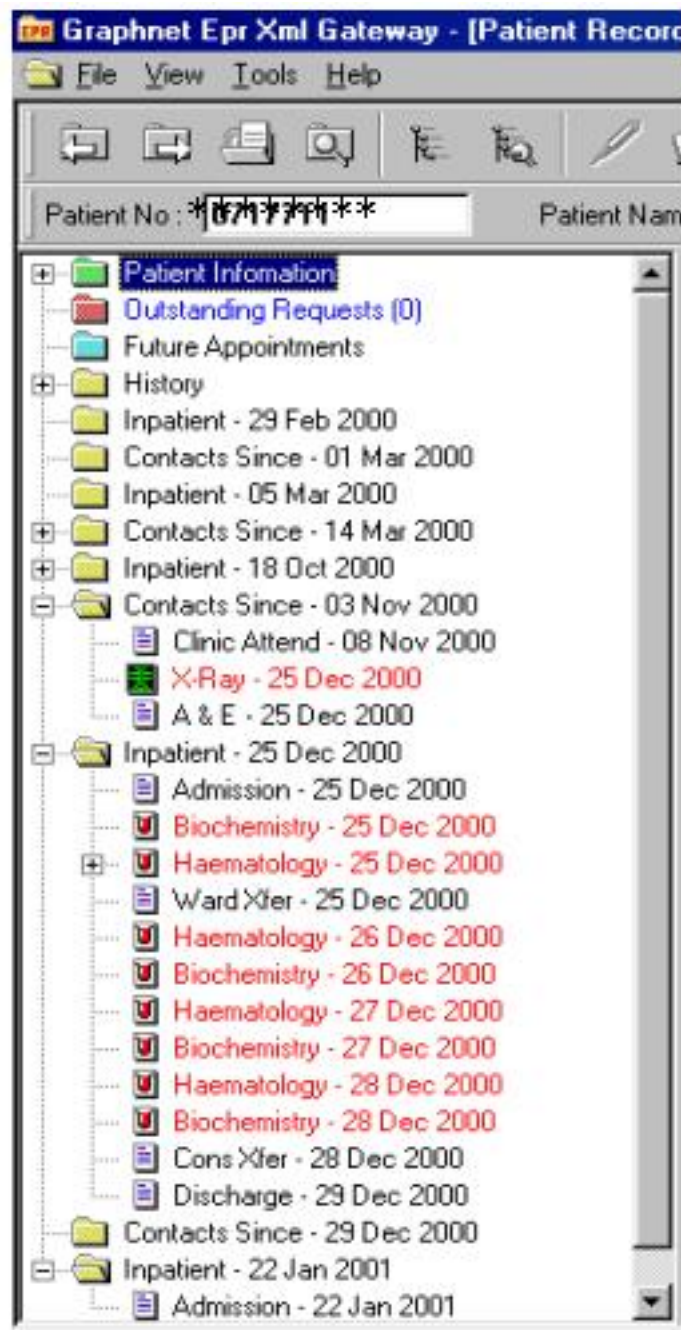


Figure 1. How we did it

List of features from Junior docs

- Access to radiology reports & discharge summaries

- Ward and consultant lists
- Graphing trends of pathology tests
- Ordering Pathology & Radiology
- Phlebotomy lists
- Ordering and delivery of blood products
- Scanned referral letters available

Extracts from existing systems

- Patient administration
 - SQL queries initiated from audit trail
 - patients, inpatients, outpatients, PAMs, A&E attendances,
 - some clinic letters & discharge summaries
- Path/Rad results
 - tap into GP results feed
 - problems of ID for GP originated requests

Ordering forms - iterated from Paper

- Start point paper forms
- Intranet HTML mock ups for discussion
 - Use of drop down menus
 - prefilled fields

- mandatory fields - which are necessary?
- Resulting form engineered

Volumes of data (each 1+ document)

Patients	1.25 mill	Path res	1.25 m
OPD visits	207k pa	Path test	10.7 m
A&E visits	44k pa	Radiol	102 K
Transfers	17.7k pa		
Discharges	60k pa		

Table 1.

Registry total (Mar '01) 12.3 million docs

Access to Evidence Based Medicine

- Link directly from patient records
- needs organisation to define key terms



Figure 2. Access to evidence based medicine

4. What we learned

Clinical involvement crucial to success

- Doctor on IT team
 - catching and training doctors
 - encouragement to use
 - feedback on good and bad features
- Nurse on IT team
 - same for nurse specialists
- sponsorship by consultants

All is not as it seems

- policies bent on paper, not easy on computer
 - Consultant authorisation before forms filled
- Holes in existing requesting/ reporting flows
 - filling out/data entry on path/rad request forms
 - Pathology & Radiology data to GPs
- Majority of pathology results hand transcribed
 - and signing/filing paper reports is a nightmare!

Doctors generally keen to use system

- Little resistance to worthwhile features
- no tolerance for slow/cumbersome features
- those that have worked with an electronic record know what they are missing
"do everything electronically, please hurry, we're lagging behind" a Poole Registrar
- medical secretaries saving pulling casenotes
- patients get instant answer to query

5. The future

Migration from Paper to computer

- Use of electronic record across site
- use of mobile technology
- dependence on paper archive - 8 years
- Access to e-record to limit growth in demands
 - Medical secretaries 107% increase
 - A&E - Previous ECGs over 5 years
 - Audit

Roll out - features and users

- Clinical Coding summary
- Endoscopy and Cardiology
 - requests and reports

studied for an MSc in Medical Radiation Physics (from North East London Polytechnic). A move to Poole hospital, and then a transition from the computing end of Medical Physics, via Information, lead to Resource Management and setting up the Information Technology department. His first project on a Hypertext based information system was in 1990, an information system for the Switchboard staff at Poole Hospital. He maintains the Internet presence for the Hospital, and the 16,000 page Intranet facility, which links well to the current work on the use of XML for storage and transmission of Clinical Records.

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Cheryl Hutchings - Cheryl graduated from University of Wales in 1978 with a BSc(Hons) in Computer Technology and joined Plessey (now Siemens) Traffic Control systems developing control systems for underground trains. Following a short period lecturing in IT she is now the IT projects manager at Poole Hospital procuring, developing and implementing clinical and administrative systems.