

Adopting a systems change mind-set: Paper pusher to digital pioneer, an eHospital journey

Nearly three years ago Cambridge University Hospitals NHS Trust (CUH) was classed as having 'minimal digital adoption on the HiMSS Electronic Medical Record Adoption Model (EMRAM). Today, after a three-year transformation journey, it is recognised as one of the most digitally advanced providers in the country.

Procuring a paper alternative

The move from traditional paper-based record keeping to an integrated electronic health record (EHR) system was a long, and at times, difficult but ultimately rewarding journey.

After a comprehensive international procurement in 2011, the Trust embarked upon its 10-year, £200 million eHospital programme in 2013. £40m was to install the Epic HER, £140m was with HP Enterprise to provide a stable platform to support the EHR – including mobile devices and entire network and desktop refresh across the Trust – and the remaining £20m was the Trust's own implementation costs to provide the necessary staff and resources to deliver the project.

 **There was clarity of the vision and the purpose**

After 18 months the EHR went live

Eighteen months after signing the contract, CUH went live with the EHR system at its Addenbrooke's and Rosie hospitals on the Cambridge Biomedical Campus. The project required the training of approximately 12,000 staff and the installation of 6,750 personal computers, 500 personal laptops, 395 workstations on wheels and 420 hand-held 'Rover' (iPod touch) devices.



Adopting a radical and supported approach

After a detailed options appraisal the CUH board opted for a significant up front IT investment rather than simply replacing outdated technology as it became obsolete.

Staff engagement, training and secondments were key to the successful co-creation and implementation of eHospital.

Realising the potential benefits early on, it was CUH clinicians that helped obtain business case approval, enabled new IT equipment to be deployed in all areas of the Trust, encouraged dress rehearsals and readiness assessments to take place and ensured essential input into the EHR configuration prior to go-live and beyond.

Over 100 clinical and administrative staff from various clinical areas were seconded to the eHospital team in 2013, and so the EHR was built by CUH staff, for CUH staff – an essential piece of staff engagement.

Prior to go-live, demonstrations of the new system were presented to staff, a dedicated weekly eHospital newsletter was sent electronically to trust employees and a public website was launched to help inform stakeholders and patients.

Detailed review of pathways

Over 250 sessions were held with 1,000 clinicians and administrators to validate some 500 major clinical pathways to ensure that the system configuration incorporated the correct CUH workflows as well as local, professional and national guidelines. All major clinical workflows and pathways in the Epic Foundation System were reviewed by clinical teams across the Trust. Over 90% were acceptable to use at CUH, with the remaining workflows adapted by the eHospital programme team to suit the NHS and CUH.

Extensive time invested in training

On top of that more than 175,000 hours of training was delivered to the 12,000 staff over a nine-week period leading up to go-live. Approximately 2,500 staff also volunteered to become 'super users', and were given extra training in how to support their colleagues with how to use the Epic EHR.



The leadership were committed to test and learn, even when things got tough.

There was a culture of respect and inclusivity, involvement of the staff throughout and investment in the training, communications and support.

Dress rehearsals and risk assessment

Trust leadership played an important role in the transition, with 120, 90, 60 & 30-day pre go-live eHospital readiness assessments carried out with oversight from senior clinical and operational leads within the Trust. Regular specialty-level risk assessments and a series of dress rehearsals in clinical areas and across high-risk patient pathways were also conducted. Senior leadership were vital in preparing hospital staff for go-live and ensuring that staff in their area were all trained.

Bumps along the road

The big bang launch approach was not without its challenges.

Six months following the installation, the Care Quality Commission (CQC) published an inspection report identifying eight areas across the trust requiring 'focus for improvement', including the use of the Epic system and IT support.

Issues identified included some confusion in a limited number of areas about how to balance the new digital systems with remaining paper records, and a decline in productivity, particularly in hard-pressed services such as dermatology, cardiology, ophthalmology and ENT.

By April 2016, however, most of the problems had been ironed out and the Trust has seen a marked shift in the ability of staff do more digitally for the benefit of their patients.

Key challenges/learnings:

- For some staff, the switch from paper to digital was not simple – even though they had access to exactly the same information that they had always used to do their jobs, but now just presented in a different way within an electronic system. So the need to prepare staff from the outset about the scale of the transition is really important.
- Workflow-based training would have been more suitable than activity / role-based training – or a combination of both.
- Be prepared – things will not necessarily be perfect first time, you need to test and learn quickly
- Support in the form of floorwalkers during the go-live period proved invaluable.
- Real-time support at go-live from our suppliers (Epic and HP), to resolve issues as quickly as possible, also proved invaluable.

"You can see what everyone's written and what's been ordered, as it happens. Documentation is easier to read, as we're not struggling with poor handwriting, and everyone is finding the process much easier now."

Chinga Chileshe, Consultant

Reaping the benefits

The Epic EHR system has brought all of CUH's administrative and clinical information relating to a patient in to one place, recorded in real time, improving quality, reducing duplication and eliminating unnecessary delays to patient care.

- Patients do not have to stay in hospital for longer than they need to as the time it takes to prepare discharge medications has halved (from 90 minutes to 45 minutes).
- Electronic prescribing has resulted in a 100% reduction in sedation-related prescribing errors in the paediatric intensive care unit.
- 16% of allergy-related prescribing alerts have led to a change in prescription, **saving 2,450 bed days a year (equivalent to £980,00) and improving patient care by avoiding adverse drug reactions.**
- To improve patient safety, every inpatient now has a barcoded wristband which links directly to the Epic EHR. Barcode-enabled medication administration in paediatrics also improves safety further and allows nurses to use handheld devices that are also directly integrated with the EHR.
- Changes in workflow supported by the system are also evident – an electronic sepsis alert workflow, has resulted in an **80% increase in patients receiving antibiotics for sepsis within 90 minutes of arriving at our emergency department.**

- The routine review of best practice for intensive care ventilator tidal volumes through automated decision support algorithms is now **saving 2-3 avoidable ventilator related deaths per year.**
- Clinicians can now also review notes and x-rays virtually. In orthopaedics this has **freed up 4,500 appointments a year** so only patients that actually need to attend the clinic for treatment are sent an appointment, and in addition adherence to best practice tariff in hip replacement care has risen from 66% to 82%.
- Patients attending the surgical pre-assessment clinic complete their own initial documentation using kiosk like software on tablets, meaning the **pre-assessment area now sees approximately 20% more patients than before.**
- Finally, integrated handheld and mobile devices enable clinicians to document information in the Epic EHR system at the patient's bedside and in real time, allowing them to spend more quality time with patients and improving patient experience.
- Overall, CUH estimates that it now **saves est £460,000 annually in staff time** from eliminating the need to retrieve paper notes, as well as **£655,000 saved each quarter in charting costs**, thanks to device integration.

"I like how safety has improved on drug rounds thanks to eHospital. It's easier now to know who's done what, and when."

Rosario Hermida, Senior

Looking to the future

With the eHospital programme bedding in, CUH is looking to expand the EHR to link with other parts of the care system and empower patients to take more control of their own health.

Epic's Care Everywhere and EpicCare Link functionality will enable records to be joined up with other trusts and primary care, while the MyChart patient portal add-on is enabling patients to securely view aspects of their medical record, including: upcoming appointments, test results, correspondence and medications.

The Trust also working to achieve EMRAM Stage 7 status.

"The achievements to date are a true testament of everyone's hard work and continued success in providing high quality patient care through our digital programme, eHospital. A key part of eHospital is our Epic electronic patient record system, which has become an essential tool in assisting our clinicians to provide better patient care. Built by our clinicians for our clinicians, it enables them to view a patient's medical record in its entirety, electronically, whenever and wherever they need to without having to wait for or write in paper notes.

"We were the first Trust to introduce such a large-scale and advanced digital programme, and the first to achieve HiMSS (Healthcare Information and Management Systems Society) Stage 6 within a year of a fully integrated electronic patient record system going live. We have learnt important lessons over the years which have helped us to develop, and from which the rest of the NHS will benefit as we all work towards the Government's target of a digital NHS."

Dr Zafar Chaudry, Chief Information Officer (CIO), CUH