

Wirral Health pilot with i-Health aims for first generation Electronic Health Record



The piloting of a first generation web-based Electronic Health Record system is the focus of a joint development between Wirral Health and New Zealand health software pioneer, i-Health. In this detailed overview, Paul Charnley, Director of Health Informatics for Wirral Health, describes the objectives, scope, vision, and practical deliverables of the pilot project.

← ARROWE PARK HOSPITAL, MERSEYSIDE, UNITED KINGDOM

THE PROJECT

In late 2001, Wirral Health and i-Health began a pilot project to demonstrate the capability of a first generation Electronic Health Record within the Wirral health care community. The project is part of Wirral Health's commission as a reference site for the National Health Service (NHS) Information Authority under the Electronic Records Development and Implementation Programme (ERDIP), and includes particular reference to cancer patients.

By mid 2002, the project will deliver the core infrastructure needed for an Electronic Health Record, including:

- A Patient Master Index facility for the Wirral natural health community;
- A central database, the Wirral Health Data Repository, that can receive and manage patient level information from multiple sources;
- A standards-based approach to messaging and interface transactions used to populate the data repository;
- An integration tool for the management of messaging and interface transactions;
- A web-based systems infrastructure for delivery of applications, functions and data to end users;
- A security and navigation model appropriate for use in an Electronic Health Record;
- Web-based applications that demonstrate functionality right across the patient record, including demographic, episodic, core clinical and specialist clinical components;
- Examples of transaction-based applications, demonstrating that the Electronic Health Record is more than a passive data repository;
- Access to specialist clinical data in the area of cancer;
- Access to specialist clinical data in the area of at least one other clinical speciality (e.g. child health), in order to demonstrate viability beyond the scope of the ERDIP project.

THE VISION

To achieve the underlying vision of an Electronic Health Record, the project will need to provide detailed access to patient records and transactions at the point of care, and radically extend the view of the patient's record beyond hospital-based events. It will involve the progressive development of a birth to death record for patients in a defined geographic region, the Wirral health community, giving appropriate and secure access to all health care practitioners involved in their care.

Central to achieving this vision is the Community View, a web-based application suite under development by health software company, i-Health. The Community View will enable health practitioners in multiple settings to access the Electronic Health Record 24 hours a day, providing records from other organisations at times when it might be most critical – for example, when a GP must see a recently discharged patient at night, or when an acutely ill patient arrives at the Emergency Department with no existing hospital record.

In addition to providing a longitudinal view of the patient's health status and events, the Community View will establish a secure means of communication between health care professionals. The system will provide access to trusted clinical knowledge sources, and support for the transactions and processes involved in complex care delivery.

THE SCOPE – A PATIENT'S JOURNEY

To define the scope, a journey was mapped for a patient undergoing treatment for cancer by a clinically-led cancer services collaborative. At each stage the patient comes in contact with health care providers from different specialities and disciplines, resulting in the creation of a record in some form of information system. This process set the framework for the different information requirements to be incorporated into the Electronic Health Record.

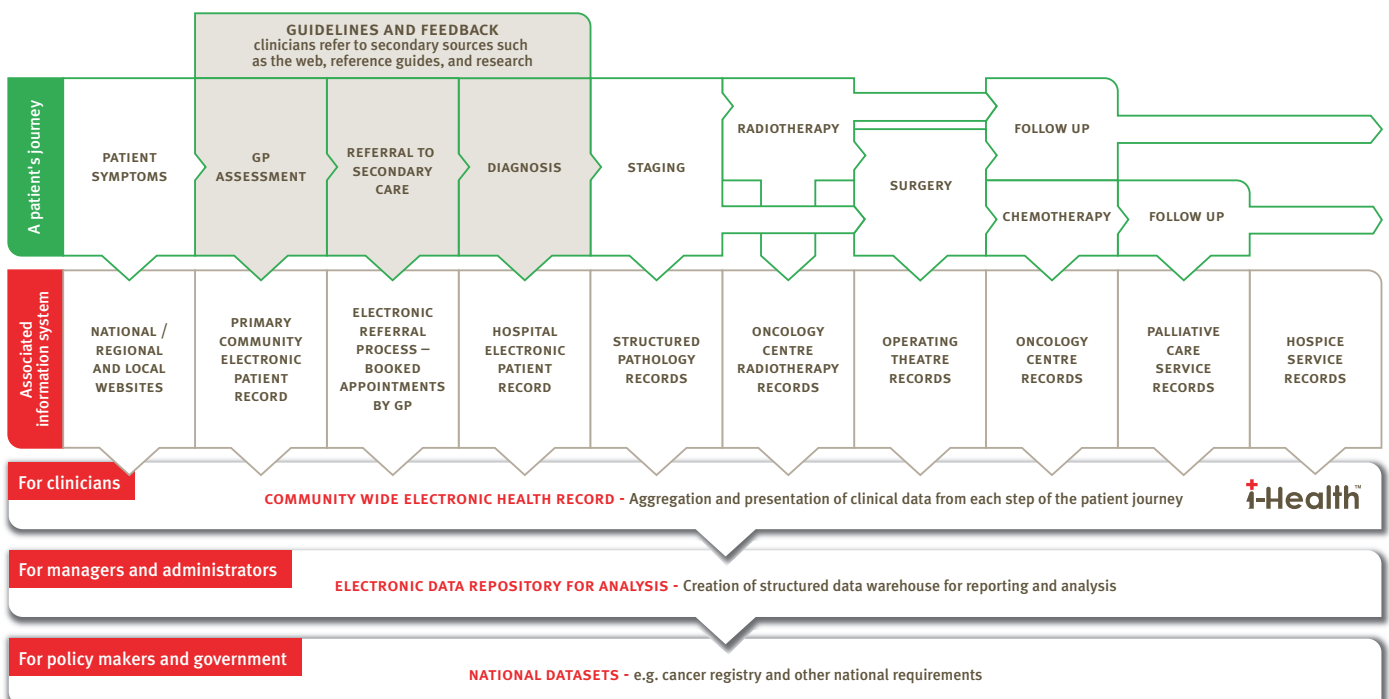
The patient journey results in the following information flows:

Information for Patients

Wirral Health provides a website for patients, relatives and caregivers that, at present, provides information on breast and colorectal cancer. It also covers the care and treatment a patient can expect as they move through the health system, and provides links to other sites.

GP Assessment and Referral Process

Consultation information is collected at primary care level and is transferred as part of the referral process. Completion of a parallel project has produced a comprehensive cancer register from within all primary care practices, enabling the gathering of detailed clinical cancer information that can be viewed through the i-Health Community View.



→ Diagnosis and Staging

At this stage a number of interactions may occur. In order to establish a firm diagnosis a patient can expect to undergo a further series of tests and procedures. Radiology and pathology data will be collected and will build on the information gathered at the primary care level. The Wirral Hospital Electronic Patient Record will provide the main source of data.

→ Surgery

After the diagnosis is determined, and the type of tumour identified, surgery may be involved. Information from surgical events is collected through the secondary care Electronic Patient Record. At present a significant amount of data can be entered for breast and colorectal cancers. Other tumour groups are yet to be included in this central database for access through the Community View. This information will be available to clinicians in other care settings – a major time saver for GPs who have traditionally seen a patient soon after surgery but without the relevant documentation from the secondary care provider.

→ Radiotherapy and Chemotherapy

Post diagnosis/surgery care in the form of radiotherapy and chemotherapy is provided by the Clatterbridge Centre for Oncology. Current systems, which collect this information as part of an audit process, will be replaced (within the next 12 months) with a new real-time system providing a comprehensive Electronic Patient Record. These records will be accessible through the Community View.

→ Follow Up

This can occur in any of the health care settings above. An additional consideration is the hospice which collects data for palliative care, and is not part of the NHS. However, the i-Health Community View will enable sharing of information collected from both NHS and non-NHS sources.

← **THE COMMUNITY VIEW WILL INTEGRATE INFORMATION AND PROCESSES FOR A PATIENT UNDERGOING COMPLEX CARE SUCH AS THE DIAGNOSIS, TREATMENT AND MANAGEMENT OF CANCER.**

ABOUT WIRRAL HEALTH

Wirral Health provides health care services to the 350,000 people of the Wirral peninsula and surrounding communities, adjacent to the city of Liverpool, in the northwest of England.

Adopting a collaborative approach to information management, IT support is provided by a single Wirral Health Informatics Service. Wirral's use of information technology in health care has been at the forefront of NHS developments for a number of years. The community is one of sixteen demonstrators for information management technology within the NHS.

Members of the Wirral Health Community include:

→ **Primary Care** – Wirral Health was one of the first to equip all its 65 practices with up to date practice systems based on Local Area Networks connected to the national secure NHSNet intranet. These practices are now combined in two Primary Care Trusts - Birkenhead and Wallasey and Bebington and West Wirral. They are leading developments in primary care electronic records.

→ **Secondary Care** – The Wirral NHS Trust is an acute care trust providing a comprehensive range of inpatient, daycase, emergency department and outpatient services. With 1,260 beds, and 4,500 staff, the Trust annually provides for 90,000 admissions, 300,000 outpatient appointments, 80,000 Accident and Emergency visits, 3,180 births, 1,000,000 laboratory tests and 200,000 x-rays.

The Wirral NHS Trust implementation of an Electronic Patient Record is one of the longest running and most successful in the NHS.

→ **Tertiary care** – The Clatterbridge Centre for Oncology is one of the largest cancer treatment centres in the United Kingdom and has an international reputation for cancer care.

→ **Mental Health and Learning Disabilities** – An NHS Partnership Trust for Wirral and Cheshire supports health care in these areas.



PAUL CHARNLEY, DIRECTOR OF HEALTH INFORMATICS FOR WIRRAL HEALTH

THE CHALLENGES

The challenges associated with the project are complex, especially when access to confidential patient information is provided to a large group of users spread over a wide geographical area.

Specific challenges include:

- The creation and management of a central Patient Master Index that can be used to collate the different components of a patient record from multiple health care providers. The NHS number will be a key identifier, but the system will not depend on it to match patient data. A combination of demographic information, such as name, date of birth, gender and address, will ensure matching is accurate.
- Storage and management of patient data from multiple underlying sources. There may be no common data standards across the variety of systems supplying patient information to the Community View. For example, there is no agreed standard data set for the summary information to be supplied following a GP visit – this information is likely to differ depending on the GP Practice Management System (and version) used in each practice.
- Multiple navigation models that will accommodate the wide variety and different perspectives of users across the health care community. For example, a GP might want to see all patients under 2 years of age that are registered within their practice, while a hospital physiotherapist may want to see all patients currently admitted in the orthopaedic ward at a particular hospital. A district nurse may wish to see all patients scheduled for a visit this week.
- A highly flexible security model that will enable parts of the patient record to be protected from access by some users. The security model for the Community View requires protection of patient

information at the data level, rather than at the application or function level. For example, there may be instances when core information, such as a patient address, needs to be protected. In other instances, the entire patient record may require the application of an additional level of security.

- Allowing secure access to the patient record through Wirral Health's wide area network, the hospital's wide area network, the NHSNet, and (potentially) the Internet.

THE PARTNERSHIP

To deliver the vision of a community-wide Electronic Health Record, Wirral NHS Trust has formed a development partnership with i-Health, a specialist in the development of web-based health care applications.

Based in Auckland, New Zealand, i-Health has established expertise in implementing an Electronic Patient Record solution – the i-Health Clinician View. i-Health solutions are in place in several District Health Boards in New Zealand, and Area Health Services in Australia.

The project takes advantage of the established architecture for the Clinician View. It will extend the current functionality, creating the i-Health Community View. The Clinician View is centred around the hospital, while the Community View allows communication and integration of patient data across the whole health care community. The maintenance of a single real-time patient record by all stakeholders in the local community is a new initiative in health care computing.

i-Health also has an existing partnership with SeeBeyond, a specialist in eBusiness Integration Applications. The SeeBeyond toolset is already in place at Wirral Health, and these applications will form the foundation for a single, shared repository of patient data that can be accessed and managed by appropriate health care professionals in the region.