

A 'DATA LAKE' APPROACH TO TRACKING PATIENTS AND DATA FLOW ACROSS A CANCER PATHWAY

Delivering the right data, at the right time, to the multidisciplinary renal cancer team in North London's Centre of Excellence (CoE) requires meaningful collaboration, a deep understanding of the cancer pathway and the ability to leverage modern data application development and data processing techniques.

In October 2013, London Cancer - a partnership of NHS, academic, charity and cancer specialists serving the north east and central London and west Essex serving a population of approximately 3.2 million - produced the report entitled 'A case for change in specialist cancer services'. The report found that the configuration of specialist cancer services into multiple small centres made it impossible for clinical teams to effectively treat patients and called for cancer services to be reconfigured into a small number of specialist centres which bring multidisciplinary experts together in high-volume teams.

One such specialist centre to arise from these recommendations is the renal cancer North London Centre of Excellence (CoE), led by Mr John Hines, the London Cancer Pathway Director for urological cancer. The CoE was chosen as the pilot service to implement a new approach to managing data flow across multiple organisations.

In order enable its multidisciplinary renal cancer team to deliver improved patient care, the CoE formed a collaborative engagement between London Cancer, University College London Hospital (UCLH), University College London Partners (UCLP), the Royal Free Hospital and Aridhia, to develop and deliver a data solution that would underpin implementation of their integrated 62 day renal cancer pathway as part of their service re-design programme.



The benefits that accrue from the system that Aridhia is developing are enormous... I think that the system will be foolproof."

Mr John Hines, Pathway Director,
London Cancer

CLIENT'S GOALS

- Track and monitor patients at different stages of the cancer pathway.
- Ensure the healthcare team has access to the information it needs while reducing the risks associated with the handover of data between different provider groups.
- Provide the healthcare team with rapid access to MDT treatment decisions.
- Produce clinical outcome metrics to
 - improve the efficiency of patient care along the cancer pathway
 - assess effectiveness of treatment
 - demonstrate that care is delivered to a consistently high standard.

THE CHALLENGE

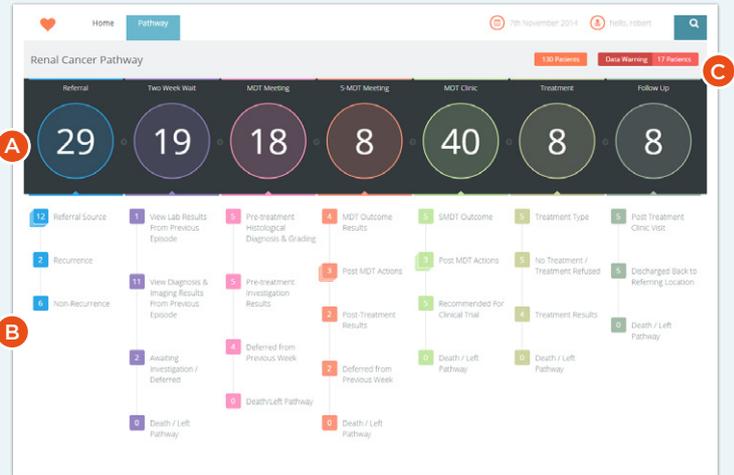
1. Extracting and linking the data from multiple treatment centres in a form that can be analysed.
2. Ensuring that, once the data was integrated, the rules used for its analysis were fit for purpose and 'bound' to the 62 day pathway, allowing various user requirements to be delivered.
3. Enabling users to view the pathway through multiple devices and locations within a modern web application.
4. Making the solution deliverable as an extensible and cost effective service.
5. Keeping information governance foremost in the design process.

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The pathway gives the user an end-to-end view, allowing the MDT to easily manage patients and workflow.

A/B Each pathway node and sub-node displays the number of patients at each stage.

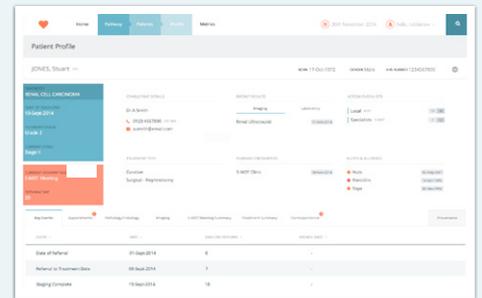
C Data warnings alert the user to any issues with a patient's source data.



PATIENT ID	NAME	GENDER	DOB (DD-MM-YY)	STATUS
EPH022008	John	Male	14/03/1958	Active
EPH022008	David	Male	05/02/1951	Active
EPH022008	Sarah	Female	21/02/1974	Active
EPH022008	Roger	Male	05/01/1958	Active
EPH022008	Jonathan	Male	28/01/1974	Active
EPH022008	Simon	Male	12/02/1962	Active
EPH022008	Simon	Male	19/02/1978	Active
EPH022008	Simon	Male	14/02/1967	Active
EPH022008	Stephen	Male	18/01/1971	Active

Selecting any one of the nodes brings up that specific nodes' patient list. This screen shows detail on the patient and their status on the pathway.

The patient profile pages is where the application displays patients' data, collected from multiple data sources and collated into a user friendly interface.



ARIDHIA'S SOLUTION

Leveraging modern day application and data processing techniques, the solution comprises five building blocks.

Renal Cancer Data Lake

Facilitating the capture of data from all sources and built using open source technologies, this approach avoided vendor lock-in and dramatically reduced the cost of implementation.

Dataset Definition and Integration

Approved in collaboration with the CoE's clinical lead, Aridhia defined and openly released a renal cancer dataset aligned to the national clinical dataset standards (COSD). This allowed system owners to extract and present their element of the data lake in the correct format, thus reducing cost and development time associated with multiple organisations building their own definitions.

Flexible Rules Engine

A key component of this solution, the rules engine delivered an encoded series of rules which are executed against the patient's data to determine what stage of the pathway they are in.

Template Visualisation

Generic data visualisations, built by Aridhia using a rapid development technique, delivered an extensible solution that is capable of being reused for other cancer types, and therefore kept costs down by avoiding unnecessary duplication of work.

Information Governance

Designed with built-in technical and operational safeguards, the solution helps the collaboration meet its obligations under the law, international standards and sector specific standards.

PROJECT STATUS

The project will move into acceptance testing in Q4 2015.