

LAMPS: Live Automated Microbiology Pharmacy Surveillance System



Background

Healthcare-acquired infection (HCAI) is a major concern for health services worldwide, resulting in significant patient morbidity and mortality. A 14 month outbreak of *Clostridium difficile* infection in the Northern Health and Social Care Trust led to an independent review of Trust policies and procedures in relation to HCAIs.

The main recommendations flowing from this review were to:

- Develop a comprehensive infection surveillance system.
- Keep infection control & antimicrobial stewardship (AMS) policies under continual review & produce regular user-friendly reports.
- Provide monthly reports on action taken to promote sound AMS and achieve relevant performance indicators.

Prior to this report all AMS audits were maintained in an Excel database and data manipulation was required to produce the necessary reports.

Development

A multidisciplinary team was established in order to address these recommendations. The team included microbiology consultants, pharmacists, infection control nurses and representatives from a local company, namely, Yarra Software Ltd.

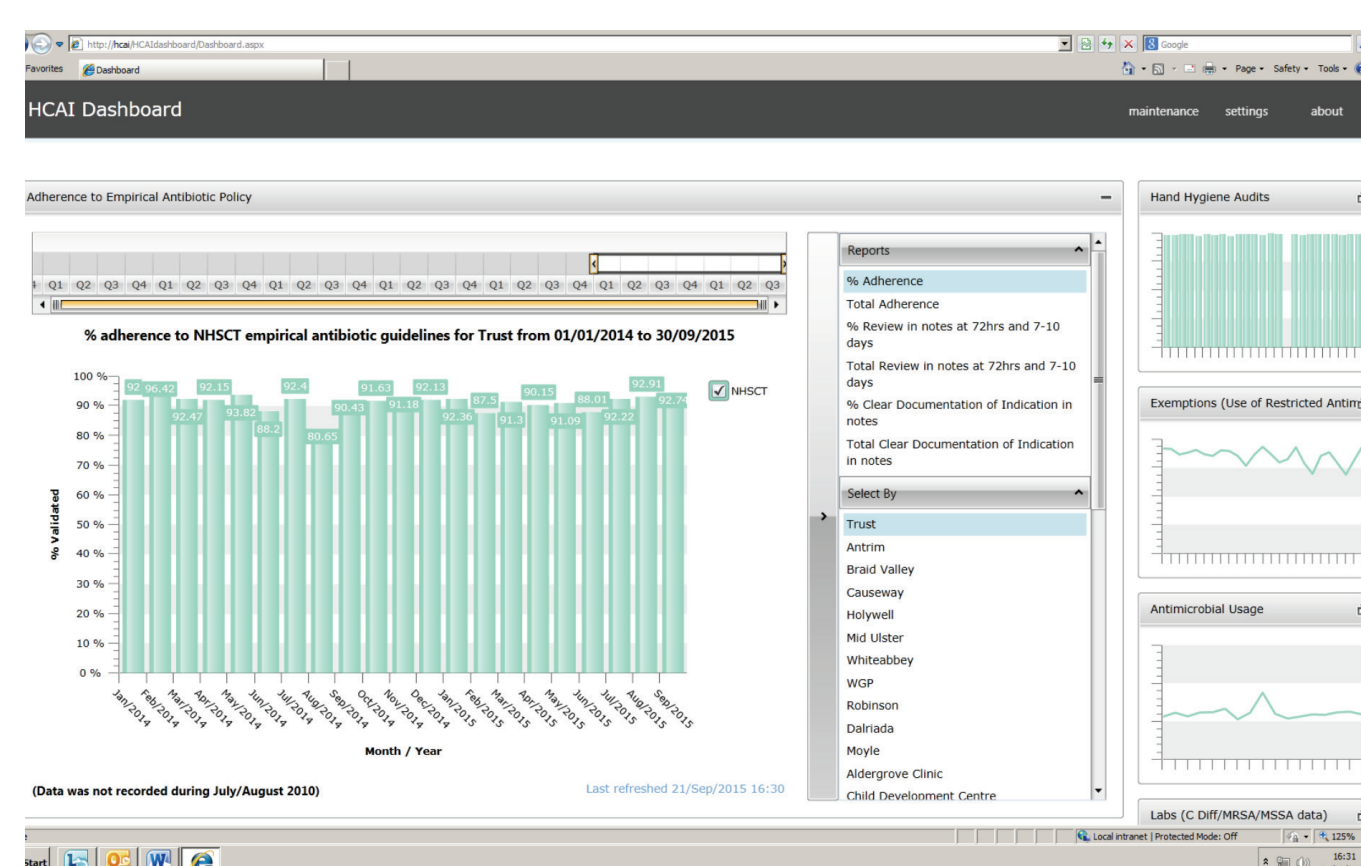
The group led on the development of a new, bespoke solution for antimicrobial surveillance, namely LAMPS (Live Automated Microbiology Pharmacy Surveillance System).

Use in practice:

LAMPS has a number of practical applications:

Antimicrobial stewardship

Weekly audits of adherence to antimicrobial policies and the use of all restricted antibiotics within the NHSCT are entered by clinical pharmacy teams on the ward. After validation of the data by both the antimicrobial pharmacist and microbiologist the software produces various graphs (example shown below). These are available promptly for inclusion in quarterly reports for the Antimicrobial Management Team and Infection Prevention Control and Environmental Hygiene Committee.



The software automatically generates and emails an Excel spreadsheet of the data on a monthly basis to the antimicrobial pharmacist. This facilitates production of stewardship reports to be fed back to the ward staff (Medical, Nursing and Pharmacy).

Intelligent alerts

These are rules which are defined and can be modified by the user. Alerts to the isolation of multi-drug resistant bacteria are set and an email is generated automatically by the system 24 hours a day, 365 days a year. This email is sent to key recipients thereby enabling rapid remedial action to be taken.

Microbiology epidemiology

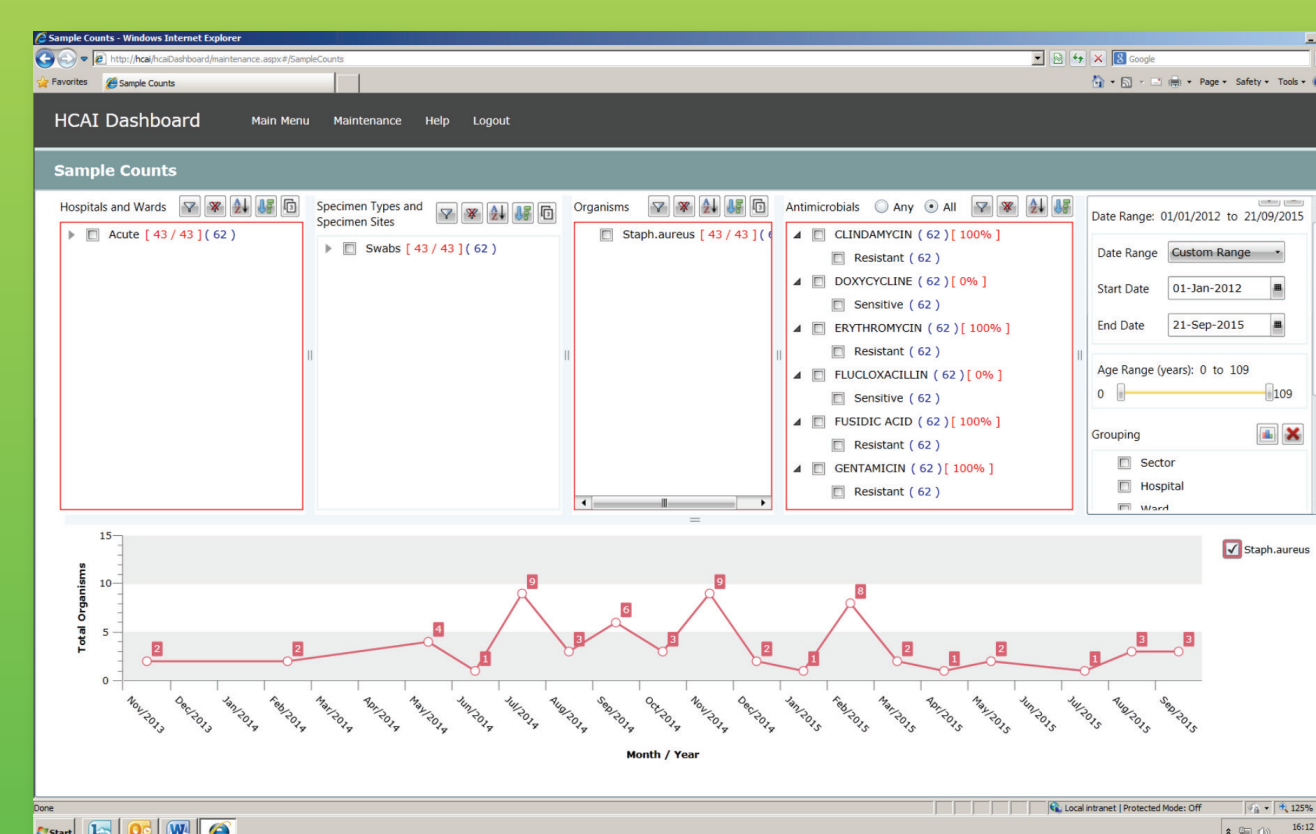
There is a live feed from laboratory software allowing real time analysis of data, in particular organism sensitivity and resistance patterns to the antibiotic regimes being used. This enables resistance trends to be identified and appropriate steps taken to address any concerns.

Case study of use in practice

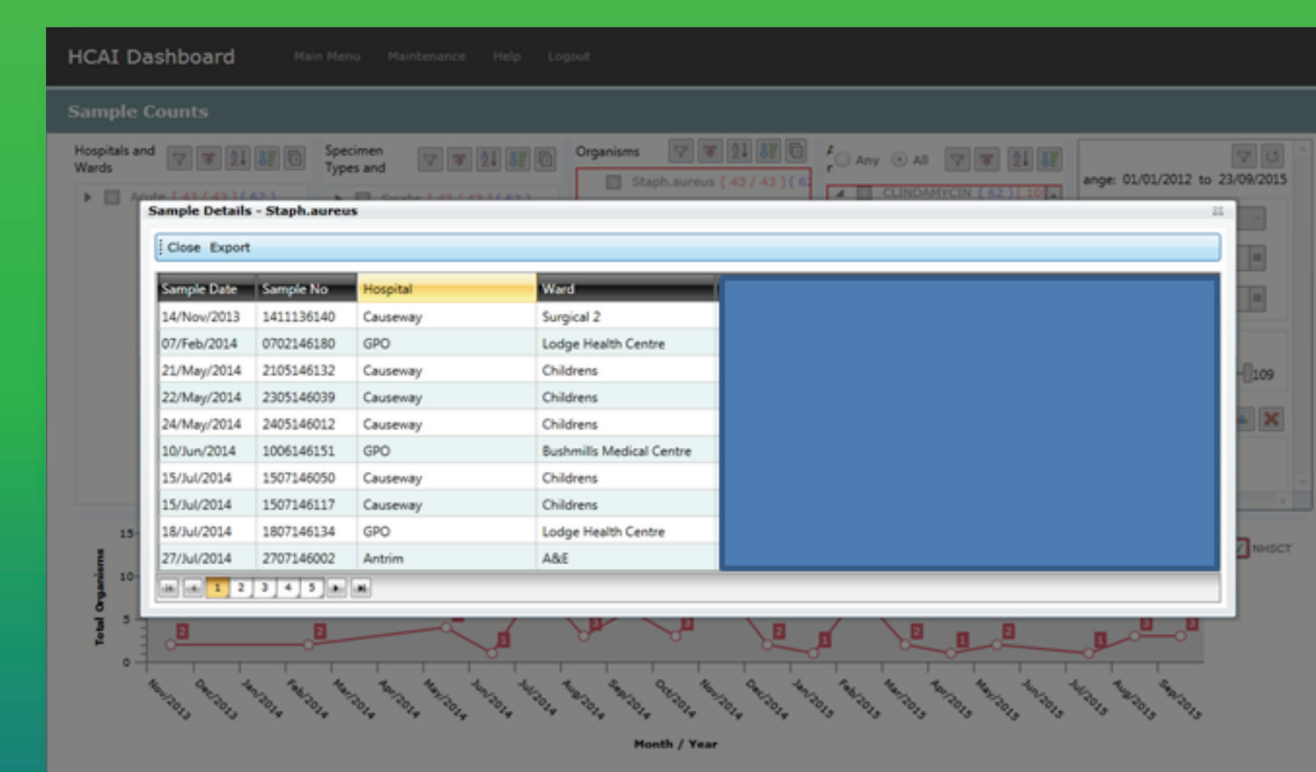
During a recent Panton valentine leukocidin (PVL) *Staphylococcus aureus* outbreak LAMPS was used to rapidly exclude cases in the NHSCT area based on a characteristic antibiogram prior to July 2013 when the outbreak was called. Cases which subsequently appeared through screening and repatriation were then monitored.

This was achieved by:

- 1) Filtering samples positive for *S. aureus* in the Organism section.
- 2) Entering the antibiogram details in the antimicrobial section as shown below.
- 3) Defining the date range
- 4) Selecting the graph icon to produce information in graphical form.



- 5) LAMPS also allows identification of the individual samples/patients if required for further analysis.



Future developments

In the future we would like to roll LAMPS out across Northern Ireland in order to achieve a fully integrated surveillance system incorporating both primary and secondary care.

Smarter Medicines Better Outcomes