Chesterfield Royal Hospital NHS
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"An Evaluation of Time and Clinical Implications of an Automated Infection Prevention Surveillance System."

Authored by: **Diane Simpson, Senior Matron, Infection Prevention & Control,** Chesterfield Royal Hospital NHS Foundation Trust, Calow, Chesterfield, Derbyshire, S44 5BL. Email: Diane.Simpson@chesterfieldroyal.nhs.uk

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Introduction

It has been well established that within infection control departments around the world due to data management requirements, infection prevention teams activities are being compromised.

The economic and health impact of Healthcare Associated Infections (HAI) on hospitals is also well established and has been a priority of governments and the medical community both in funding and resources made available to combat these preventable conditions.

Due to the majority of Infection Preventionist's (IP) time being spent collecting, analysing and interpreting data on the occurrence of infections, any help, can and should be implemented[1]. There are various software solutions available which claim to meet this need.

Surveillance of HAI is the cornerstone of an effective infection prevention program. To enhance the role of the infection preventionist to one in which the primary objective is that of prevention, surveillance must absorb fewer human resources[2]. Even though a well-established area of technological development, up to 80% of facilities have no software available at present to aid the IP team in this role[3].

Objective

This poster will look at an example installation of surveillance software, which will demonstrate the reasons behind the installation, and the benefits realised to the infection prevention team and the hospital at large.

Methods

Data regarding usage and the implications of automated case management and surveillance was collected from a fully installed location of ICNet International's HAI case management and surveillance software – ICNet (v6).

- This study was carried out at Royal Chesterfield Hospital
- 19 wards with 569 general and acute beds.
- Intensive therapy unit, high dependency unit, neo-natal unit, maternity beds and day care beds.
- 3400 staff, £172 million budget (2009/10), 60,000 in-patient and 260,000 out-patient episodes per year and serving a population of 430,000.

Time Data collection

Time sensitive data regarding usage was collected from a sample of users of recent installations of electronic surveillance (within the past 24 months) as it was important to have team members who could recall the methods utilised pre software installation.

Infection Control Teams (Administrative Assistant, Infection Preventionist, Surveillance Manager, Director of Infection Prevention and Control) from across the United Kingdom were sent a questionnaire. This was composed of three parts.

- Documenting daily activity with regard to surveillance and case management in the IC team.
- Highlighting the most common tasks taken.
- Attributing daily time taken to these tasks.

These results were collected electronically and analysed to ascertain the daily hourly reduction in time spent on common tasks within the IP team. This was to provide a percentage reduction in time post installation.

Results

The daily time was quantified and adjusted according to the response rates. Not all tasks were appropriate to the job roles surveyed and so the total time saved was divided by the number of submissions for a task, except where N/A was used.

The collective results are shown below and show the average daily time saved pre and post installation of electronic surveillance.

	Pre install	Post install
Patient Data Entry and Case Management	2.88	1.88
Collection of Lab results	2.03	1.22
Data Analysis and Reporting	2.81	1.62
Searching for data on patients or outbreaks	2.54	1.23
Creation of Trust reportable data	2.86	1.71
Surveillance of Person Under Investigation (PUI)	2.26	1.38
Total hours	15.38	9.03
Daily hours saved	6.35	
Percentage Saving	41.3%	

Table 1: Percentage reduction of the daily time taken to carry out common tasks within the IP team.

The percentage reduction for the daily tasks showed a 41% reduction in time spent on these tasks.
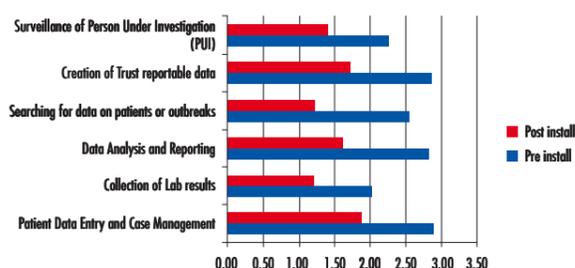
Fig 1: A comparison of the daily time taken to carry out common tasks within the IP team.

At the Chesterfield Royal hospital this was recorded as 14.5 hours per week released per IP team member.

Historical processes for case management and surveillance of patients

- Daily line list from laboratory system
- Hours to interpret, document, alert clinical staff
- Delay in informing clinicians
- Paper based records
- PAS and Lab systems separate – no link
- Outbreaks not easy to identify and manage
- Audit trails time consuming to document and access

Current situation – Post Installation

- Immediate access to laboratory downloads – 3 per day
- Patient demographic and laboratory data automatically merged
- Immediate ward alerts
- Access to database on wards
- Documentation of expert advice as given to clinician
- Individual IP workload documented – real time
- Audit trail easy to follow
- Line lists, charts, reports etc easy to produce
- Records auto-tagged for alerts to readmitted patients, e.g. post surgery, past MRSA patients readmitted

The information displayed here is at one facility which has individual nuances to its IP process but does reflect the broad spectrum of activities carried out by an IP team.

Discussion

The results shown in this small sample are indicative of the percentage reduction in time taken to perform common surveillance tasks both pre and post electronic surveillance installation.

This means that several key actions can be performed as a result.

- Increase in direct patient contact
- Increased education at ward level
- Reduction in ward outbreaks
- Speedy interventions – preventing relapses and cross infection

The more appropriate use of nurses on high pay bands can be implemented. The specialist nurses can perform the roles for which they have trained and are employed. The more perfunctory tasks of data entry/management can be performed where needed by staff on lower pay grades.

Although these results have been corrected simply, they do not represent the actual time taken by IP teams daily on surveillance but rather a base line for reduction in time taken with common tasks.

Conclusions

The results shown here are indicative of the significant time and money burden that can be lifted from IP teams which enable them to be more efficient, proactive and impactful in reducing the incidence of HAI in a healthcare facility.

Future connections to aid the IP team are being made in the following areas:

- Connection to operating theatre database to expand SSI monitoring
- Connection to pharmacy database when individual patient prescribing implemented to enable:
- Antibiotic usage reviews
- Timely intervention for inappropriate prescribing

These advances will only aid to extend the ease of access to data for the extended IP team and help them to meet the challenges posed to them now and in the future.

References

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