BETTER, SOONER, MORE EFFECTIVE **INFECTION MANAGEMENT Canterbury** District Health Board



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Up to 10% of patients admitted to hospitals in high income countries acquire a healthcare-associated infection (HAI). In New Zealand in the late 1990s, the financial costs were estimated to be in excess of \$137 million¹. Additionally, there are increasing international risks from multi-drug resistant organisms (MDRO) and other contagious organisms.

Te Poari Hauora ō Waitaha

Burden of Cost and Harm from Infection due to Delayed Clinical Response

Prior to 2012, the Canterbury District Health Board (CDHB) Infection Prevention and Control team spent a significant amount of time on non-clinical issues. An 11-stage process was required to follow positive laboratory specimens (Figure 1). The team accessed three different computer systems before clinical input could occur and did not always know which units patients with multi-resistant infections had been were admitted to. If the service does not know where the patients are, advice and follow-up cannot occur. An automated solution that reduced manual workload and lowered risks to patients and staff was urgently required.



Figure 3: Efficiency Gains by Chesterfield Trust (UK) after Implementation of ICNet



Figure 1: BEFORE: IPC Follow-up Process, before dedicated infection management software



Figure 4: AFTER: Current IPC follow-up process – post infection management software

Surgical Site Infection Improvement (SSII) Programme

Due to the known harm and costs³ (**Table 1**) of surgical site infections (SSIs), in 2012 the Health Quality and Safety Commission instigated the development of a national Surgical Site Infection Improvement (SSII) programme. ICNet was chosen as the provider of the electronic data collection form and data warehouse software for the programme. The surveillance programme has provided a national data set, which along with identified quality and safety markers (QSMs), is bringing about culture change and practice improvements. Initial trends are positive⁴(Figure 5) although it is too soon for statistical significance. Within CDHB, the implementation of the full ICNet programme (ICNet Next Generation) enables automatic transfer of patient data from CDHB to the SSII Programme national warehouse, providing further efficiencies for both.

Benefits of Automated Infection Management

After a robust procurement process, the ICNet software programme was chosen as the preferred infection management software programme. The software interfaces with the CDHB patient management system and laboratory information system (Figure 2).



Figure 2: Interface of infection management software with other CDHB software.

BENEFITS:

Paperless case management – patients have individual case record that can be utilised for recording advise provided, documenting possible HAI information and other documentation

LEAD TO:

- Efficiencies free up IPC CNS to provide more clinical input and advice
- Speed earlier identification of cases and clusters of infections

Table 1: Modelled additional cost of each SSI (2011 \$NZ, +/- 20%)³.

Surgery	Excess costs of SSI 2011 \$NZ, +/- 20%	
Knee joint replacement	21000	
Hip joint replacement	21000	
Coronary artery bypass graft	20000	
Caesarean section	4500	
Other surgery types	10000	



Figure 5: QSM Process and Outcome Measures of NZ National SSII programme^{4,5}.

Time for a National Infection Management System?

- Real time alerts alerts for organisms, clusters of infections and readmissions of infectious patients
- Outbreak management timelines and reports developed in real time and able to be downloaded instantly
- Report generation utilising data mining to instantly able to generate required reports
- Surveillance automated surveillance of infections
- Cross-cover for all facilities all patients records able to be accessed from all sites
- Improved patient outomes

Productivity gains have been realised, similar to those of Chesterfield Trust² (**Figure 3**). The team is now more proactive, providing earlier clinical advice and input. Capacity has also increased without additional resources; substantial IPC input into the Christchurch Hospital rebuild has occurred without an increase in CNS full-time equivalents.

An automated infection management software system has freed up the CDHB IPC to respond sooner, provide advice faster and reduce infection risks to patients and staff more effectively. The efficiencies gained and expected improvement in patient outcomes raise the question: *Is now the time to implement a national infection* management system?

Acknowledgements

The authors would like to thank Jim Brown and Deborah Jowitt for their assistance in the development of this poster.

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