

Resources, staffing and the costs of infection control services in Australian hospitals

B. Mitchell¹, L. Hall², A. Gardner³, D. MacBeth⁴, K. Halton²

¹Avondale College, Wahroonga, Australia

²Queensland University of Technology, Brisbane, Australia

³Australian Catholic University, Canberra, Australia

⁴Gold Coast Hospital, Gold Coast, Australia

Objective: To describe infection control staffing levels, patient outcomes and costs associated with the provision of infection prevention and control services in Australian hospitals. A secondary objective was to determine the priorities for Australian infection control units.

Methods: A cross sectional study design was used. Infection control units in Australian public and private hospitals were invited to complete a web-based anonymous survey. Data collected included details about the respondent; hospital demographics; details and services of the infection control unit; and a description of infection prevention and control related outputs and patient outcomes and infection control priorities.

Analysis of variance was performed to compare means. Correlations between variables were calculated using Spearman's correlation coefficient or Kendall's tau. Full time equivalent (FTE) and confidence intervals per 100 overnight hospital beds were calculated using Poisson distribution. The staffing costs of nurses in infection control units were calculated using the FTE, pay rates according to an enterprise bargaining agreement and on-costs. Annual staffing expenditure per 100 hospital beds was calculated, using bootstrapping.

Results: Forty-nine surveys were undertaken, accounting for 152 Australian hospitals, constituting 22.4% of all public and privately funded hospital beds. Sixty-seven percent of responses were from publicly funded hospitals. The mean number of infection control professional (ICPs) in Australian hospitals was 0.66 per 100 overnight beds (95% CI 0.55-.0.77). There was relative consistency in the mean ICPs per 100 beds across different size hospitals. Privately funded hospitals have significantly less ICPs per 100 overnight beds, compared to publicly funded hospitals ($P < 0.01$).

Staffing costs for nursing staff in infection control units in this study totalled \$16,953,511 (mean \$394,267). Infection control units responsible for managing larger hospitals (>270 beds) identified a significantly higher need for dedicated research time ($p=0.02$) and increased access to senior management ($p=0.04$), whilst teams managing smaller hospitals identified the need for increased access to infectious diseases or microbiology support. In hospitals with 100-499 overnight beds, there was a borderline association between higher ICP FTE staffing and a reduced incidence of healthcare associated *Staphylococcus aureus* bacteraemia ($p=0.05$).

Conclusion: Implementing an effective infection control program is challenging, compounded by a lack of information on service delivery models. This study provides such information, supporting future decision-making by funders, hospital administrators and ICPs. Further, it provides valuable data to support the development of robust business cases and subsequent decisions.