

Investigating the effect of enhanced cleaning and disinfection of shared medical equipment on health-care-associated infections (CLEEN): a stepped-wedge, cluster randomised, controlled trial

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Background

There is a paucity of high-quality evidence based on clinical endpoints for routine cleaning of shared medical equipment. We assessed the effect of enhanced cleaning and disinfection of shared medical equipment on health-care-associated infections (HAIs) in hospitalised patients.

Aim

The aim of this study was to evaluate the efficacy of enhanced cleaning and disinfection of shared medical equipment in reducing the prevalence of HAIs.

Method

We conducted a stepped-wedge, cluster randomised, controlled trial in ten wards of a single hospital located on the central coast of New South Wales, Australia. Each cluster consisted of two randomly allocated wards, with a new cluster beginning the intervention every 6 weeks. In the control phase, there was no change to environmental cleaning practices. In the intervention phase, a multimodal cleaning bundle included an additional 3 h per weekday for the dedicated cleaning and disinfection of shared medical equipment by 21 dedicated cleaning staff, with ongoing education, audit, and feedback. The primary outcome was the number of confirmed cases of HAI.

Results

5002 patients were included in the study (2524 [50.5%] women and 2478 [49.5%] men). In unadjusted results, 433 confirmed HAI cases occurred in 2497 patients (17.3%, 95% CI 15.9 to 18.8) in the control phase and 301 confirmed HAI cases occurred in 2508 patients (12.0%, 10.7 to 13.3) in the intervention phase. In adjusted results, there was a **relative reduction of -34.5% (-50.3 to -17.5) in HAIs** following the intervention (odds ratio 0.62, 95% CI 0.45 to 0.80; $p=0.0006$), corresponding to an absolute reduction equal to -5.2% (-8.2 to -2.3). No adverse effects were reported.

Conclusion

Improving the cleaning and disinfection of shared medical equipment significantly reduced HAIs, underscoring the crucial role of cleaning in improving patient outcomes. Findings emphasise the need for dedicated approaches for cleaning shared equipment.

References

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