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Risk of organism acquisition from prior room occupants: a systematic review and meta-analysis

B.G. Mitchell, S.J. Dancer, M. Anderson, E. Dehn



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Review**Risk of organism acquisition from prior room occupants: a systematic review and meta-analysis**B.G. Mitchell^{a,b,*}, S.J. Dancer^c, M. Anderson^a, E. Dehn^a^a*Avondale College of Higher Education, Faculty of Arts, Nursing and Theology, Wahroonga, NSW, Australia*^b*Faculty of Health Sciences, Australian Catholic University, Watson, Australian Capital Territory, Australia*^c*Department of Microbiology, Hairmyres Hospital, East Kilbride, UK*

*Corresponding author. Address: Avondale College of Higher Education, 185 Fox Valley Rd, Wahroonga, NSW 2076, Australia. Tel.: +61 2 9487 9630.

E-mail address: +61 2 9487 9630.

SUMMARY

A systematic review and meta-analysis was conducted to determine the risk of pathogen acquisition for patients associated with prior room occupancy. The analysis was also broadened to examine any differences in acquisition risk between Gram-positive and Gram-negative organisms. A search using Medline/PubMed, Cochrane and CINAHL yielded 2577 citations between 1984 and 2014. Reviews were assessed in accordance with the international prospective register of systematic reviews (PROSPERO). Just seven articles met the inclusion criteria, namely: (a) papers were peer reviewed, (b) pathogen acquisition prevalence rates were reported, (c) articles were written in English; and (d) had minimal or no risk of bias based on the Newcastle–Ottawa Scale (NOS). One study was an extension of a previous study and was discarded. Employing NOS provided little difference between the studies, with five studies receiving eight-star and two studies receiving seven-star ratings, respectively. Overall, pooled acquisition odds ratio for study pathogens (meticillin-resistant *Staphylococcus aureus*; vancomycin-resistant enterococcus; *Clostridium difficile*; acinetobacter; extended-spectrum β -lactamase-producing coliforms; pseudomonas) was 2.14 [95% confidence interval (CI): 1.65–2.77]. When comparing data between Gram-positive and Gram-negative organisms, the pooled acquisition odds ratio for Gram-negatives was 2.65 (95% CI: 2.02–3.47) and 1.89 (95% CI: 1.62–2.21) for Gram positives. The findings have important implications for infection control professionals, environmental cleaning services and patients, since current practices fail to adequately reduce acquisition risk. Although there may be non-preventable

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