

Hospital-based environmental hygiene: priorities for research

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Traditional, environment-based hospital hygiene has long been considered a weak science, usually arising from the creation of a global hypothesis, which is poetically elaborated upon by its creator without appeal to patient-orientated facts that would be capable of confirming or refuting it.¹ There are many examples of environment-focused studies in hospital hygiene that reveal the missed opportunity of introducing some patient-orientated outcome into the study design. Nevertheless, the role of the environment as a potential reservoir of multidrug-resistant microorganisms (MDROs) and *Clostridium difficile* has recently gained new momentum.² Several studies from Europe have highlighted the importance of thorough cleaning practices to avoid transmission of MDROs that are capable of surviving in the environment for extended periods.^{3–5} With respect to hospital cleaning, a broad consensus exists now among European experts that high standards are essential.⁶ This message has also been well received in North America, where several descriptive and interventional studies recently addressed the challenge to decrease environmental contamination with MDROs and *C. difficile*.^{7,8}

What are important issues to address in future research projects in this field? First, the impact of environmental contamination on healthcare-associated infection rates and the cost-effectiveness of surface disinfection as opposed to detergent-based cleaning remains a scientifically unresolved issue, despite a growing body of literature.⁶ Second, our current understanding of the behaviour of microorganisms in biofilms remains rudimentary. Research characterising the behaviour of organisms in a biofilm on surfaces or in endoscopes, may possibly lead to the development of materials that have superior resistance to colonisation by pathogenic organisms.⁹ Third, we need large-scale descriptive cohort studies to better understand the real-world differences in the incidence and transmission of *C. difficile* and its explanatory determinants.¹⁰ Fourth, experimental studies should evaluate the role of decolonisation of MDRO carriers or treatment of all patients with chlorhexidine body washes and its impact on room contamination and nosocomial spread of these pathogens via the environment.¹¹ Careful models are

needed to better describe this interaction in a meaningful way. Finally, we will need to better address the challenge of resistance to antiseptics and disinfectants, if we want to preserve their efficacy for future generations.¹²

Conflict of interest

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