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Letter to the Editor

Healthcare environment decontamination

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Contamination of the inanimate healthcare environment with microbial pathogens can lead to contamination of healthcare workers' hands thus providing a vector to infect vulnerable patients. Evidence exists that many of these pathogens survive well in the environment. The conditions, mechanisms and appropriate techniques of environmental decontamination are controversially debated.

Professional cleaning in hospitals is essential for hygienic as well as for aesthetic reasons. The benefits and disadvantages of surface disinfection compared with cleaning using a detergent only have been discussed in detail in several publications.[1–3] Some experts believe it is reasonable to use hospital disinfectants on noncritical patient care surfaces, patient equipment surfaces, and housekeeping surfaces in patient care areas. Conversely, others argue against routine surface disinfection and favour surface cleaning without the use of biocidal substances, particularly in light of occupational risks (e.g. contact dermatitis to benzalkonium chloride) and the selection for resistance, which poses a risk to humans and the environment.

In a systematic review we assessed the evidence with respect to the effects of using a detergent alone or a detergent-disinfectant to decontaminate inanimate surfaces in the healthcare setting until year 2001.[4] All together, 236 articles meeting the inclusion criteria could be identified. None of these described a meta-analysis, systematic review, or randomised controlled trial, and only four described completed cohort studies with concurrent or historical controls meeting the criteria for final inclusion. None of the articles showed lower infection rates associated with routine disinfection of surfaces (especially floors) compared to cleaning with detergent only. Since then further studies on this issue have been published, mostly dealing with the risk of transmission of multiresistant pathogens (MRSA/VRE) or *C. difficile*.[5] These studies seem to favour routine surface disinfection. However, this chapter of hospital infection control is far from being closed.

Current guidelines and recommendations reflect this lack of evidence and are mainly based on expert consensus. The Robert Koch-Institute (Germany; www.rki.de) issued its revised guideline on household cleaning and surface disinfection in 2004. That document recommends detergent-based cleaning for most surfaces and targeted surface disinfection for surfaces that frequently come into contact with hands and skin of patients or personnel. The lack of evidence in support of routine disinfection of surfaces in healthcare institutions is also reflected by the Centers for Disease Control and Prevention (USA; www.cdc.gov) guideline on environmental infection control.

The high importance of cleaning with a detergent using up-to-date technologies by well trained staff must be highlighted.[6] In addition, in circumstances such as blood or body fluid spills, rapid disinfection is inevitable and necessary in order to prevent fixation. Newer disinfectants, mainly peroxygen compounds, show good and even sporicidal properties and will probably replace more environmentally problematic substances such as chlorine-releasing agents. The high transmissibility of gastrointestinal viruses like norovirus shows the need for sound data on how different disinfectant classes perform with respect to inactivation. New technologies and products like hydrogen peroxide vapour decontamination are being intensively evaluated to demonstrate their properties and their restrictions in clinical practice (e.g. costs and time required).

Although resistance to biocides is generally not judged to be as critical as antibiotic resistance, scientific data discourage the widespread use of biocides, especially in low concentrations and in consumer products.[7] Increased utilisation of biocides in household products is in conflict with the principle that antiseptics and disinfectants should be used only when necessary and then only with a full appreciation of the factors influencing their activity.[8]

In conclusion, cleaning and disinfection are established components of infection control, and special situations may require special procedures, e.g. when treating infected or severely immunocompromised patients or patients harbouring transmissible multi-resistant pathogens. Targeted surface disinfection with a special focus on frequently touched surfaces is indispensable in modern healthcare facilities. However, disinfectants may be hazardous to personnel and patients, as well as the environment, and require special safety precautions. Unrestricted use of biocides, especially in low concentrations, may lead to the development of resistance, and for many surfaces like floors in hospitals thorough cleaning

using environmentally friendly detergents is appropriate. New technologies and biocidal substances with promising properties should be further evaluated. As emerging resistant pathogens will challenge healthcare facilities in the coming years even more than at present, there is a need for well designed (multicenter) studies addressing the future role of cleaning and disinfection in healthcare infection control.[9] However, it should be kept in mind that the still too low compliance with hand hygiene is the more urgent problem for the safety of our patients.

Conflict of interest

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