

Optimizing Health Care Environmental Hygiene



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KEYWORDS

- Hygienic practice • Hand hygiene • Environmental hygiene
- Optimizing disinfection cleaning

KEY POINTS

- During the past decade it has become widely appreciated that patient area environmental surfaces play an important role in the transmission of all health care–associated pathogens (HAPs).
- Clarification of opportunities to have a favorable impact on such transmission has led to new approaches for optimizing the structure and practice of health care environmental hygiene.
- Although both hand hygiene and environmental hygiene represent basic horizontal interventions to prevent transmission of HAPs, there is a need for these 2 interventions to be recognized as interdependent.
- Several technologic interventions to augment environmental hygiene have been recently developed but remain to be objectively evaluated in well-designed clinical studies.

INTRODUCTION

As recently noted by the Centers for Disease Control and Prevention (CDC), “In the 1970s and 1980s the transmission of pathogens from healthcare surface to susceptible patients was thought to be insignificant.”¹ As a result of epidemiologic and microbiologic studies over the past decade, it has become increasingly evident that interventions to mitigate environmental surface pathogen contamination constitute an important component of health care–associated infection (HAI) prevention. During this time it has become widely appreciated that, “Cleaning of hard surfaces in hospital rooms is critical for reducing healthcare-associated infections.”² Unfortunately, the complexity of the interrelated factors necessary to optimize the safety of surfaces in the patient zone remains an evolving challenge. Precisely defining how the impact of various surface cleaning interventions and optimized hand hygiene practice can

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be validated to develop clinically grounded implementation guidance has yet to be substantially realized.^{1,3} Despite such ongoing challenges, it is important to recognize that environmental hygiene represents a critical element of what Wenzel and Edmond define as “horizontal interventions” that are central to mitigating a wide range of HAIs.^{4,5} These approaches aim to reduce the risk of infections caused by a broad range of pathogens by the implementation of standard practices that are effective regardless of patient-specific conditions.⁶ In contrast to the horizontal interventions, “vertical interventions” are pathogen and/or condition specific. They remain important in defined settings and become most cost effective when the indications for their use are most clearly defined. Although vertical and horizontal approaches are not mutually exclusive, there is evolving evidence that horizontal interventions in endemic situations may represent a best use of HAI prevention resources.⁶ Recent well-designed studies of chlorhexidine bathing and decolonization as well as expanded use of contact precautions in ICUs seem to have significant potential for HAI reduction, at least in certain settings.⁶ Furthermore, the use of vertical interventions has recently been shown of critical value in optimizing safety with emerging pathogens, such as Ebola virus and the Corona virus associated with MeRS.^{7,8}

To facilitate discussion of the many elements necessary to optimize health care hygienic cleaning, it is useful to put these interventions into a defined construct of HAI prevention activities. As indicated in Fig. 1, hygienic cleaning and hand hygiene as well as interventions related to instrument reprocessing, air quality, water quality, and physical setting design are all horizontal interventions. All these horizontal interventions represent elements of health care hygienic practice. Although these elements have traditionally been discussed independently, their effectiveness in clinical settings is substantially interrelated, in particular environmental hygiene and hand hygiene, as discussed later. The term, *environmental hygiene*, with respect to health care, can be defined as cleaning activities directed at removing and/or killing potentially harmful pathogens capable of being transmitted directly from surfaces or indirectly to susceptible individuals or other surfaces. As such it consists of both the physical cleaning of surfaces as well as surface disinfection cleaning (see Fig. 1). Although liquid chemistries are well established as the most clinically useful

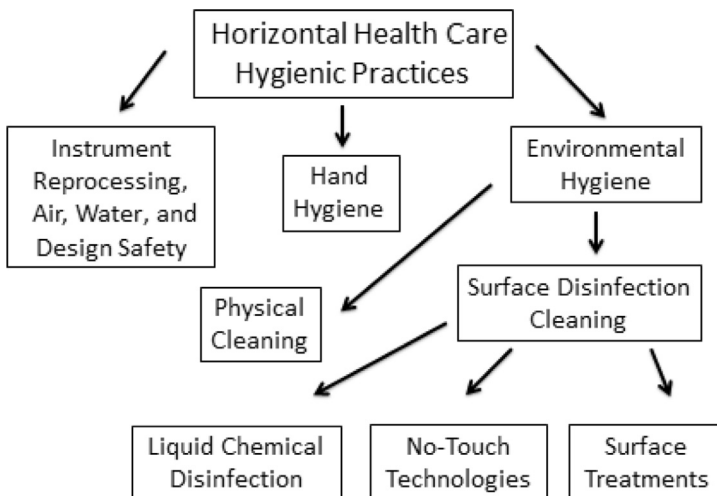


Fig. 1. The elements of horizontal healthcare hygienic practice.

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