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How are nursing homes cleaned? Results of a survey of 6 nursing homes in Southeast Michigan

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This brief report details 2 surveys that were conducted to better understand current cleaning practices in 6 nursing home facilities in Southeast Michigan. Each facility's environmental services supervisor answered questions regarding cleaning policy and procedures, roles and responsibilities of the staff, and frequency of education and training; one environmental services employee from each facility answered questions addressing education and training, employer evaluation and feedback, and workload. We identify gaps in knowledge and behaviors and note substantial variations in cleaning practices.

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Nursing homes (NHs) are well-known reservoirs for multidrug-resistant organisms, including methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant enterococci, and antibiotic-resistant gram-negative bacilli.¹⁻³ NH residents who are colonized or infected with multidrug-resistant organisms shed these organisms onto their skin, clothing, bedding, and nearby environmental surfaces for prolonged periods of time.⁴⁻⁷ Residents may acquire pathogens directly through contact with contaminated environmental surfaces or indirectly from touching the hands of the health care personnel.^{8,9} Most of these residents remain silent carriers after acquisition; however, some develop health care-associated infections (HAIs). These remain an important source of morbidity and mortality, with an estimated 1.7 million infections and 99,000 deaths annually.^{8,10}

In recent years, many studies have demonstrated that proper cleaning and disinfecting of environmental surfaces can reduce pathogen burden, and may reduce the incidence of HAIs.^{4,6,8,10-12} Although cleaning is essential to reduce environmental reservoirs of known pathogens that can be easily transmitted from person to person via the hands of health care workers, few studies examine current cleaning practices in NHs. We conducted semi-structured interviews with environmental services (ES) personnel to evaluate cleaning procedures in 6 NHs in Southeast Michigan to identify

gaps in current practice and inform future interventions to reduce pathogen burden, lower infection rates, and improve patient outcomes.

METHODS

To evaluate cleaning practices in NHs, 2 semi-structured interviews were conducted at each participating facility: one with the ES supervisor and the other with an ES personnel. Interview guides were developed and pilot tested among 2 of the NH supervisors. Individual domains and items were clarified based on their feedback. The surveys were conducted via researcher-administered interviews.

The ES supervisor survey consisted of 41 questions divided into 6 main categories which included (1) job description, including roles and responsibilities; (2) policy and procedures; (3) education and training; (4) frequency and time spent cleaning; (5) cleaning methods and products; and (6) cleanliness assessment. The ES personnel survey consisted of 11 questions regarding demographics, assignments, training, education, and evaluations. Questions were either open-ended, multiple choice, or yes or no responses. Each questionnaire was accompanied by a cover letter explaining the purpose of the study. This study was approved by the Institutional Review Board at the University of Michigan. Consent was implied by the agreement to meet and conduct the interview. Responses from the surveys were exported into Microsoft Excel 2016 (Microsoft, Redmond, WA) at a facility level. Multiple choice and yes or no questions were coded, whereas responses to open-ended questions were transcribed.

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Table 1
Nursing home facility and environmental services staff characteristics

Characteristic	Facility					
	1	2	3	4	5	6
2015 Star rating*	5	3	5	2	3	4
No. of certified beds	74	143	103	72	133	102
Percentage of short-stay beds	34	8	44	75	16	8
Total no. of cleaning staff	6	14	9	7	18	13
No. of staff per day	2	5	4	2	6	5
Average length of shift, h	8	7.5	8	8	8	7.5
No. of rooms per staff member	22-23	12	25	20	7-16	18
Average time to clean room, min	10	20-30	10-15	10-15	20	15-20
Average time to clean room on discharge, min	30	30	30	30-45	30-45	45

NOTE. These data are the self-reported numbers from each facility's environmental services supervisor.

*Star ratings are as follows: 1 (much below average), 2 (below average), 3 (average), 4 (above average), and 5 (much above average).

RESULTS

Facility and staff characteristics

ES personnel at all 6 NHs are hired through a contracted cleaning company and initially trained by the ES supervisor. The supervisors we interviewed varied greatly in their length of employment (range, 2 weeks-12 years). Each supervisor reported having an off-site district manager who visits the facility once each week, on average. Facility and staff characteristics are found in Table 1. The average number of beds at the 6 facilities was 104.5 (range, 72-143). The total number of ES personnel at each facility ranges from 6-18 people; the average number of personnel at each facility on a given day ranges from 2-6 people. Room assignments are variable among the facilities and range from 7-23 rooms per shift. Personnel spend 10-30 minutes per room during their daily routine, which extends up to 45 minutes on deep cleaning or discharge days.

Cleaning policies and practices

All 6 ES supervisors reported that high-touch surfaces—including doorknobs, bedrails, and in and around toilet seat—are cleaned daily with disinfectant; walls, blinds and window frames are cleaned once a week or as needed (Table 2). Techniques for cleaning high-touch surfaces included applying disinfectant directly to a cleaning cloth at 5 facilities, and pouring bottle to bucket immersion at 1 facility. Four facilities use spray bottles and 1 facility uses premoistened wipes. Cleaning carts are used at all 6 facilities and contain the following items: quaternary ammonium chloride disinfectant, bleach, window-glass cleaner, toilet bowl cleaner, trash bags, paper products, and hand towels. Water in the mop bucket is changed after every 3 rooms at all facilities. Only 1 ES supervisor reported that his or her staff uses a checklist of items to be cleaned in each room. However, all 6 NH facilities follow the 5 and 7 steps routine—a method of patient room cleaning and washroom cleaning that includes emptying trash, disinfecting horizontal surfaces, spot cleaning walls, dust mopping floors, and cleaning and sanitizing the commode.

All 6 ES supervisors reported that cleaning rooms with contact precautions is done differently; in 3 facilities, these rooms are cleaned before all others. All ES personnel are required to comply with contact precautions (wearing gloves, gown, and mask). Bleach is the product used to clean surfaces in all facilities; time spent cleaning a contact precaution room is longer than that spent in a noncontact precautions room in 5 out of the 6 facilities (Table 2).

Staff education and training

Four of the facilities reported performing ongoing education for cleaning personnel (Table 2). Two facilities have monthly in-services;

1 facility has in-services every 3-4 months; and 1 facility has at least 2 in-services each year. This education is performed via reading materials (at 4 facilities) and in-service examinations (at 2 facilities). Hands-on training about the cleaning procedures is performed in the first week of hiring a new staff member in all 6 facilities; it is done periodically thereafter in 3 of the facilities (Table 2).

Environmental cleaning staff questionnaire

The length of employment among the surveyed ES personnel in each facility ranged from 1-13 years (Supplementary Table S1). When asked if their workload was fair, too heavy, or not heavy enough, 4 of the 6 personnel reported too heavy, whereas the remaining 2 reported a fair workload. The initial training on hiring was done differently for each employee (variable in duration and method used). Four ES personnel reported at least monthly subsequent training or in-services thereafter. All 6 ES personnel reported a visual assessment performed by the supervisor for randomly selected rooms to check and assess for cleanliness; 4 personnel reported daily checks.

DISCUSSION

The aim of our 2 surveys was to compare cleaning policies at 6 NHs and identify gaps and areas for improvement. We found that although the role of environmental supervisors does not vary significantly across facilities, there is great variation in the responsibilities of the cleaning staff, with the number of rooms assigned to each employee ranging from 7-23 rooms and the time spent to clean each room ranging from 10-30 minutes. The frequency of cleaning high-touch surfaces was similar among the 6 facilities but with different techniques used (eg, facilities reported different product, time, and sequence when cleaning rooms of contact precautions). The amount of training and continued education for ES employees varied across facilities and between what the supervisor and the staff reported.

A recently conducted national survey described infection control practices at NHs throughout the United States.¹³ Among the 6,700 NHs that received the questionnaire, a median of 18 (range, 15-22) rooms were assigned to each cleaning staff member. Different cleaning practices for rooms with contact precautions were reported in two-thirds of NHs.¹³ In another study focusing on 10 NHs in California, the median number of rooms assigned per cleaning staff was 20 (range, 12-27); and the median time spent cleaning each room on a daily basis was reported to be 21 minutes (range, 7-45).⁷ Fifty percent of the facilities reported cleaning rooms with contact precautions last each day, with bleach used in routine and discharge cleaning in 90% of NHs.⁷ The number of rooms assigned per cleaning staff in our study was similar; however, facility

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