

Environmental Services (EVS) and Nurse Managers

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Abstract (Revised)

Background: The hospital environment is an established cause of healthcare-associated infections (HAI). Enhanced terminal room disinfection, including the use of UV-C emitting devices and/or bleach, has been proposed as a method to reduce the risk of HAI caused by environmental contamination, but implementation of these methods is poorly described. We characterized the perceptions of EVS and nurses regarding enhanced disinfection strategies.

Methods: We administered surveys to EVS supervisors and nurse (RN) unit managers at the 9 hospitals in the BETR Disinfection study to assess perceptions about delays in room cleaning, odor, streaking, and other unintended consequences based on type of terminal room disinfection method employed (quaternary ammonium [reference group], quaternary ammonium with the UV-C emitting device, bleach alone, or bleach with UV-C). We compared responses a) during the use of quaternary ammonium versus bleach and b) with and without UV-C. Proportions were compared using the 2-tailed chi-square test.

Results: 433 survey answers were provided from 166 EVS staff (50% response rate) and 267 nurse managers (56% response rate). EVS supervisors and housekeepers both perceived an increase in room cleaning/decontamination delays with the use of UV-C than without UV-C (Supervisors: 48 v. 28%, $p=0.01$; housekeepers: 43 v. 28%. RNs received more complaints (though not significantly more) from staff concerning odor with UV-C than without (60 v. 49%, $p=0.08$). EVS supervisors received more complaints about delays from RNs (70 v. 39%, $p=0.0001$) and bed control (53 v. 36%, $p=0.03$) with the use of UV-C than without UV-C. Regardless of cleaning strategy, EVS believed that delays in the Emergency Department were the primary cause of delays in hospital room turnover, whereas RNs perceived that room disinfection was the principal source of delay. RNs felt that rooms were not cleaned consistently with either disinfectant (60% & 58%, $p=0.86$) and that rooms were not cleaner with UV-C (59% each, $p=0.90$). Over one-third of RNs believed that room disinfection with any strategy frequently interfered with the timely care of patients.

Conclusion: The successful implementation of enhanced terminal room disinfection strategies must address the barrier of perceived increases in cleaning/disinfection times among both EVS and nursing.

Background

- The hospital environment is a clear cause of health-care associated infections (HAI).
- Enhanced terminal room disinfection, including UV-C emitting devices and bleach, has been proposed as a method to reduce the risk of HAI caused by environmental contamination, but implementation of these methods is poorly described.

Methods

- Surveys administered to EVS supervisors and Nurse unit managers regarding:
 - Perceived delays in room cleaning
 - Odor, streaking and unintended consequences of disinfection
- BETR Disinfection Study compares effectiveness of enhanced terminal room disinfection methods
- Quaternary ammonium (standard) vs.:
 - Quaternary ammonium with UV-C
 - Bleach alone
 - Bleach with UV-C.
- Responses were compared during:
 - Use of quaternary ammonium vs. bleach
 - With and without UV-C.
 - EVS vs. Nurse perceptions on cleaning and delays
- Proportions compared using 2-tailed chi-square test.

Results

Table 1: Questionnaire responses from EVS supervisors regarding room delay and other effects of disinfection on staff

EVS Supervisor Answers			
Primary Cleaning Chemical	Quaternary Ammonium	Bleach	p-value
	N=79, n (%)	N=65, n (%)	
Complaints: Cleaning protocols			
Odor	27 (34)	25 (39)	0.59
Chemical streaking	29 (48)	23 (48)	0.62
Perceived Room cleaning delay?	32 (41)	22 (39)	0.41
Complaints: Perceived Delays			
Housekeepers	27 (34)	23 (35)	0.88
Nurses	42 (53)	36 (55)	0.79
Bed Control	35 (44)	29 (45)	0.97
Use of UV-C	UV-C	No UV-C	p-value
	N=86, n (%)	N=75, n (%)	
Complaints: Cleaning protocols			
Odor	30 (35)	35 (47)	0.12
Chemical streaking	40 (47)	31 (41)	0.51
Perceived Room cleaning delay?	41 (48)	21 (28)	0.01
Complaints: Perceived Delays			
Housekeepers	37 (43)	21 (28)	0.05
Nurses	60 (70)	29 (39)	<0.001
Bed Control	46 (53)	27 (36)	0.03

- EVS Supervisors & Nurse managers perceived an increase in room cleaning delays with UV-C and received more complaints from housekeepers, nurses and bed control.
- No significant differences were found with the use of quaternary ammonium vs. bleach among either group.
- Regardless of cleaning strategy:
 - EVS believed that delays in the Emergency Department were the primary cause of delays in hospital room turnover.
 - Nurses perceived that delays in room disinfection were the principal source of delays in hospital room turnover.

Table 2: Questionnaire responses from Nurse managers regarding room delay and other effects of disinfection on staff and patients

Nurse Manager Answers			
Primary Cleaning Chemical	Quaternary Ammonium	Bleach	p-value
	N=136, n (%)	N=130, n (%)	
Perceived Room cleaning delay?	62 (46)	53 (41)	0.43
Complaints: Staff			
Odor	77 (57)	68 (52)	0.48
Chemical streaking	19 (14)	31 (24)	0.04
Complaints: Patients			
Odor	54 (40)	38 (29)	0.07
Chemical streaking	12 (9)	13 (10)	0.74
Cleaning interferes with patient care?	52 (38)	45 (35)	0.54
Rooms cleaned consistently?	81 (60)	76 (58)	0.86
Use of UV-C	UV-C	No UV-C	p-value
	N=146, n (%)	N=119, n (%)	
Perceived Room cleaning delay?	65 (45)	24 (20)	<0.001
Complaints: Staff			
Odor	87 (60)	58 (49)	0.08
Chemical streaking	22 (15)	19 (16)	0.84
Complaints: Patients			
Odor	46 (32)	46 (39)	0.22
Chemical streaking	13 (9)	12 (10)	0.74
Cleaning interferes with patient care?	50 (34)	47 (39)	0.37
Rooms cleaned consistently?	86 (59)	71 (59)	0.9

Conclusions

- Differences about perceived hospital room cleaning delays and cleanliness exist between EVS and nursing.
- The successful implementation of enhanced terminal room disinfection strategies must address the barrier of perceived increases in cleaning times.