Environmental Cleaning and Disinfection in Long-Term Care Facilities: Opportunities for Improvement

Kate Tyner, BSN, RN, CIC[1], Regina Nailon, RN, PhD[1], Sue Beach, BA[1], Margaret Drake, MT, ASCP, CIC[1,2], Teresa Fitzgerald, RN, BSN, CIC[1], Elizabeth Lyden, MS[3], Mark E. Rupp, MD[1,4], Michelle Schwedhelm, MSN, RN[1], Maureen Tierney, MD, MSc[2], Muhammad Salman Ashraf, MBBS[1,4]

(1) Nebraska Infection Control Assessment and Promotion Program, Nebraska Medicine, Omaha, NE; (2) Division of Epidemiology, Nebraska Department of Public Health, Lincoln, NE; (3) College of Public Health, University of Nebraska Medical Center; (4) Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, NE

Infection Control Assessment & Promotion Program

Contact Information:
L Kate Tyner
987556 Nebraska Medical Center
Omaha, NE 68198-7556
Ltyner@nebraskamed.com
Icap.nebraskamed.com

BACKGROUND

Nebraska (NE) Infection Control Assessment and Promotion Program (ICAP) is supported by the Nebraska DHHS HAI program via a CDC grant. The NE ICAP team works in collaboration with NE DHHS to assess and improve infection prevention and control programs in acute care, outpatient and long-term care facilities (LTCF).

- A paucity of data exists on infection control (IC) gaps related to environmental cleaning and disinfection in long-term care facilities (LTCF).
- Gap frequencies related to environmental cleaning and disinfection in LTCF were studied.

METHODS

- On-site assessments of infection prevention and control programs (IPCP) were conducted.
- 30 LTCF were assessed from November 2015 to March 2017.
- The CDC Infection Prevention and Control Assessment tool for LTCF was used for on-site **interviews.**
- When possible, **observations** of environmental cleaning and disinfection practices of environmental services staff (EVSS) were made in 29 LTCF using the Centers for Medicare and Medicaid (CMS) Hospital Infection Control Worksheet.
- Gap frequencies were calculated for each question, which represent best practice recommendations (BPR).
- The Fisher's exact and Mann Whitney tests were used for statistical analyses examining associations of gaps with:
  - Bed size
  - Hospital affiliation
  - Having trained infection preventionists (IP)
  - IP weekly hours/100 beds for IPCP

RESULTS

- Table 1 displays facility characteristics and Table 2 displays factors that were significantly associated with the presence of certain BPR, when analyzing individual gaps.
- All gaps identified during on-site interviews are displayed in Figure 1.
- Analysis of observed practices of EVSS (Figure 2) revealed that 17 of the 18 BPR on the CMS Hospital Infection Control Worksheet were being followed in over 80% of LTCF.

Table 1. Characteristics of Long-term Care Facilities

Facility Characteristics	N = 30
Hospital affiliation - n (%)	7 (23)
Bed size - median (range)	60.5 (25 - 293)
Presence of trained infection preventionist – n (%)	18 (60)
Infection prevention-related worked hours per week per 100 beds - median (range)	6.5 (0 - 24.0)

Table 2. Factors Associated with Presence of Best Practice Recommendation

Best Practice Recommendations (n = no. of facilities with particular BPR in place out of total of 30 LTCF)	Median IP time towards IPCP (Weekly hours/100 beds)			Hospital Affiliation			IC Trained IP		
	For facilities with the corresponding BPR in place	For facilities without the corresponding BPR in place	p value	Affiliated (%)	Not Affiliated (%)	p value	Present (%)	Not Present (%)	p value
Facility has written cleaning and disinfection policies which include cleaning and disinfection of high-touch surfaces in common areas (n = 19)	8.5	2.5	0.041	5 of 7 (71.4)	14 of 23 (60.9)	1.00	11 of 18 (61.1)	8 of 12 (66.7)	1.00
Appropriate staff receive job specific training and competency validation on cleaning and disinfection procedures at time of hire (n = 22)	8.4	2.4	0.014	7 of 7 (100)	15 of 23 (65.2)	0.14	15 of 18 (83.3)	7 of 12 (58.3)	0.209
Facility cleaning and disinfection policies include handling of equipment shared among residents (i.e., BP cuffs) (n = 18)	7.7	4.9	0.48	7 of 7 (100)	11 of 23 (47.8)	0.024	13 of 18 (72.2)	5 of 12 (41.7)	0.14
Appropriate staff received job specific training and competency validation on cleaning and disinfection procedures within past 12 months (n = 11)	9.6	4	0.85	5 of 7 (71.4)	6 of 23 (26.1)	0.068	10 of 18 (55.6)	1 of 12 (8.3)	0.018

Figure 1. Performance of Best Practice Recommendations for Environmental Cleaning in Long-term Care Facilities, On-site Interview

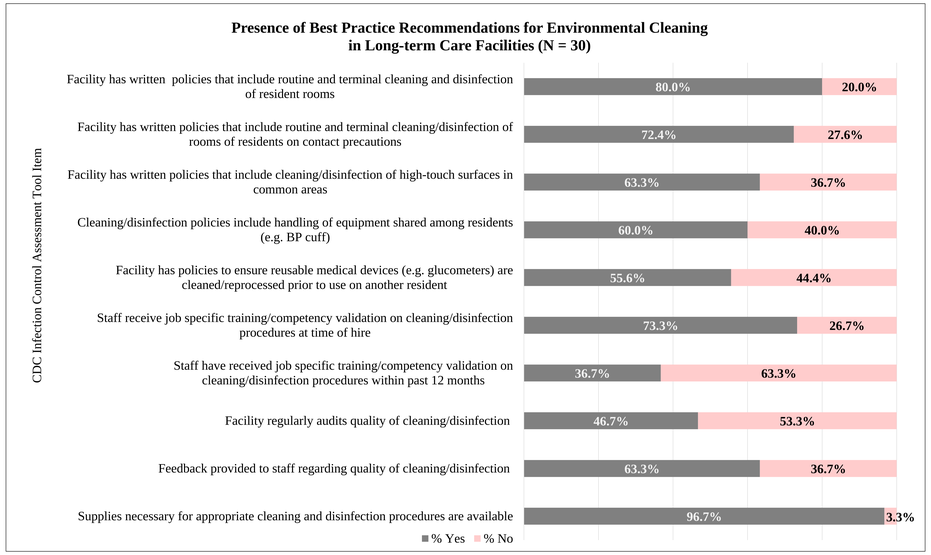
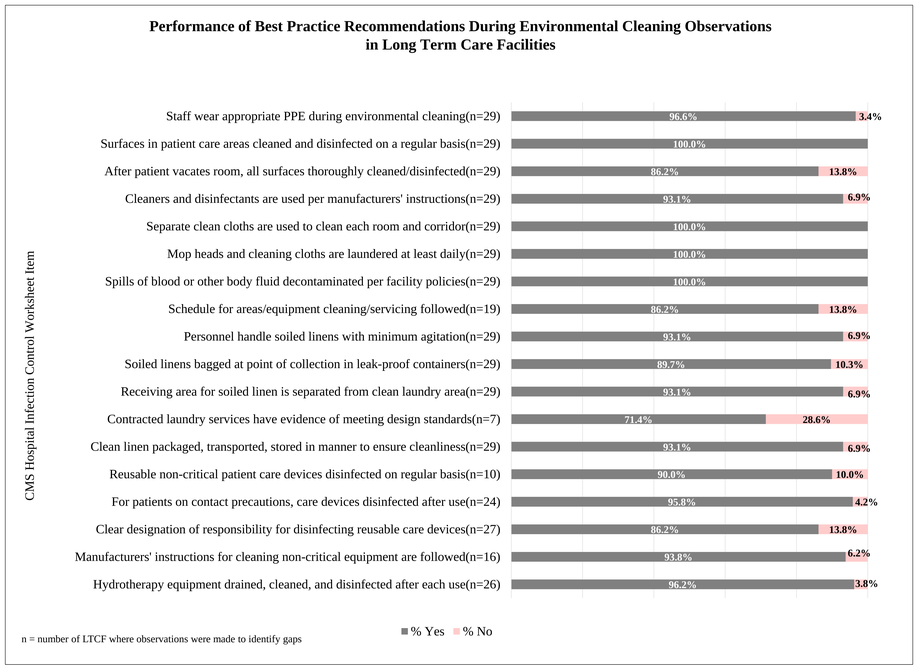
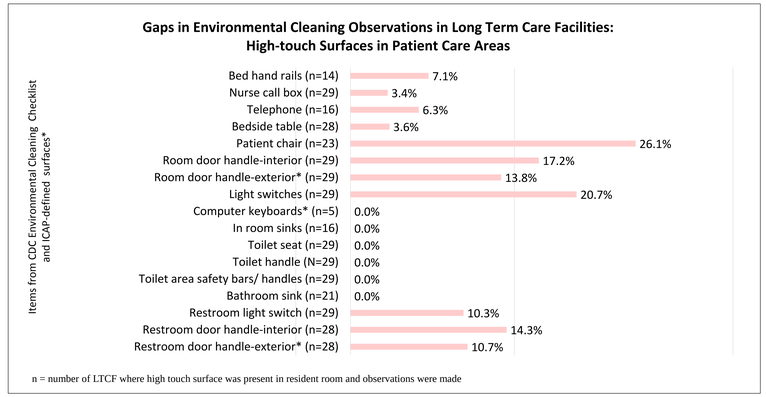


Figure 2. Performance of Best Practice Recommendations in Environmental Cleaning in Long Term Care Facilities, On-site Observation of Practices



n = number of LTCF where observations were made to identify gaps

Figure 3. Gaps in Observations of Environmental Cleaning Practices: High-Touch Surfaces in Patient Care Areas



n = number of LTCF where high touch surface was present in resident room and observations were made

DISCUSSION

- EVSS in LTCF in NE were observed to perform especially well during cleaning and disinfection practices, and notably addressed high touch surfaces.
- Gaps related to best practice recommendations that related to environmental cleaning and disinfection policies and procedures still exist, which can be a threat to continuity of a good environmental cleaning and disinfection program and make the facility vulnerable during outbreaks.
- Infection preventionist training and more dedicated time to IP towards IPCP may help mitigate some of the gaps. Training should include:
  - Cleaning and disinfection procedures.
  - Methods to evaluate competency of staff doing cleaning and disinfection.
  - Best practices/methods to audit the quality of cleaning and disinfection.
- Facilities may benefit from resources or templates to guide policy development for:
  - Routine and terminal cleaning and disinfection of resident rooms
  - Cleaning and disinfection of rooms for residents on Contact Precautions
  - Cleaning and disinfection of high tough surfaces
  - Cleaning and disinfection of equipment shared among residents
  - Cleaning and disinfection of reusable medical devices
- NE ICAP has provided facility-specific guidance to each facility on how to mitigate the most pressing challenges observed during the on-site assessment.
- NE ICAP has partnered with the Nebraska Infection Control Network and Nebraska DHHS HAI program to offer a training course on primary infection prevention to all infection preventionists that includes education on cleaning and low-level disinfection (as suggested above).
- Members of the team are currently partnering with LTCF and critical access hospitals on a pilot project designed to implement environmental disinfection and cleaning audit and feedback programs.
- Future studies will evaluate the impact of such efforts on environmental cleaning and disinfection programs and practices on a statewide basis.

REFERENCES

- Centers for Disease Control and Prevention (CDC) Infection Control Assessment Tool for Long- Term Care Facilities https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html
- Centers for Medicare & Medicaid Services (CMS) Hospital Infection Control Worksheet https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-15-12-Attachment-1.pdf
- Centers for Disease Control and Prevention (CDC) Environmental Checklist for Monitoring Terminal Cleaning https://www.cdc.gov/hai/toolkits/environmental-cleaning-checklist-10-6-2010.pdf

DISCLOSURE

The authors of this study have nothing to disclose related to the content of this poster.