

Infection Control in Long-Term Care Facilities: Frequently Identified Gaps in Infrastructure, Surveillance and Safety

Teresa Fitzgerald, RN, BSN, CIC¹, Regina Nailon, PhD, RN¹, Kate Tyner, RN, BSN, CIC¹, Sue Beach, BA¹, Margaret Drake, MT, ASCP, CIC^{1,2}, Elizabeth Lyden, MS³, Mark E. Rupp, MD^{1,4}, Michelle Schwedhelm, MSN, RN¹, Maureen Tierney, MD, MSc², 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

BACKGROUND

- Nebraska (NE) Infection Control Assessment and Promotion Program (ICAP) is supported by the NE Department of Health and Human Services (NE DHHS) HAI program via a CDC grant.
- The NE ICAP works in collaboration with NE DHHS HAI team to assess and improve infection prevention and control programs (IPCP) throughout the state.
- One of the areas of focus is to better prepare long-term care facilities (LTCF) to recognize and prevent outbreaks.
- The objective of this study was to identify frequency of practice gaps related to infection control infrastructure (ICI), surveillance and disease reporting (SDR), and health care personnel and resident safety (HRS) in LTCF.

METHODS

- NE ICAP conducted on-site surveys in 30 LTCF to assess the Infection Prevention and Control Programs using the CDC Infection Prevention and Control Assessment Tool for LTCF.
- This tool contains questions representative of best practice recommendations (BPR) in different areas of infection prevention and control programs including 6 best practice recommendations for infection control infrastructure, 13 for healthcare personnel and resident safety and 7 for surveillance and disease reporting.
- Gap frequencies were calculated for each best practice recommendation and factors studied for associations included bed size, hospital affiliation, presence of infection preventionist (IP), and weekly hours per 100 beds spent by IP on IPCP.
- Fisher's exact test and Mann Whitney test were used for statistical analyses.

RESULTS

- On-site surveys were conducted in 30 LTCF that ranged from 25 bed to 293 beds with varying degrees of staff time dedicated toward infection prevention activities (Table 1).
- Table 2 outlines the frequency of presence and absence of each of the 26 BPR in the surveyed LTCF.
- Less than half (13, 43.3%) of the LTCF reported having over 80% (21/26) of BPR in place and only 4 (13%) reported having all 26 BPR in place.
- LTCF that reported >80% BPR in place compared to those with ≤ 80% BPR in place appeared more likely to have hospital affiliation, have higher median bed size, and higher IP weekly worked hours/100 beds, along with an increased likelihood of having a trained IP; however, differences were not statistically significant (Table 3).
- In addition to the lack of a trained IP, there were an additional 11 BPR that were not in place in at least 20% LTCF (Table 2).
- There appears to be differences in implementation of many of these 11 BPR based on the presence or absence of a trained IP and two of those differences were statistically significant, reflecting the positive impact of having a trained IP at the LTCF (Figure 1).

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) |

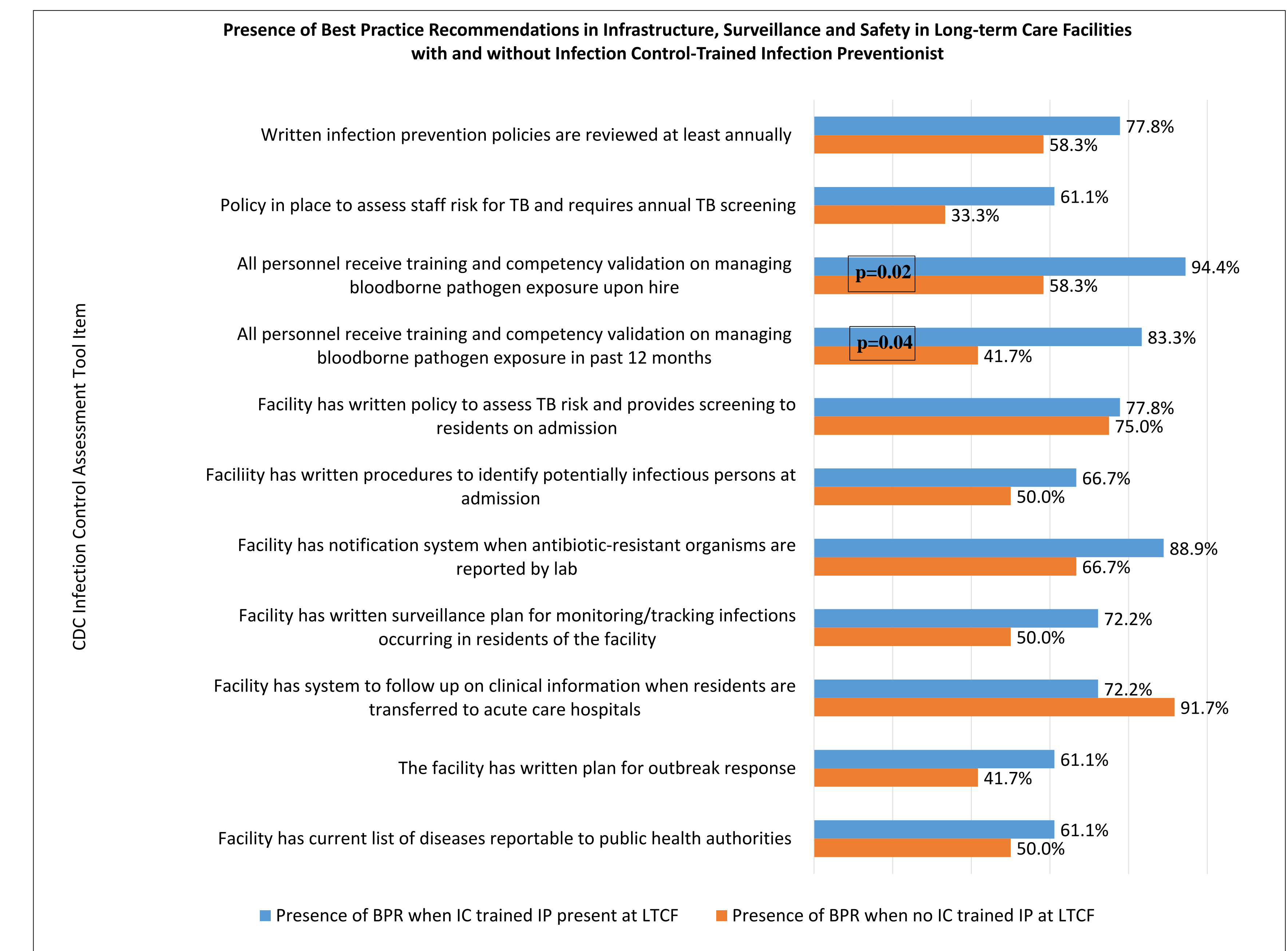
Table 2. Percent Gaps for each CDC Best Practice Recommendation

| Infection Control Program and Infrastructure | Yes | No |
|--|------|-----|
| The facility has specified a person who is responsible for coordination the IC program | 93% | 7% |
| The person responsible for coordinating the infection prevention program has received training in IC | 60% | 40% |
| The facility has a process for reviewing infection surveillance data and infection prevention activities | 87% | 13% |
| Written infection control policies and procedures are available and based on evidence-based guidelines, regulations or standards | 90% | 10% |
| Written infection control policies and procedures are reviewed at least annually or according to state or federal requirements, and updated if appropriate | 70% | 30% |
| The facility has a written plan for emergency preparedness | 83% | 17% |
| Healthcare Personnel and Resident Safety | Yes | No |
| The facility has work-exclusion policies concerning avoiding contact with residents when personnel have potentially transmissible conditions which do not penalize with loss of wages, benefits, or job status | 83% | 17% |
| The facility educates personnel on prompt reporting of signs/symptoms of a potentially transmissible illness to a supervisor | 87% | 13% |
| The facility conducts baseline Tuberculosis screening for all new personnel | 83% | 17% |
| The facility has a policy to assess healthcare personnel risk for TB and requires periodic TB screening if indicated | 50% | 50% |
| The facility offers Hepatitis B vaccination to all personnel who may be exposed to blood or body fluids as part of their job duties | 97% | 3% |
| The facility offers all personnel influenza vaccination annually | 100% | 0% |
| The facility maintains written records of personnel influenza vaccination from the most recent influenza season | 97% | 3% |
| The facility has an exposure control plan which addresses potential hazards posed by specific services provided by the facility | 87% | 13% |
| All personnel receive training and competency validation on managing a blood-borne pathogen exposure at the time of employment | 80% | 20% |
| All personnel received training and competency validation on managing a potential blood-borne pathogen exposure within the past 12 months | 67% | 33% |
| The facility currently has a written policy to assess risk for TB and provide screening to residents on admission | 77% | 23% |
| The facility documents resident immunization status for pneumococcal vaccination at time of admission | 100% | 0% |
| The facility offers annual influenza vaccination to residents | 100% | 0% |
| Surveillance and Disease Reporting | Yes | No |
| The facility has written intake procedures to identify potentially infectious persons at the time of admission | 60% | 40% |
| The facility has system for notification of infection prevention coordinator when antibiotic-resistant organisms or <i>C. difficile</i> are reported by clinical laboratory | 80% | 20% |
| The facility has a written surveillance plan outlining the activities for monitoring/tracking infections occurring in residents of the facility | 63% | 37% |
| The facility has system to follow-up on clinical information when residents are transferred to acute care hospitals for management of suspected infections, including sepsis | 80% | 20% |
| The facility has a written plan for outbreak response which includes a definition, procedures for surveillance and containment, and a list of syndromes or pathogens for which monitoring is performed | 53% | 47% |
| The facility has a current list of diseases reportable to public authorities | 57% | 43% |
| The facility can provide point(s) of contact at the local or state health department for assistance with outbreak response | 90% | 10% |

Table 3. Factors Associated with LTCF with ≤ or > 80% of the 26 Best Practice Recommendations in Place

| % Best Practice Recommendations in Place | Hospital Affiliation | Median Bed Size | Median IP Weekly Hours /100 beds | Infection Control Trained IP |
|--|----------------------|-----------------|----------------------------------|------------------------------|
| 13 LTCF with < 80% | 7.6% | 58 | 3.5 | 38.5% |
| 17 LTCF with >80% | 35.2% | 64 | 8.5 | 76.5% |
| p value | 0.10 | 0.48 | 0.11 | 0.06 |

Figure 1. Presence of BPR in LTCF with and without Infection Control-Trained Infection Preventionist



DISCUSSION

- Several IC gaps exist in LTCF that can be barriers for outbreak recognition and prevention.
- Absence of a trained IP was found to be a risk factor although larger scale studies are needed to validate this finding.
- One mitigation strategy is to develop a LTCF IP training program incorporating gap findings.
- NE ICAP has partnered with the Nebraska Infection Control Network and the NE DHHS Epidemiology unit to offer a training course on primary infection prevention to all infection preventionists that includes guidance on issues identified in our study related to infection control infrastructure, surveillance and disease reporting, and health care personnel and resident safety in LTCF.
- Future studies should evaluate the impact of such training efforts on outbreak recognition and prevention in long-term care facilities.

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>

Disclosures