Frequently Identified Gaps in Antibiotic Stewardship Programs in Long-Term Care Facilities

Philip Chung, PharmD, MS, BCPS[1,3], Regina Nailon, PhD, RN[1,2], Kate Tyner, RN, BSN, CIC[1,2], Sue Beach, BA[1,2], Scott Bergman, PharmD, BCPS-AQ ID, FIDSA[1,3], Margaret Drake, MT, ASCP, CIC[2,4], Teresa Fitzgerald, RN, BSN, CIC[2], Elizabeth Lyden, MS[5], Mark E. Rupp, MD[1,2,6], Michelle Schwedhelm, MSN, RN[1,2], Maureen Tierney, MD, MSc[4], Trevor Van Schooneveld, MD[1,6], Muhammad Salman Ashraf, MBBS[1,2,6]

[1]Nebraska Antimicrobial Stewardship Assessment and Promotion Program, [2]Nebraska Infection Control Assessment and Promotion Program, [3]Department of Pharmacy, Nebraska Medicine; [5]College of Public Health, [6]Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, NE; and [4]Division of Epidemiology, Nebraska Department of Public Health, Lincoln, NE

University of Nebraska Medical Center
Nebraska Medicine

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

Infection Control Assessment & Promotion Program

Contact Information:
Philip Chung
987556 Nebraska Medicine
Omaha, NE 68198-7556
Email: pchung@nebraskamed.com
Website: asap.nebraskamed.com

BACKGROUND

- The Nebraska (NE) Infection Control Assessment and Promotion Program (ICAP) is supported by the NE DHHS Healthcare-Acquired Infection Program and CDC to assess and improve infection prevention and control programs
- NE ICAP surveyed infection prevention (IP) and antimicrobial stewardship (AS) activities in NE long-term care facilities (LTCF)
- New Centers for Medicare and Medicaid Services (CMS) regulations require LTCF to develop antimicrobial stewardship programs that include antibiotic use protocols and systems to monitor antibiotic use
- The objective of the study was to evaluate the current level of AS activities and associated factors in LTCF in NE

METHODS

- NE ICAP conducted on-site surveys on IP and AS practices in 30 LTCF from October 2015 to March 2017
- The CDC Infection Prevention and Control Assessment Tool for Long-Term Care Facilities (Figure 1) was used to assess each facility's perceptions on the level of implementation of the CDC AS core elements (CE)
- CE were categorized as administrative [CE 1-3: leadership support (LS), accountability, drug expertise (DE)] and interventional (CE 4-7: action, tracking, reporting, education)
- Effects of LS, accountability, bed size (BS), hospital affiliation (HA), presence of trained infection preventionist and infection prevention activity weekly hours (IP WH)/100 beds on AS activities were evaluated
- Statistical analyses were performed using Fisher's exact, Mann-Whitney and Kruskal-Wallis tests

Figure 1. Questions on Antimicrobial Stewardship Program in the CDC Infection Prevention and Control Assessment Tool for Long-Term Care Facilities

RESULTS

Table 1. Characteristics of Long-Term Care Facilities Surveyed

Characteristics	N = 30
Hospital affiliation – n (%)	7 (23)
Presence of trained infection preventionist – n (%)	18 (60)
Bed size – median (range)	60.5 (25 – 293)
Infection prevention activity weekly hours/100 beds – median (range)	6.5 (0 – 24)
Number of AS core elements implemented – median (range)	3 (0 – 7)

Abbreviation: AS = antimicrobial stewardship

Figure 2. Frequency of Implementation of Individual Antimicrobial Stewardship Core Element in Long-Term Care Facilities Surveyed (N = 30)

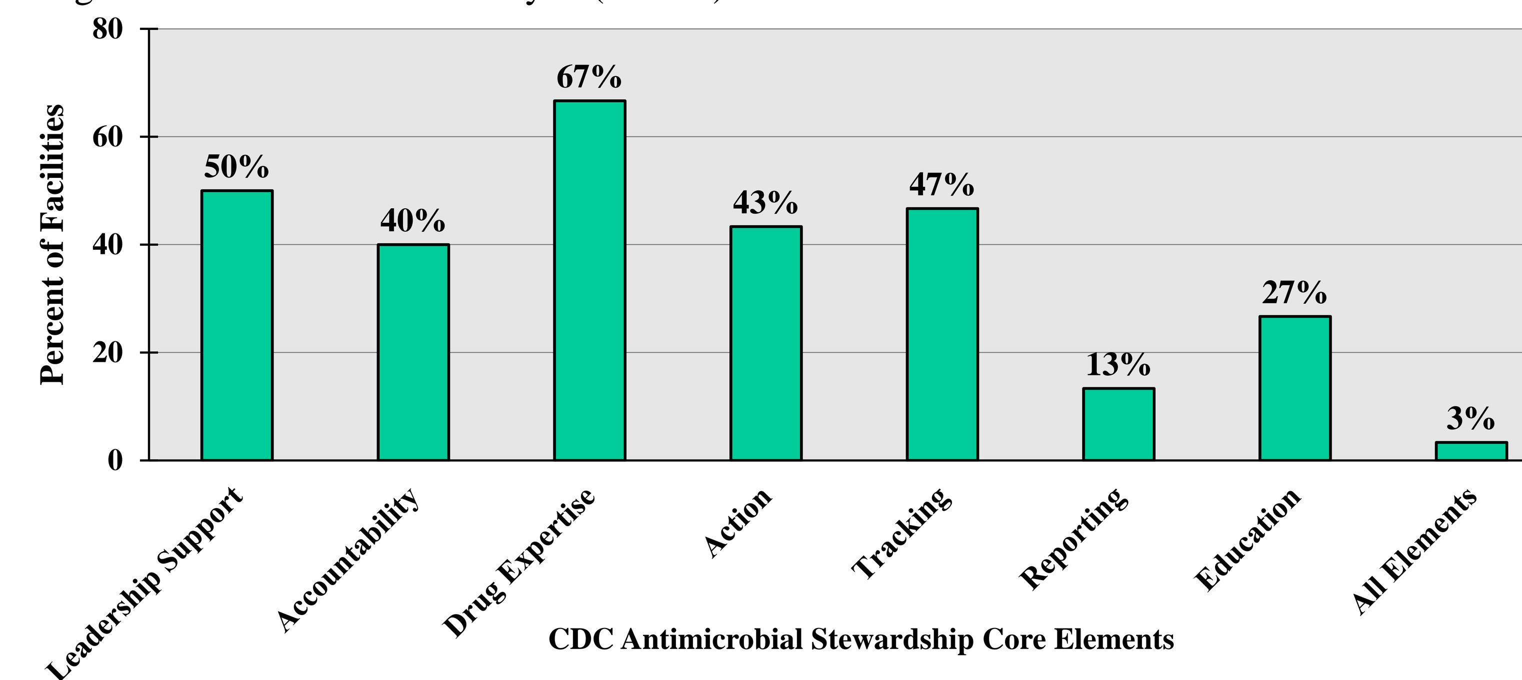
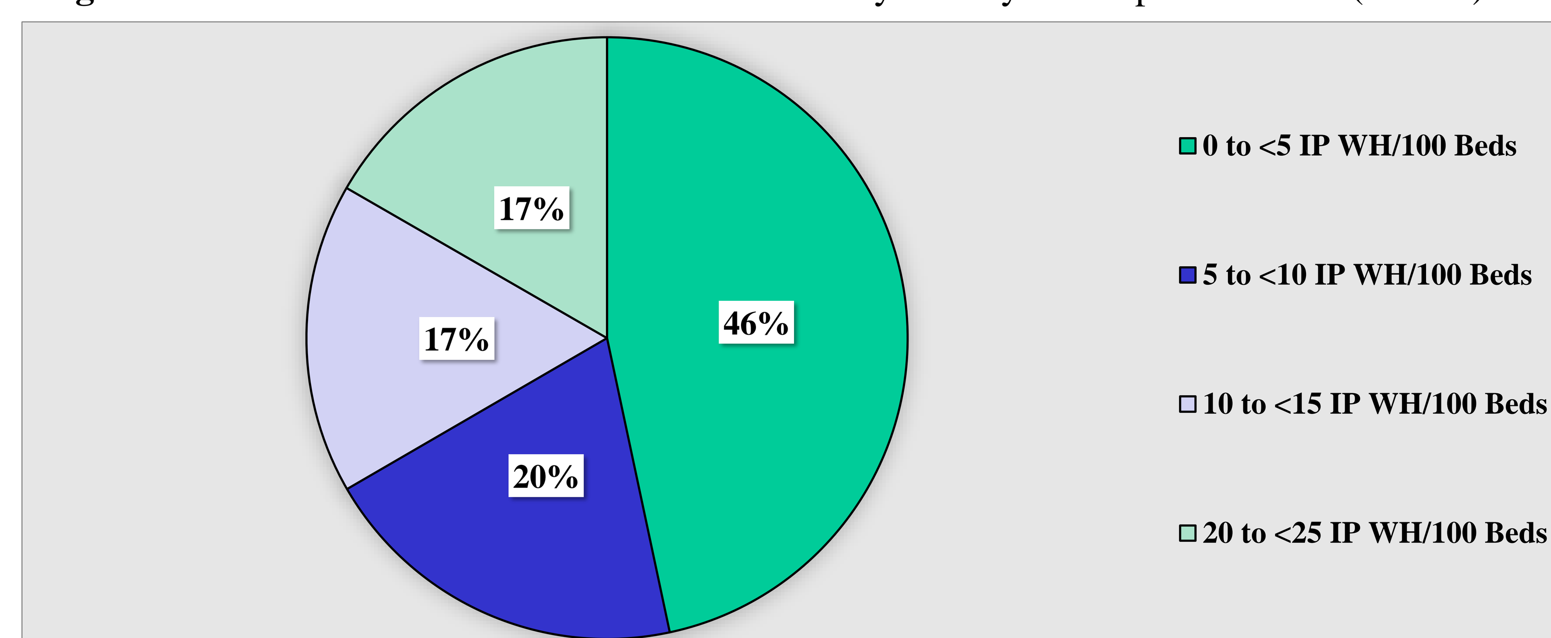


Table 2. Effect of Leadership Support and Accountability on Implementation of the Remaining Antimicrobial Stewardship Core Elements

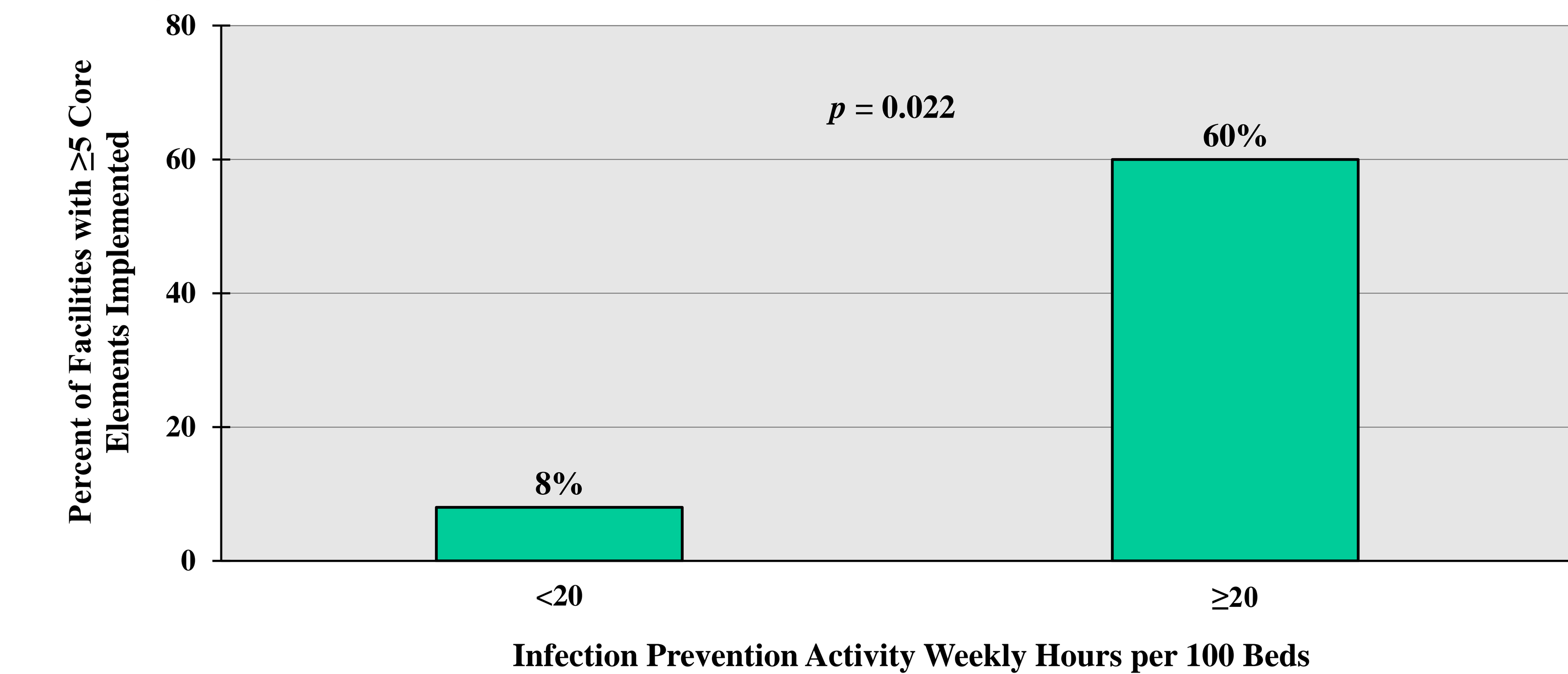
Factors	Implemented? (n)	Median No. of Remaining Core Elements Implemented	*p*-value
Leadership Support	Yes (15) No (15)	3.0 2.0	0.029
Accountability	Yes (12) No (18)	3.0 2.0	0.035

Figure 3. Distribution of Infection Prevention Activity Weekly Hours per 100 Beds (N = 30)



Abbreviation: IP WH = infection prevention activity weekly hours

Figure 4. Success of Core Element Implementation Stratified by Infection Prevention Activity Weekly Hours per 100 Beds



DISCUSSION

- The majority of surveyed LTCF employ trained infection preventionist but time dedicated for IP activity was highly variable (Table 1)
- Implementation of all CDC AS core elements was infrequent, with DE and reporting being the most and least commonly implemented, respectively (Figure 2)
- LTCF with LS or accountability implemented significantly more of the remaining CE compared to those without LS or accountability (Table 2)
- A significantly higher percentage of facilities with ≥20 IP WH/100 beds implemented ≥5 CE compared to those with <20 IP WH/100 beds (Figure 4)
- Presence of LS, accountability and ≥20 IP WH/100 beds led to a higher percentage of facilities implementing ≥2 interventional CE (100% vs. 30%, $p = 0.041$)

CONCLUSIONS

- **Implementation of all 7 AS core elements in Nebraska LTCF was found to be uncommon**
- **Presence of leadership support, accountability, and ≥20 IP WH/100 beds are significant factors predicting implementation of more AS core elements**
- **LTCF leadership would benefit from specific guidance on time dedication and support for infection control and antimicrobial stewardship activities**

DISCLOSURE

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

REFERENCES

1. Medicare and Medicaid Programs, Reform of Requirements of Long-Term Care Facilities, 42 CFR § 483 (2016).
2. CDC. Infection prevention and control assessment tool for long-term care facilities, version 1.3.1, September 2016. Available at https://www.cdc.gov/infectioncontrol/pdf/icar/ltcf.pdf. Accessed August 4, 2017.