THE HOT ZONES: IMPLICATIONS OF COVID-19 IN LONG TERM CARE FACILITIES AND THE ROLE OF EMPIRIC TREATMENT

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Why are long-term care facilities hot spots?

Preventing, diagnosing and managing infections in nursing home residents is difficult due to:

1. Facility design;
2. Vulnerable population (85% elderly, 66% primary diagnosis of dementia, 40% advanced illness);
    - infection symptomology is not the same
3. Poor staffing (lack of trained infection professional, low hours of nursing time to resident, lack of onsite advance clinicians)
4. Lack of technology

Infection control deficiencies are the most common CMS inspection citation (40%)

Prior to COVID-19, 1.13 to 2.68 million infections, with 380,000 people dying of infections every year

Antimicrobials have been over and mis-used (up to 80% receive an antimicrobial 1/year; 42% receive an antimicrobial in the last 2 weeks of life); most without documented infection

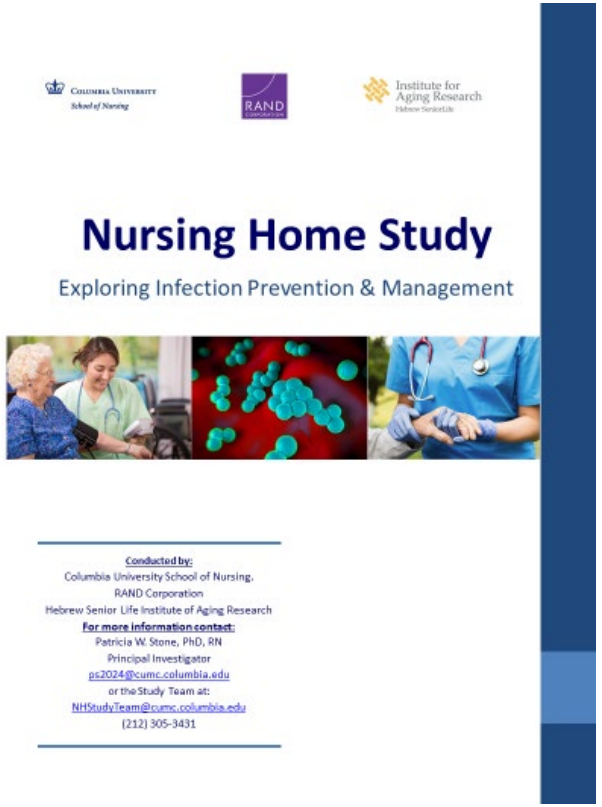
Just being a resident in a nursing home makes the individual high risk for having a multiple drug resistant organism (MDRO)

Herzig C.T.A., Dick A.W., Sorbero M., Pogorzelska-Maziarz M., Cohen C.C., Larson E.L., Stone P.W. (2017). Infection Trends In US Nursing Homes, 2006-2013. *JAMDA*

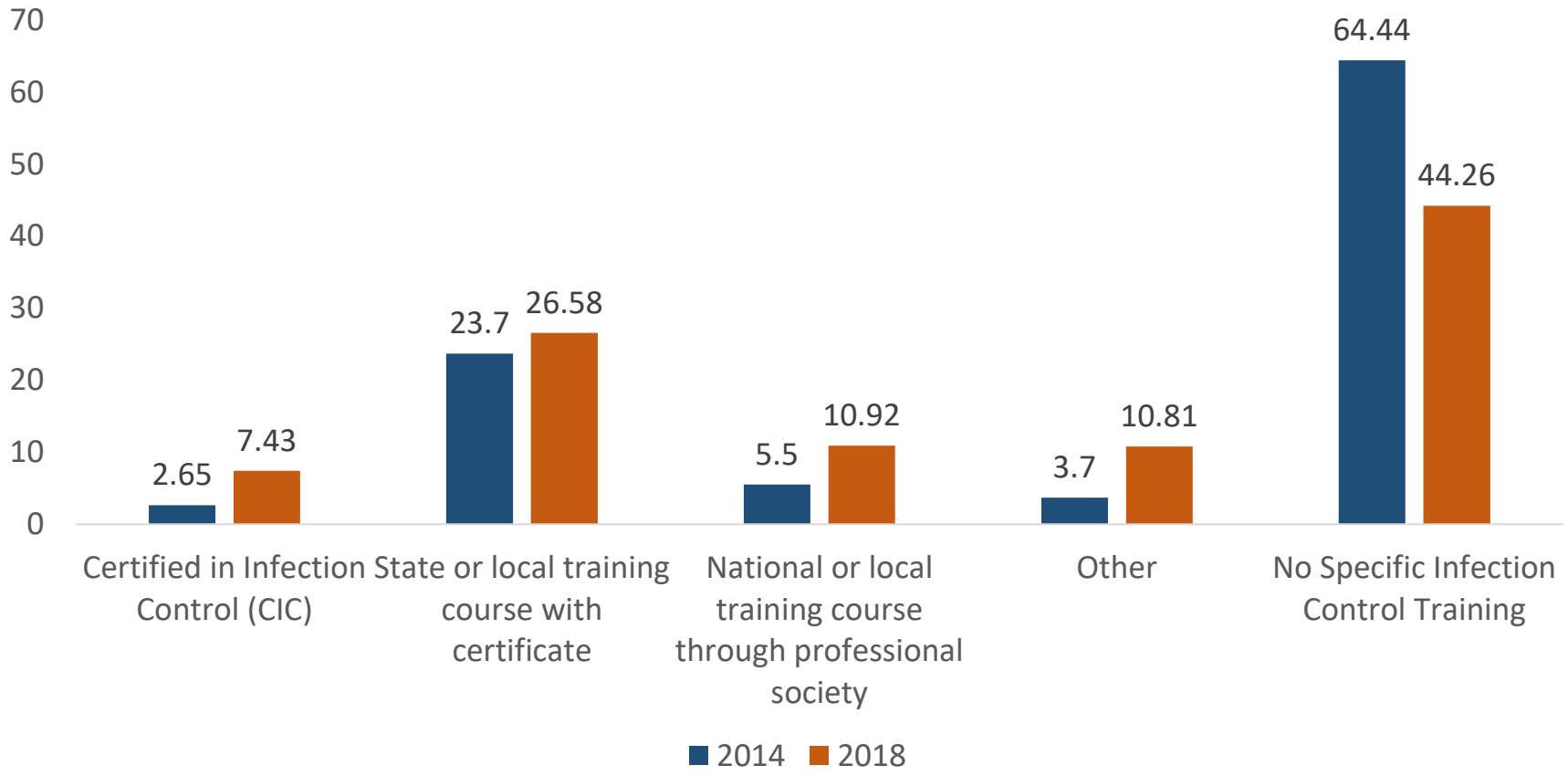
Methods

- Two national surveys
  - 2014 (n = 992)
  - 2018 (n = 892)
    - Training of the person in charge of the program (i.e., the infection preventionist [IP]),
    - Comprehensive antibiotic stewardship programs (ASP),
    - Outbreak control policies,
    - UTI prevention policies

- Longitudinal Centers for Medicare and Medicaid Services (CMS) administrative data
  - CASPER facility level
  - MDS resident level



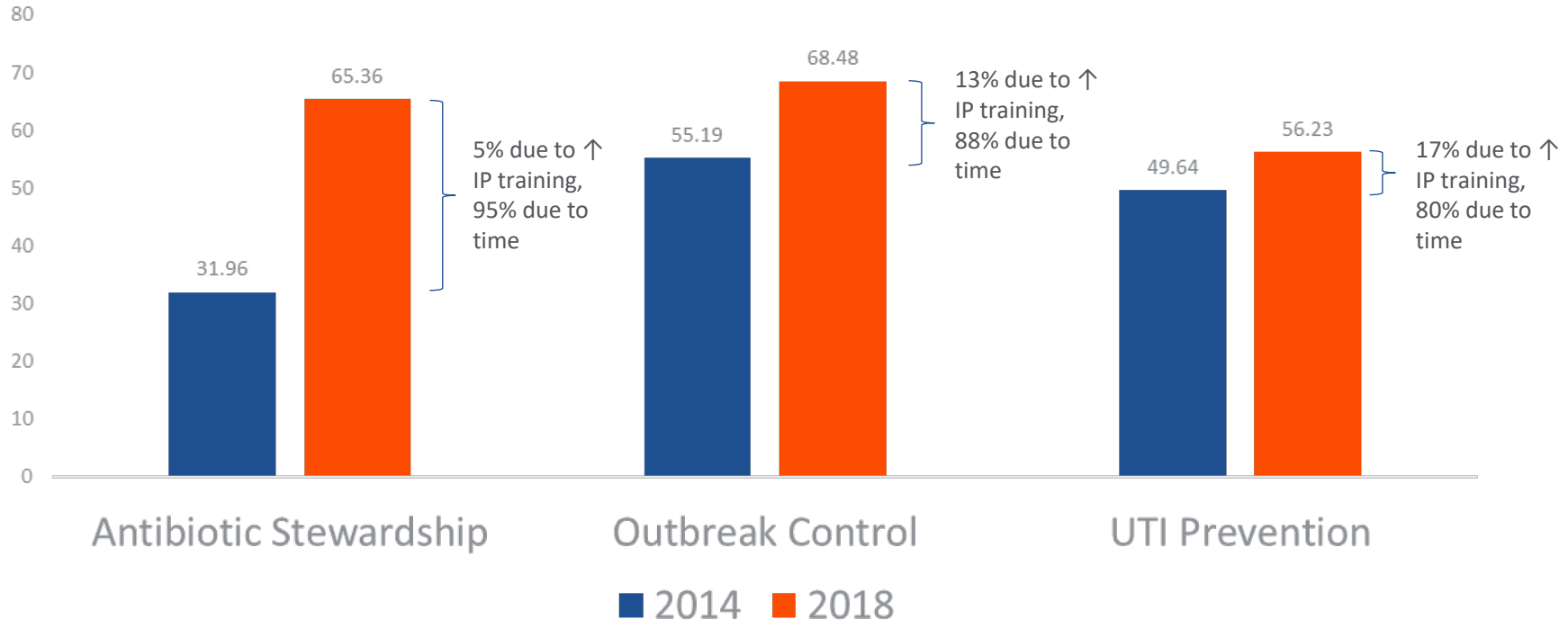
Change in Infection Preventionist (IP) Training Over Time



Significant difference in all categories ($p < 0.01$)

Change in Infection Programs Over Time

- Most of change is due to time (i.e., policy changes), infection preventionist (IP) training is also a significant factor



One-day Prevalence of Antibiotic Use

Design: Retrospective, repeated cross-sectional analysis.

Setting and Participants: All long-term residents in a random 10% sample of national NHs (2,092,809 assessments from 319,615 residents in 1562 NHs).

Measurements: 1-day antibiotic prevalence using all annual and quarterly clinical assessments in the MDS April 2012 through December 2016.

Prevalence of antibiotic use overall and for Alzheimer's Disease and Related Dementias (ADRD), advanced cognitive impairment (ACI), and infections.

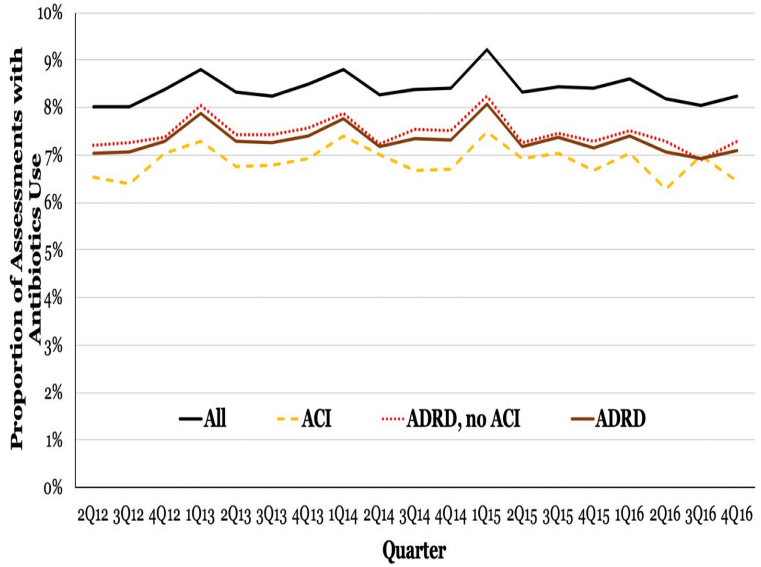
Analysis: Logistic regressions, adjusted odds ratios (AORs) with NH-cluster robust standard errors to assess changes in antibiotic use over time.

Results:

Overall: AOR = 1.00 95% CI: 0.99-1.03

No infection: AOR = 1.13, 95% CI: 1.09-1.17

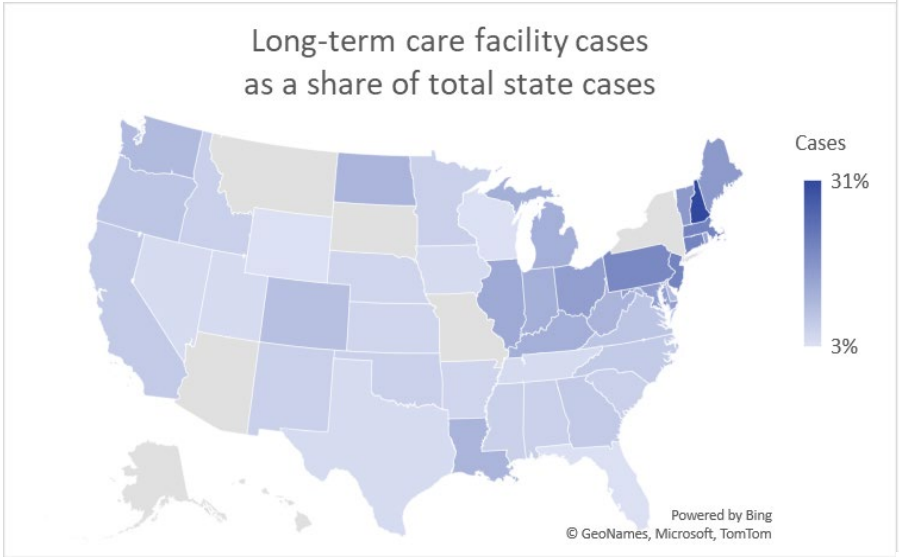
ACI, ADRD: no difference

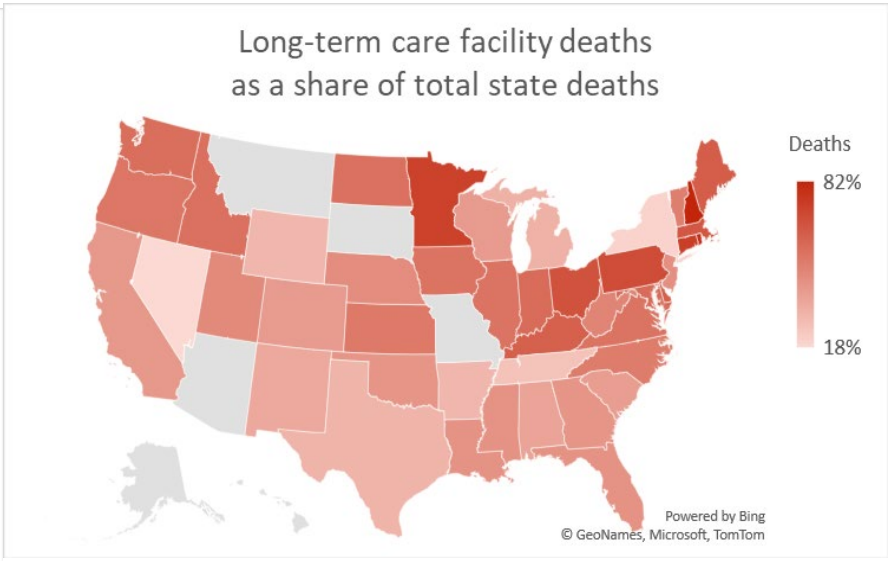


COVID-19 Cases and Deaths in Long-term care

*Approximately 15,700 facilities, 15,566 with COVID-19 cases (99%)

- 391,397 cases
- 70,649 COVID-19 Long-term care deaths





*Data from KFF, downloaded 8/28/20, not reporting states include Alaska, Arizona, Hawaii, Montana and South Dakota

What does this mean for antimicrobial usage with COVID-19? How do nursing homes change in the longrun?

Empiric antimicrobial use during COVID-19?

- Secondary infections due to COVID-19 may have increased usage
- Antibiotic stewardship programs have been strengthened, but we haven't yet seen a decrease in usage

Better Infection Prevention and Control Programs?

- Increased scrutiny
- New technologies
- Trained infection preventionists
  - Trained staff
- Equipment and PPE
- Increased Infection Surveillance
  - NHSN

Thanks to a fabulous interdisciplinary team, and all the nurses who have participated in our research!