



Comparison of Antibiotic Use in Post-Acute and Long-Term Care Facilities Based on Proportion of Short-Stay Residents Using a Long-Term Care Pharmacy Database

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BACKGROUND

- The Center for Medicare and Medicaid Services (CMS) requires participating long-term care facilities (LTCF) to establish an antibiotic stewardship program (ASP)¹
- Common barriers encountered by LTCF include lack of antibiotic use (AU) data and inability to benchmark use²
- A previous study using several national and provincial databases indicates antibiotic use (AU) among Ontario LTCF is highly variable³
- The objective of the study was to utilize a long-term care pharmacy (LTCPh) database to obtain and compare AU data across enrolled Nebraska LTCF based on the proportion of short-stay residents

METHODS

- We partnered with a regional LTCPh that dispenses and reviews medication for over 40 LTCF, of which 32 agreed to participate
- Prescriptions filled by the LTCPh during the baseline year were used to calculate antibiotic starts and days of therapy (DOT)
- Starts and end dates were used to calculate DOT if available
- Manual review of administration records was performed for prescriptions without an end date (<10%)
- Total bed-size and proportion of short-stay beds were estimated for each LTCF based on a cross-sectional evaluation of billing records from the LTCPh and input from the pharmacists providing service to each facility
- Resident-days (RD) were obtained from each LTCF
- Starts and DOT were evaluated by grouping LTCF into 3 cohorts based on proportion of total RD attributable to short-stay residents
 - Low: <5% of total RD attributable to short-stay residents
 - Medium: 5-20% of total RD attributable to short-stay residents
 - High: >20% of total RD attributable to short-stay residents

DISCLOSURE

This work is supported by an investigator initiated study grant from Merck & Co. Inc.

REFERENCES

- Medicare and Medicaid Programs; Reform of Requirements for Long-Term Care Facilities. 42 CFR § 483.80 2016.
- Chung P, et al. Poster 702, Frequently Identified Gaps in Antibiotic Stewardship Programs in Long-Term Care Facilities. IDWeek 2017.
- Daneman N, et al. Variability in Antibiotic Use Across Nursing Homes and the Risk of Antibiotic-Related Adverse Outcomes for individual residents. JAMA Intern Med 2015;175:1331-9.

LTCF Characteristics

- Of the 32 participating LTCF, data from 29 (91%) were included for analysis; 3 LTCF were excluded due to lack of RD data

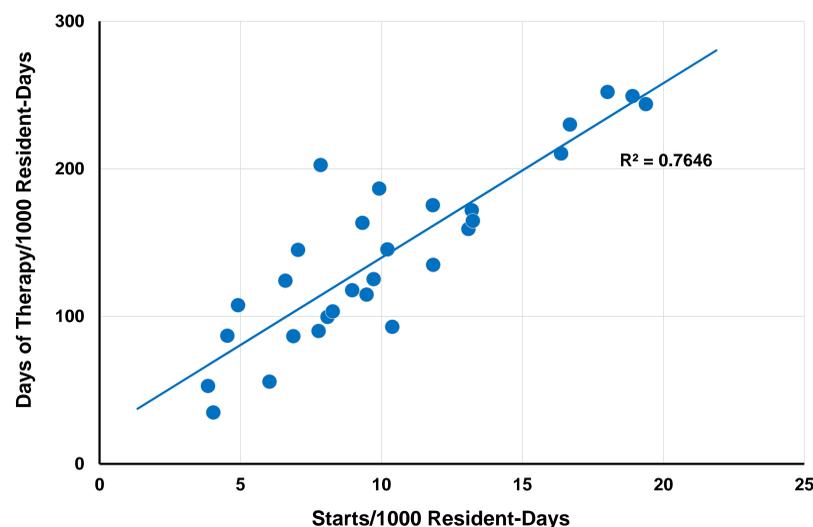
Characteristics	All Facilities	Percent Short-Stay Resident-Days		
		Low	Medium	High
Number of facilities—n (%)	29 (100.0)	6 (20.7)	15 (51.7)	8 (27.6)
Total bed size—median (range)	56 (17-226)	41.5 (17-112)	49 (29-226)	80 (34-204)
Total short-stay bed—median (range)	4 (0-82)	0 (0-3)	4 (2-38)	26 (8-82)
Percent short-stay bed—median (range)	8.7 (0.0-55.0)	0.0 (0.0-2.9)	8.3 (5.9-17.5)	25.5 (22.5-55.0)

Antibiotic Use Metrics

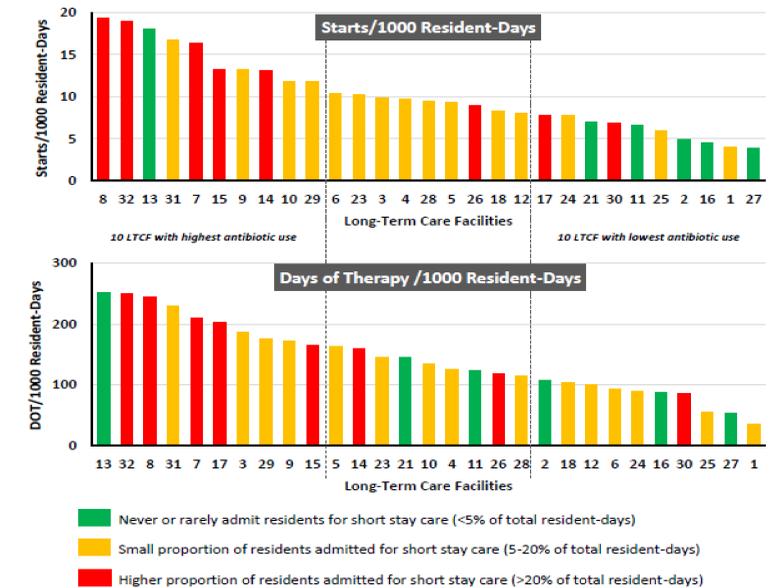
Antibiotic Use Metric*	Percent Short-Stay Resident-Days			p-Value
	Low	Medium	High	
Starts/1000 resident-days	7.5 (5.3)	9.8 (3.0)	13.1 (4.9)	<0.05
Days of therapy/1000 resident-days	128.1 (68.5)	128.3 (51.9)	179.3 (58.0)	0.12

* Data presented as mean (standard deviation)

Correlations Between Antibiotic Use Metrics



Distribution of Antibiotic Starts and Days of Therapy Among Facilities



RESULTS

- Antibiotic starts/1000 RD varied from 3.8 to 19.4 while DOT/1000 RD ranged from 34.86 to 252.09
- Strong correlation was observed between antibiotic starts and DOT
- LTCF with >20% short-stay RD have higher antibiotic starts and DOT compared to those with <5% and 5-20% of short-stay RD
- Five LTCF with high short-stay RD are among the top 10 facilities with the highest antibiotic use compared to only 1 with low short-day RD
- Limitation: The number of total and short-stay beds were estimated based on billing records and pharmacist input

CONCLUSIONS

- Long-term care pharmacy can play an important role in supporting ASP in LTCF by providing AU data for benchmarking
- Antibiotic use in LTCF is highly variable and may be influenced by the proportion of beds dedicated to short-stay residents amongst other factors