



The Impact of the COVID-19 Pandemic on the Prevalence of Multidrug-resistant Organisms in Veterans Affairs Nursing Homes

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Background

- Multidrug-resistant organisms (MDRO) in long-term care facilities are prevalent and pose a major health concern for their residents.
- During the COVID-19 pandemic, infection control measures were justifiably heightened in every aspect of health care, including nursing homes.
- There are reports depicting decreasing prevalence of MDRO in hospital settings during the pandemic.

Objective

- The aim of our study is to compare the prevalence of MDRO in our facility's nursing homes in the two-year period before vs. the two years of the pandemic.

Methods

- Study was performed at Northport Veterans Affairs Medical Center which provides long-term nursing home care structured as community living centers including mental health and hospice care; a 139 total bed capacity.
- A retrospective review of culture data collected by infection control preventionists comparing the prevalence of MDROs between 1 March 2018 to 28 February 2022 was performed.
- Data included: Nasopharyngeal MRSA swabs, urine, wound, blood, sputum cultures, *C. difficile* toxin and PCR assays. MDRO included ESBL *E. coli*, *K. pneumoniae*, *P. mirabilis*, MDR *Pseudomonas spp* (resistance to 2/3 antibiotics: cefepime/piperacillin-tazobactam/ciprofloxacin), carbapenem-resistant *Pseudomonas spp*, and vancomycin-resistant *Enterococcus spp*.

Results

- There were 75209 bed days of care from 1 March 2018 to 28 February 2020 vs. 77531 from 1 March 2020 to 28 February 2022.
- The MRSA rate per 1000 patient days decreased from 4.98 pre-COVID to 2.70 during-COVID, P <0.001.
- Similarly, there was a decrease in *C. difficile* 0.69 vs. 0.13, P<0.001, ESBL *E. coli* 0.53 vs. 0.51, P<0.001 and *S. maltophilia* (no cases during COVID).
- There was an increase in ESBL *K. pneumoniae* 0.51 vs. 0.63, P<0.001, MDR *Pseudomonas* 0.05 vs. 0.49, P<0.001, carbapenem-resistant *Pseudomonas* 0.026 vs. 0.077, P<0.001 and VRE 0.22 vs. 0.31, P<0.001.
- There were no *Candida auris* or *Acinetobacter spp* detected in the study period.

	3/1/2018 to 2/28/2020 Before COVID-19 occurrences	3/1/20 to 2/28/22 during COVID-19 occurrences
Methicillin-resistant <i>Staphylococcus aureus</i>	375	210
ESBL <i>Klebsiella pneumoniae</i>	39	49
ESBL <i>Escherichia coli</i>	40	30
ESBL <i>Proteus mirabilis</i>	0	1
Carbapenem-resistant Enterobacteriaceae	16	15
MDR- <i>Pseudomonas spp</i>	4	38
Carbapenem-resistant <i>Pseudomonas spp</i>	2	6
Vancomycin-resistant <i>Enterococcus spp</i>	17	24
<i>Clostridioides difficile</i> infection	52	10
<i>Stenotrophomonas maltophilia</i>	9	0
<i>Candida auris</i>	0	0
<i>Acinetobacter spp</i>	0	0

Limitations

- The sample size is small and limited to a single nursing home/long-term care center and data may not be applicable to other patient population cohort.
- The retrospective study design limits the distinction between MDRO infection versus asymptomatic colonization in some cases.

Conclusions

- While increased awareness and implementation of infection control measures during the years of the COVID-19 pandemic led to decrease in certain infections in our nursing homes, like *C. difficile*, a surprising uptick in ESBL *K. pneumoniae* and MDR *Pseudomonas* was noted.
- This is a concerning trend that merits further study to identify molecular factors and increase stewardship efforts to regulate the use of antibiotics.

References

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