

ORAL PRESENTATION

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# The determinants of *C. difficile* infection in long-term care facilities: a portrait of patient- and facility-level factors across 90 care regions in the veterans affairs health care system

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## Introduction

*Clostridium difficile* infection (CDI) is an infectious diarrheal disease that is associated with antibiotic and healthcare exposures. Although individual-level risk factors have been extensively studied, the facility-level factors that drive CDI have not.

## Objectives

To study the determinants of CDI incidence across long term care (LTC) facilities, with a specific interest in the role importation of infectious patients from acute care (AC) facilities.

## Methods

We conducted a retrospective cohort study of CDI from 2006 through 2012 across Veterans Affairs local health-care systems (HCS) where both AC and LTC patient censuses were above an average of 10 patients per day. Our outcome was LTC-onset *C. difficile* lab-identified event, defined as a case with onset  $\geq 3$  days after admission occurring at least 8 weeks from a previous positive test.

## Results

We identified 90 local HCS that met our inclusion criteria. The incidence of *C. difficile* infection in LTC facilities was 3.6 per 10,000 patient-days. In bivariate weighted linear regression analyses, the most important predictors of facility CDI incidence were importation ( $R^2=0.63$ ,  $p<0.001$ ) and antibiotic prescribing ( $R^2=0.58$ ,

$p<0.001$ ). Time-series analyses revealed that increases in *C. difficile* case importation from AC facilities preceded increases in CDI rates for a period of up to 8 weeks. Multi-level analyses, that included individual-level covariates, revealed that *C. difficile* importation and facility-level antibiotic use acted independently of resident age, direct antibiotic exposure and direct proton pump inhibitor use.

## Conclusion

This is the first study showing that importation of *C. difficile* cases from AC facilities and facility-level antibiotic use are principal drivers of CDI in LTC facilities. A regional approach, addressing rates in AC facilities, is needed to control CDI in LTC facilities.

## Disclosure of interest

None declared.

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