Healthcare-Associated Infection (HAI) Surveillance During the Covid-19 Pandemic in New Mexico

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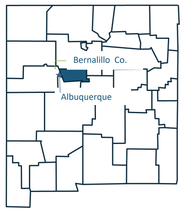
Background

The Covid-19 pandemic lead to regionally-dependent shifts in risk factors and screening practices for HAI such as *Clostridium difficile* (CD), extended-spectrum beta lactamase producing enterobacterales (ESBL-E) and carbapenem-resistant enterobacterales (CRE).

New Mexico represents a unique setting for the investigation of co-occurring HAI and Covid-19 infectious threats, characterized by a resource-limited healthcare environment and a strong social and policy response to the Covid-19 pandemic

Data and Methods



The NM EIP, a collaboration between University of New Mexico and the NM DOH, conducts ongoing laboratory- and population-based surveillance of infectious disease including CD, ESBL-E, and CRE

Stata statistical software was used to conduct retrospective analysis of lab-confirmed positive CD, ESBL-E, and CRE cases from the NM EIP

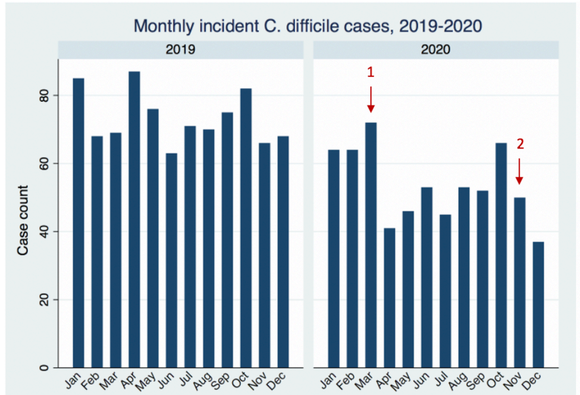
HAI incidence

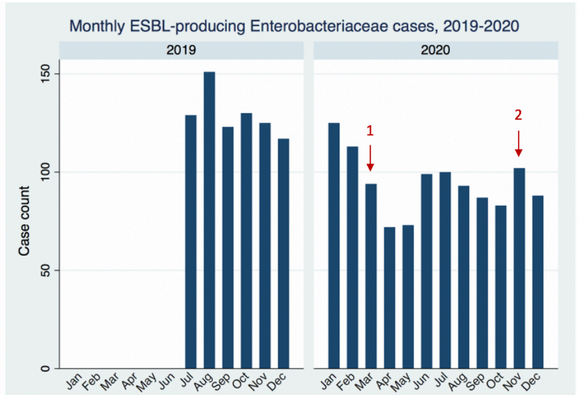
	2019-2020 pre-pandemic period	2020 pandemic period	2021 pandemic period
C. difficile	67 /month	45 /month	53 /month
ESBL-E*	117 /month	81 /month	94 /month
CRE	3 /month	5 /month	4 /month

Monthly average case rates reported for three periods: 2019 – 3/14/2020, 3/15/2020-12/31/2020, and 2021.

**ESBL-E case definition began July 2019*

2019-2020 Trends





Key points in COVID-19 pandemic in New Mexico

1) Initial public health orders (3/13-3/17) & initial shelter in place order (3/24)
2) Highest daily case count for 2020 (11/3) & second shelter in place order (11/16)

ESBL-EC organism tracking under current definitions began July 1, 2019

Selected Case Characteristics

C. difficile case origin	Hospital Admit	LTCF or LTACH	Private Residence	Other
January 1 2018 – March 14 2020 (2,022 cases, avg 76/month)	**16.7%** (13/month)	**17.2%** (13/month)	**64.6%** (49/month)	**1.5%** (1/month)
March 15, 2020 – December 31 2020 (413 cases, avg 49/month)	**16.7%** (8/month)	**10.4%** (5/month)	**70.9%** (34/month)	**1.9%** (1/month)

ESBL-E case characteristics	30-day mortality rate	Cases sampled at sterile site
January 1 2018 – March 14 2020	1.4% (12 deaths)	3.1% (31 cases)
March 15, 2020 – December 31 2020	3.1% (19 deaths)	4.9% (38 cases)*

Above: *C. difficile* patient location 3 days prior to positive test result. LTCF = long term care facility, LTACH = long term acute care hospital.
Left: ESBL-E case sampling site (sterile body site vs. urine sample) and percentage of cases where patients died within 30 days of positive test or prior to discharge.
Highlighted results are significant, p<0.05
**p = 0.051*

Results

- *C. difficile* and ESBL-E incidence and total burden decreased in 2020-2021
- There was no change in CRE incidence.
- Decreased *C. difficile* incidence during 2020 is attributable primarily to decreased healthcare facility-onset (HCFO) rate, with the greatest proportional decrease from cases originating in long term care facilities (LTCF).
- ESBL-E cases were more likely to originate from sterile sites during the 2020 pandemic period compared to the previous 9 months.
- ESBL-E cases had a higher 30-day mortality rate during the 2020 pandemic period compared to the previous 9 months
- There was no change in the proportion of ESBL-E or CRE cases originating from private residence, hospital, or LTCF.
- There was no change in the proportion of CRE cases originating from sterile sites, or in the 30-day mortality rate of CRE cases

Discussion

Rates and characteristics of *C. difficile* and ESBL-E infections in Bernalillo county NM changed during the Covid-19 pandemic, while rates of CRE remained constant; these patterns have continued into the end of 2021.

Although the factors contributing to these changes are unclear, shifts in case origin and outcomes implies the possibility of changing testing practices and/or healthcare seeking behavior influencing the real or captured surveillance data. Policy and social responses may affect disease incidence as well as surveillance.

Especially in resource-limited settings, it is crucial that ongoing surveillance efforts be prepared for simultaneous public health crises.

Contact

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