Rates of hospital-acquired *Clostridioides difficile* infection during the COVID-19 pandemic in a tertiary healthcare setting

K Hazel[1], M Skally[2], E Glynn[1], M Foley[2], K Burns[2], A O'Toole1, K Boland[1] & F Fitzpatrick[2]

[1]Department of Gastroenterology, Beaumont Hospital, Dublin 9

[2]Department of Microbiology, Beaumont Hospital, Dublin 9

Introduction

Clostridioides difficile infection (CDI) is the leading cause of hospital-acquired infectious diarrhoea.

High bed occupancy rates in acute hospitals are correlated with an increased incidence of healthcare-associated CDI.

The COVID-19 pandemic led to changes within our healthcare system, with a cessation of elective procedures and reduced presentations for non-COVID-19-related illnesses.

Aim

to determine if improved hand-hygiene, increased use of PPE, social distancing and reduced hospital occupancy resulted in a decrease in new cases of healthcare-associated *C. difficile* infection during the first wave of the COVID-19 pandemic.

Methods

We defined the COVID-19 outbreak period as March to May 2020 and identified newly-acquired *C. difficile* cases during the same period from 2018 – 2020, using the hospital *C. difficile* database.

Electronic records were used to assess patient demographics and biochemical markers.

Antimicrobial usage was provided by our Pharmacy Department.

Hand-hygiene audit results were provided by the Infection Control Department

Results

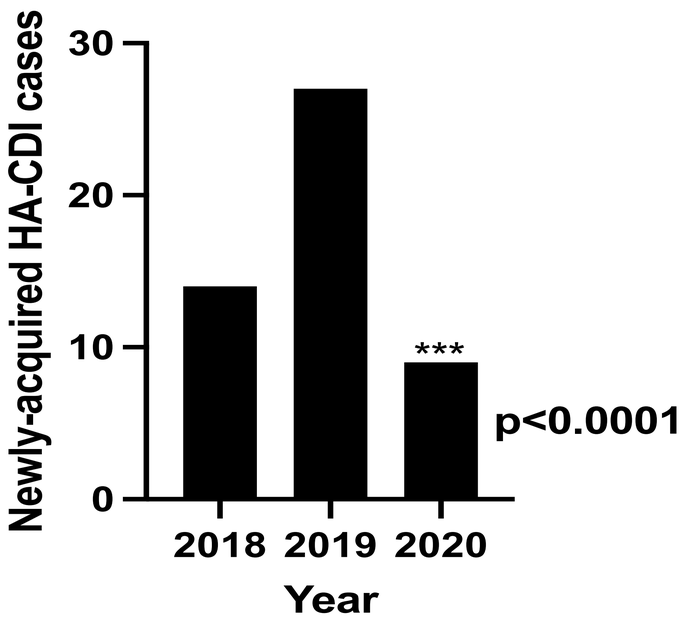

Figure 1: Newly-acquired HA-CDI cases March to May 2018-2020

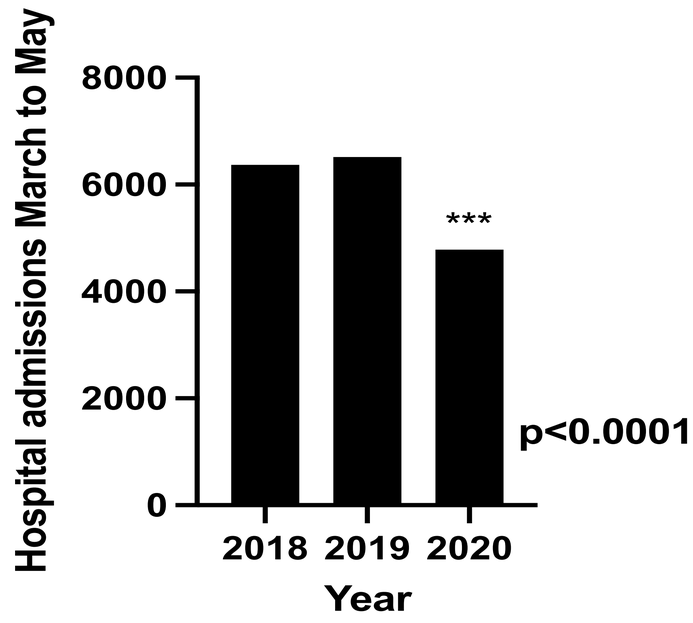

Figure 2: Total number of hospital admissions March to May 2018-2020

	2018 (n=14)	2019 (n=27)	2020 (n=9)
CDI rate per 10,000 BDU[1]	2.24	4.24	2.15
COVID-19 infection	0	0	4
Sex: Male	5 (35.7%)	16 (59.3%)	7 (77.8%)
Mean age in years (range)	71 (17-93)	68 (31-89)	67 (33-87)
Admitting specialty: medical	10 (71.4%)	14 (51.9%)	6 (66.7%)
Admitting specialty: surgical	2 (14.3%)	9 (33.3%)	2 (22.2%)
Critical care admission[2]	2 (14.3%)	4 (14.8%)	1 (11.1%)
Concurrent/recent antimicrobials[3]	3 (21.4%)	22 (81.5%)	7 (77.8%)
Hospital data			
Hospital admissions	6368	6519	4781
Average length-of-stay (days)	9.79	9.73	8.41
Hand hygiene compliance	85%	86%	90.3%
Hospital antimicrobial consumption (DDD[4]/100 BDU[1])	94.5	93	95

[1] BDU: Bed days used; [2] Patient an inpatient in the critical care unit at time of diagnosis of CDI, [3] Antimicrobial therapy during current admission, [4] DDD: defined daily dose

Table 1. Details of patients with hospital-acquired *C. difficile* infection (HA-CDI), 1st March to 31st May 2018-2020, hospital activity, antimicrobial consumption and hand hygiene compliance.

In total, 50 patients with HA-CDI were identified, the majority admitted under the care of medical specialties: 14 in 2018, 27 in 2019 and nine in 2020 (four of whom had COVID-19). (Table 1)

When compared to the previous two years, hospital admissions were reduced ($p<0.0001$). (Figure 2)

Hand hygiene audit scores showed a significant improvement during the first COVID-19 wave when compared with 2018 ($p=0.0015$) and 2019 ($p=0.045$)

There was no change in antimicrobial consumption.

There was a non-significant decrease in length-of-stay in 2020.

Newly-acquired HA-CDI decreased during the first wave of the COVID-19 pandemic period when compared to the same period in 2018 ($p=0.0013$) and 2019 ($p<0.0001$). (Figure 1)

Conclusions

During the first wave of the COVID-19 pandemic, static antimicrobial use, reduced hospital occupancy, improved hand hygiene and the use of PPE resulted in a decline in rates of new cases of healthcare-associated CDI; demonstrating the importance of hospital overcrowding, social distancing and hand hygiene on the development of CDI during an inpatient stay.