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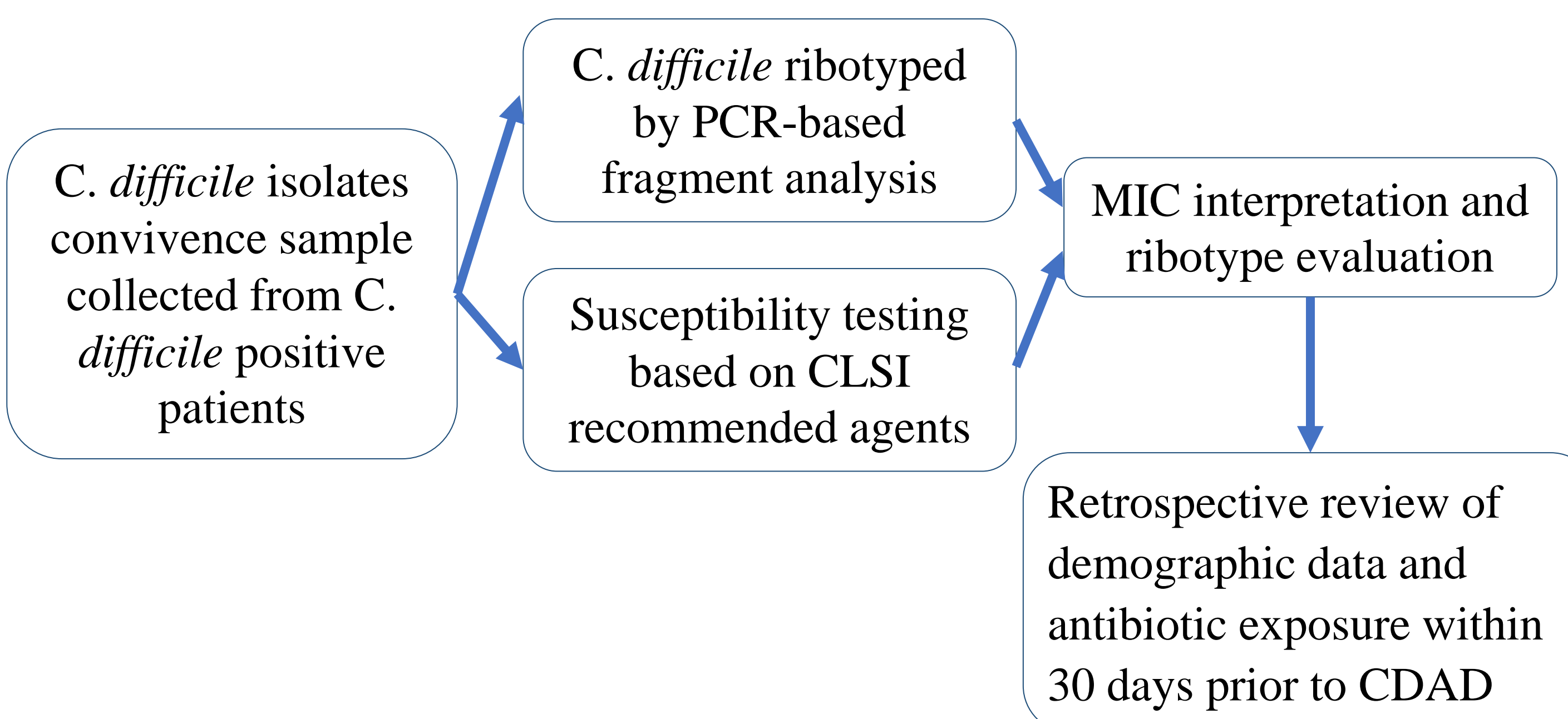
Introduction

- Antibiotic exposure is the most important risk factor for *Clostridioides difficile* associated disease (CDAD).
- Fluoroquinolone and macrolide exposure have been shown to predict infection with fluoroquinolone resistant *C. difficile* strain 027.
- However, little information has been reported on the relationship between prior antibiotic exposure, antibiotic resistance of *C. difficile*, as well as isolate ribotype, especially in a non-epidemic setting.

Objectives

- Examine the association of antibiotic exposure on ribotype in a cohort of *C. difficile* isolates obtained in a single center from 2011 through 2021.
- Identify the patterns of resistance in relation to antibiotic exposure in *C. difficile* isolates.

Methods



Methods

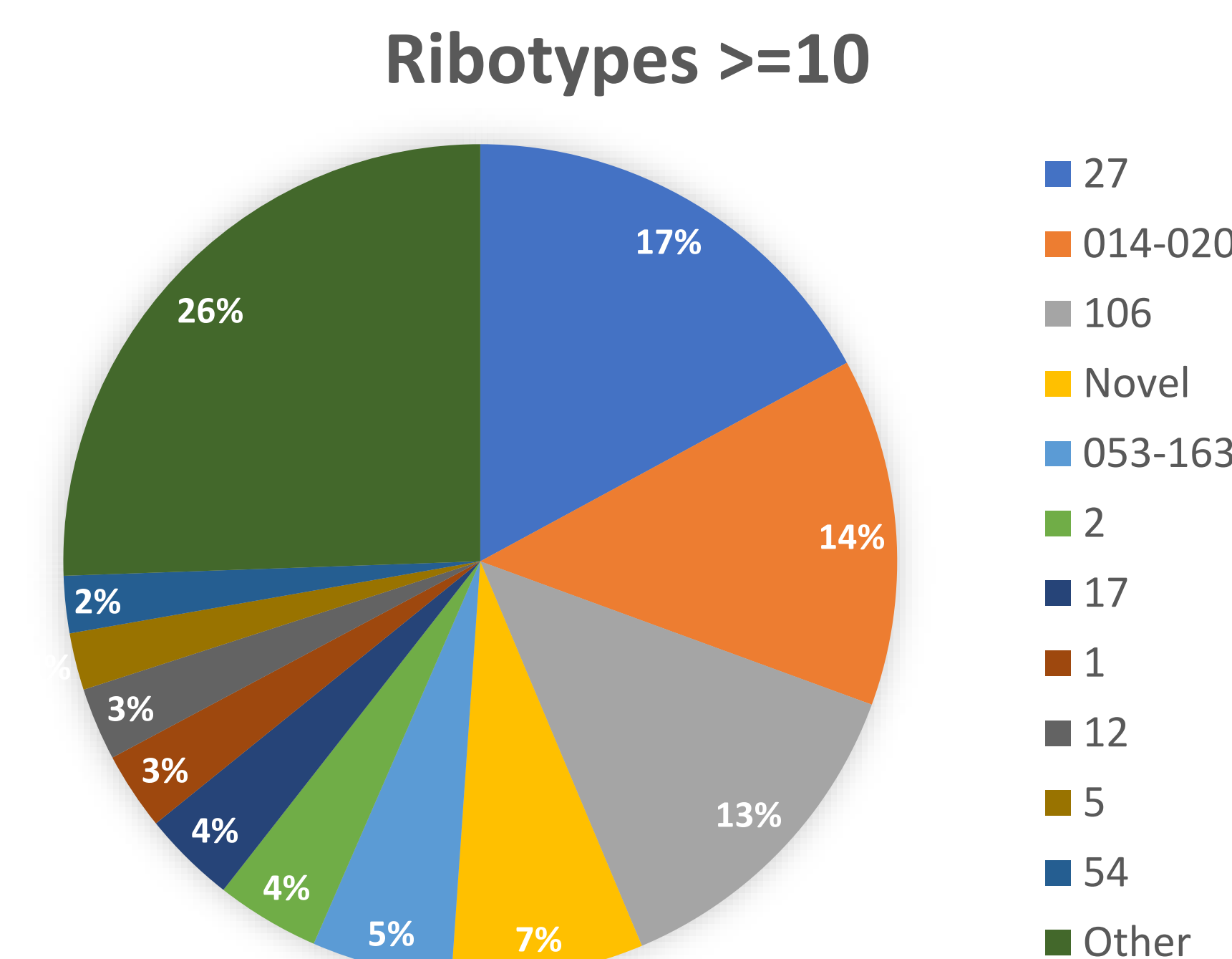
- Patients who had higher Charlson Comorbidity Score (CCI) and who had hospital-associated CDAD were more likely to have received antibiotics, as shown in table 1

Table 1 Patient Demographic Based on Receiving at Least One Antibiotic

	Yes (n=302)	No (n=176)	p-value
Male	167 (55.3)	88 (50.3)	0.3
Race (White)	231 (76.7)	124 (70.5)	0.2
Age at time of CDI (median)	64 (17.7)	61 (16.9)	0.47
CCI	4.0 (1.9)	3.0 (1.9)	0.045
WBC at time of diagnosis	10.6 (8.8)	9.8 (6.8)	0.29
Health care associated CDAD	247 (84.3)	77 (45.8)	<0.001*
Inpatient diagnosis	264 (87.4)	123 (69.9)	<0.001*
IBD	12 (4.0)	20 (11.4)	0.002*
History of transplant or immunosuppression	47 (15.6)	38 (21.6)	0.56

Results

- A total of 490 *C. difficile* isolates were collected. The exposure to at least one antibiotic was documented in 302 (63.2%) cases 30 days prior to CDAD.
- Cephalosporins were the most common class used. 40% of patients received two or more antibiotics
- We identified 54 different ribotypes in the cohort; 10 ribotypes accounted for 67% of the isolates as shown in the figure



Results

- The most common ribotypes to exhibit multi-drug resistance, defined as resistance to three or more drugs, were 027 followed by 053-163.
- We noted significantly higher rates of multi-drug resistance following any antibiotic exposure (OR = 2.1, 95% CI 1.1- 3.8). Table 2 shows prior antibiotic treatment and isolation of ribotype

Table 2 Antibiotic exposure and ribotype isolation

Antibiotic	Ribotype	OR (95% CI)
Aminopenicillins	053-163	2.9 (1.0-8.2)
Aminopenicillins	002	3.2 (1.0-10)
cephalosporins	014-020	2.0 (1.2-3.3)
carbapenems	106	2.3 (95% 1.2-4.4)

- Moxifloxacin resistance was significantly associated with prior fluoroquinolone exposure (OR 2.5 CI 95% 1.5-4.1). While fluoroquinolone use was associated with vancomycin resistance (OR 2.7, CI 95% 1.3-5.6) and rifampin resistance (OR 1.9, CI 95% 1.2-3).
- Infection with a clindamycin resistant isolate was more likely to be hospital acquired (p = 0.006).
- Additional supplementary data using QR code



Conclusion

- Specific antibiotic exposure may select for infection by specific *C. difficile* ribotypes, which can often lead to infection with resistant strains.
- Prior fluoroquinolone treatment, in particular, was associated with an increased risk of isolating multi-drug resistant strains.
- Understanding antibiotic exposure and resistance patterns can help guide outbreak control measures and antibiotic choices in patients at risk for CDAD.