Proactive choice of antibiotic may reduce the risk of *Clostridioides difficile* infection

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Background

CDI is the leading cause of healthcare-associated infections, with an estimated 2.24 cases per 1000 hospital admissions per year[3]

Use of antibiotics such as fluoroquinolones, cephalosporins, and clindamycin is associated with increased risk of CDI.[4-6] This is of particular concern given the wide use of ceftriaxone and levofloxacin/moxifloxacin (prominent members of these drug classes) in treating community-associated infections

Multiple action plans and initiatives have been introduced to reduce CDI rates, including antibiotic stewardship programs, national surveillance and action plans, improved testing methods, and enhanced infection control[7-10]

Most initiatives are aimed at secondary prevention; however, a proactive CDI risk assessment may offer objective evidence to defer use of antibiotics associated with a high risk of CDI, such as fluoroquinolones and ceftriaxone in CABP

Predictive CDI risk models need to be simple, and use clinically relevant and available measures

Methods

Patients were randomized 1:1 to receive 100 mg intravenous (IV) omadacycline every 12 hours for two doses then every 24 hours (q24h), or 400 mg IV moxifloxacin q24h, with optional transition to oral after 3 days (omadacycline: 300 mg q24h; moxifloxacin: 400 mg q24h). Total treatment duration was 7–14 days

CDI risk was calculated per patient as a score from 0 to 10 (Davis CDI risk index) using: number of high-risk antibiotics received = 1 point each (maximum of 5 points); receipt of proton-pump inhibitors = 1 point; age 40–55 years = 1 point, >55 years = 2 points; Charlson Comorbidity Index (1 comorbidity = 1 point, >1 comorbidity = 2 points)

Statistics: distributions of risk scores per treatment group (logistic regression); observed CDI cases (Fisher's exact test)

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Predicted risk and observed occurrence of *Clostridioides difficile* infection in patients with community-acquired bacterial pneumonia treated with omadacycline or moxifloxacin

Objective

To compare the risk and number of cases of *Clostridioides difficile* infection (CDI) in patients with community-acquired bacterial pneumonia (CABP) treated with omadacycline or moxifloxacin in the phase 3 OPTIC study (Omadacycline for Pneumonia Treatment In the Community; NCT02531438),[1] using the validated Davis CDI risk index[2]

Conclusions

Despite equal risk across the two treatments, no cases of CDI were seen with omadacycline treatment, whereas eight cases occurred in the moxifloxacin group

The results from this analysis may indicate a lower propensity to induce CDI with omadacycline, compared with moxifloxacin treatment

Scan for the abstract (accepted to ECCMID 2020), a copy of this poster, and information on CDI initiatives

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Results

Omadacycline and moxifloxacin groups included 386 and 388 patients, respectively

Risk of CDI was balanced across both treatment groups, with overlapping mean and variance distributions (**Figure 1**)

Mean risk score: omadacycline, 4.02 (standard deviation: 1.35); moxifloxacin, 4.12 (standard deviation: 1.45)

Risk of CDI was also balanced for each of the individual CDI risk scores, with overlapping 95% confidence intervals between treatments (**Figure 2**)

Observed occurrence of CDI was not balanced between treatment groups:

- Eight cases of CDI were reported in the moxifloxacin group
- No cases of CDI were reported in the omadacycline group (p=0.0037)

Figure 1: Risk of CDI was balanced across treatment groups

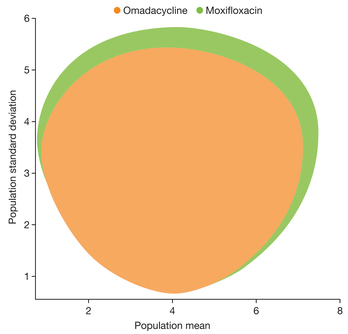
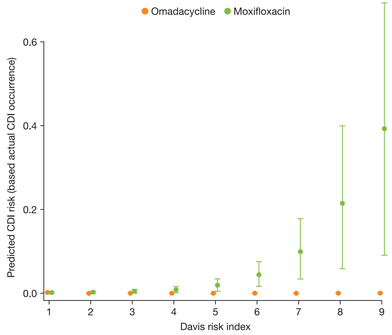


Figure 2: Individual CDI risk scores were balanced across treatments



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