Eravacycline combination therapy for severe, recurrent, or fulminant *Clostridioides difficile* infection

Austin Morrison, PharmD. BCIDP[1]; Shaina Kwiatkowski, PharmD, BCIDP[2]; Mayur Ramesh, MD[3]; Rachel Kenney, PharmD, BCIDP[3]

Moffitt Cancer Center, Tampa, FL[1], Henry Ford Hospital Macomb, Clinton Twp, MI[2], Henry Ford Hospital, Detroit, MI[3]

Address correspondence to:
Shaina Kwiatkowski
skwiatk1@hfhs.org

HENRY FORD HEALTH

Introduction

- Based on guidelines, *in vitro* data, and retrospective analysis treatment for severe, fulminant, or recurrent episodes of *C. difficile* infections (CDI), tigecycline can be considered as adjunct therapy
- Eravacycline (ERV) is a fluorocycline with in vitro activity against *C. difficile*
- Because of a formulary change, ERV replaced tigecycline; however, there is a paucity of clinical data in the usage of ERV for the treatment of CDI
- Purpose: to evaluate the usage of ERV in the management of CDI

Methods

Objectives

- Describe the proportion of patients prescribed ERV dose with CDI
- Compare outcomes of patients prescribed ERV for CDI based on severity

Study Design

- This medication use evaluation was a retrospective cohort study conducted at a five-hospital health system in Michigan
- IRB approved

Subjects

- Patients prescribed greater than one eravacycline dose for the treatment of CDI between July 2019 and March 2020

Inclusion Criteria	Exclusion Criteria
• Adult patients (≥ 18 years) • Prescribed greater than one ERV dose for the treatment of CDI	• Incarcerated • Pregnant • Cognitively disabled

Data Collection

- Data was collected from the electronic medical records using a standardized case report form including patient and infection related information.

Endpoints

- Primary outcome: all-cause mortality at 30 days from start of ERV
- Secondary outcomes: clinical cure, colectomy, and recurrence within 30 days

Analysis

- Descriptive statistics

All authors report no conflicts of interest.

Results

CDI Characteristics and Management

CDI Characteristics; n=14	n (%)
C. diff test toxin positive	6 (42.9)
C. diff test toxin indeterminate, PCR positive	8 (57.1)
Initial CDI Classification	
Fulminant	6 (42.9)
Severe	4 (28.6)
Recurrent	4 (28.6)
History of CDI	6 (42.9)
On concurrent non-CDI antibiotics	12 (85.7)
High risk antibiotics for CDI	10 (71.4)

CDI Management Characteristics; n=14	
Reason for ERV, n (%)	
Severe	4 (28.6)
Fulminant	6 (42.9)
Recurrent	1 (7.1)
Cannot tolerate other CDI meds	3 (21.4)
Refractory	3 (21.4)
Time from positive C. diff test to ERV , median (IQR)	1.5 (1, 3.8)
Surgery consult, n (%)	6 (42.9)
ID consult, n (%)	14 (100)

Treatment Choice and Durations

Concomitant Drug Therapy	n (%)	Duration, median (IQR)
PO VAN treatment prior to ERV initiation	11 (78.5)	1 (1, 3)
IV metronidazole treatment prior to ERV initiation	12 (85.7)	2 (0)
Concurrent PO VAN and ERV	14 (100)	5.5 (3, 6)
Concurrent IV metronidazole and ERV	6 (42.9)	4 (1, 6)
Eravacycline	14 (100)	6 (4.5, 7.8)

Demographics based on CDI Classification

	Severe (n=4)	Recurrent (n=4)	Fulminant (n=6)	Total (n=14)
Age, years, median (IQR)	61 (51, 67)	67.5 (61, 77)	61.5 (44, 69)	63 (57, 72)
Sex assigned at birth, male, n (%)	0	1 (25)	4 (66.7)	5 (35.7)
ATLAS score, median (IQR)	4 (3, 5.5)	5.5 (4.8, 6.5)	6.5 (6, 7)	6 (4.3, 7)
Immunocompromised, n (%)	2 (50)	0	5 (83.3)	7 (50)
Radiographic features of CDI, n (%)	1 (25)	3 (75)	5 (83.3)	9 (64.3)
ICU admission, n (%)	1 (25)	1 (25)	6 (100)	8 (57.1)
Days of hospitalization, median (IQR)	7.5 (6, 9)	7 (5.8, 8.8)	22 (17, 30)	9 (6, 20)
Hospital-acquired CDI, n (%)	0	0	3 (50)	3 (21.4)
Received bezlotoxumab, n (%)	0	1 (25)	0	1 (8.3)
Received fecal microbiota transplant, n (%)	0	2 (50)	0	2 (16.7)

Clinical Outcomes based on CDI Classification

30-day Outcomes, n (%)	Severe (n=4)	Recurrent (n=4)	Fulminant (n=6)	Total (n=14)
All-cause mortality	0	0	2 (33.3)	2 (14.3)
Clinical cure	4 (100)	4 (100)	4 (66.7)	12 (85.7)
Colectomy	0	0	2 (33.3)	2 (14.3)
Readmission related to CDI	1 (25)	0	0	1 (7.1)
Hospice or comfort care	0	0	1 (16.7)	1 (7.1)

Summary

- ERV appears to be a potential adjunctive therapy for severe, recurrent, or fulminant CDI
- Prospective studies are needed to further investigate the safety and efficacy of ERV in serious CDI