



Re-hospitalization of Patients for Recurrent *Clostridioides difficile* Infection

Can Re-Hospitalization Rates be Improved?

Emily N. Drwiega¹, Larry Danziger¹, Stuart Johnson^{2,3}, Andrew M. Skinner^{2,3}

¹University of Illinois at Chicago, College of Pharmacy, Chicago, IL; ³Edward Hines, Jr. VA Hospital, Hines, IL; ⁴Loyola University Medical Center, Maywood, IL



Introduction

- The Centers for Medicare and Medicaid Services evaluate hospital-acquired infections (HAI) and hospital readmissions within 30 days.
- *Clostridioides difficile* infection (CDI) is an HAI notorious for causing recurrent illness and potentially leading to re-hospitalizations
- Infectious Diseases (ID) and Gastroenterology (GI) providers may be uniquely trained to manage patients with CDI

Methods

- Single-center, retrospective, chart review at an urban, tertiary academic medical center with 547 licensed beds
- All hospitalized patients with a positive stool test for *C. difficile* (GI panel PCR, FilmArray, Biofire, *C. difficile* PCR, Xpert CD assay, or Cepheid) with or without an ICD-10 code of Enterocolitis due to *C. difficile* (A04.7, A04.71, A04.72) from January 2018 through December 2018 were included
- Demographic and clinical data at the time of diagnosis and up to 90 days after discharge were collected from the electronic health record
- Primary outcome: re-hospitalization for recurrent CDI (rCDI)

Results

- 586 patients reviewed for inclusion, 42 were excluded due to death or enrollment in hospice during the index hospitalization. An additional 59 patients were excluded with due to a lack of post hospitalization documentation.
- The majority of patients received oral vancomycin therapy for their primary CDI episode

Table 1: Baseline Patient Characteristics

Variable	Patients (N = 485)
Male, n (%)	239 (49.3)
Age in years, median [IQR]	63 [52, 72]
Race, n (%)	
Asian	14 (2.9)
Black or African American	97 (20.0)
White	336 (69.3)
Charlson Comorbidity Index Score, median [IQR]	2 [1, 4]
Immunocompromised*, n (%)	209 (43.1)

*Transplant, HIV, malignancy, leukemia, lymphoma, autoimmune disease

Results

Figure 1: *C. diff* diagnosis based on treating physician (N=485)

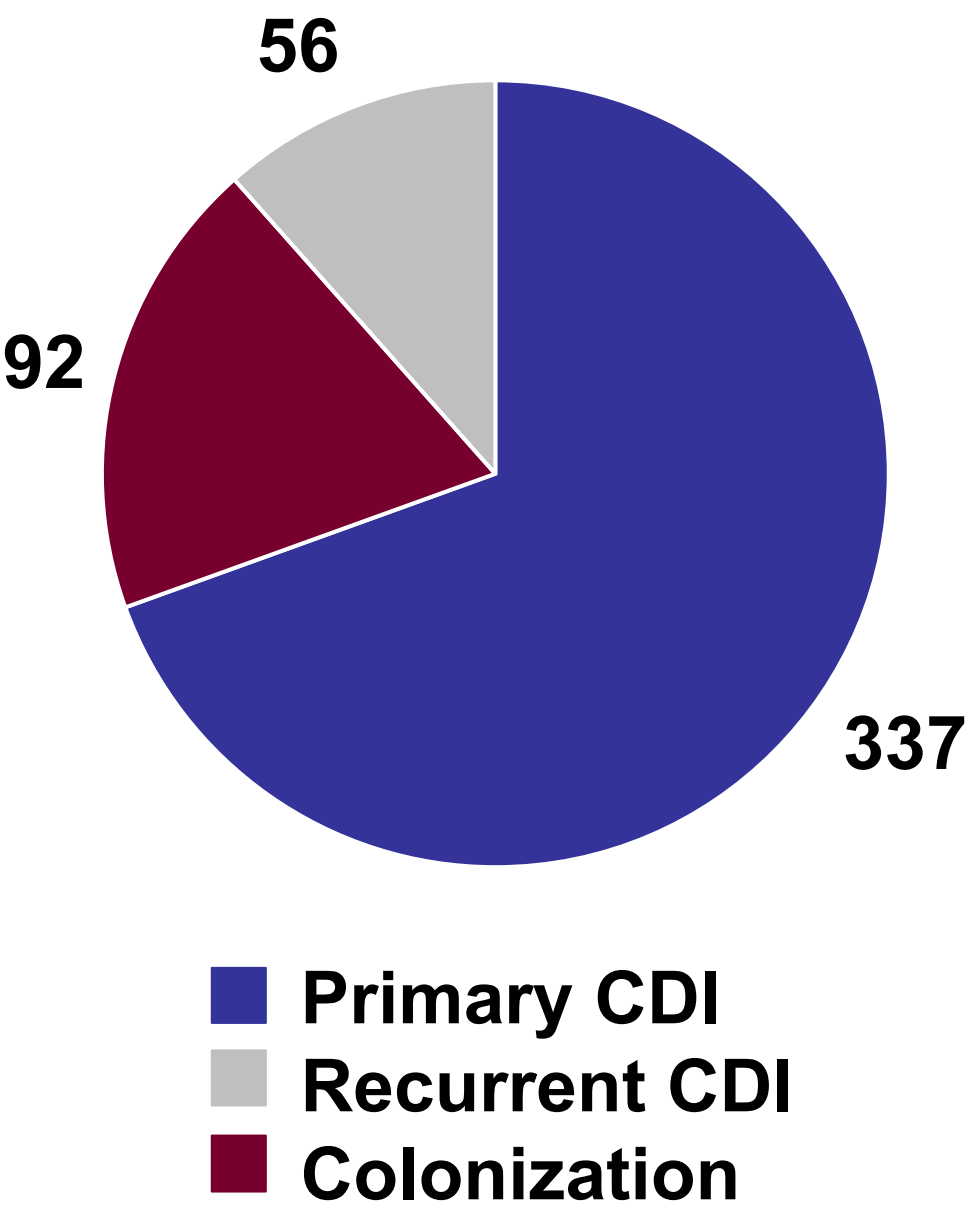


Figure 2: rCDI within 90 days of discharge (n = 393*)

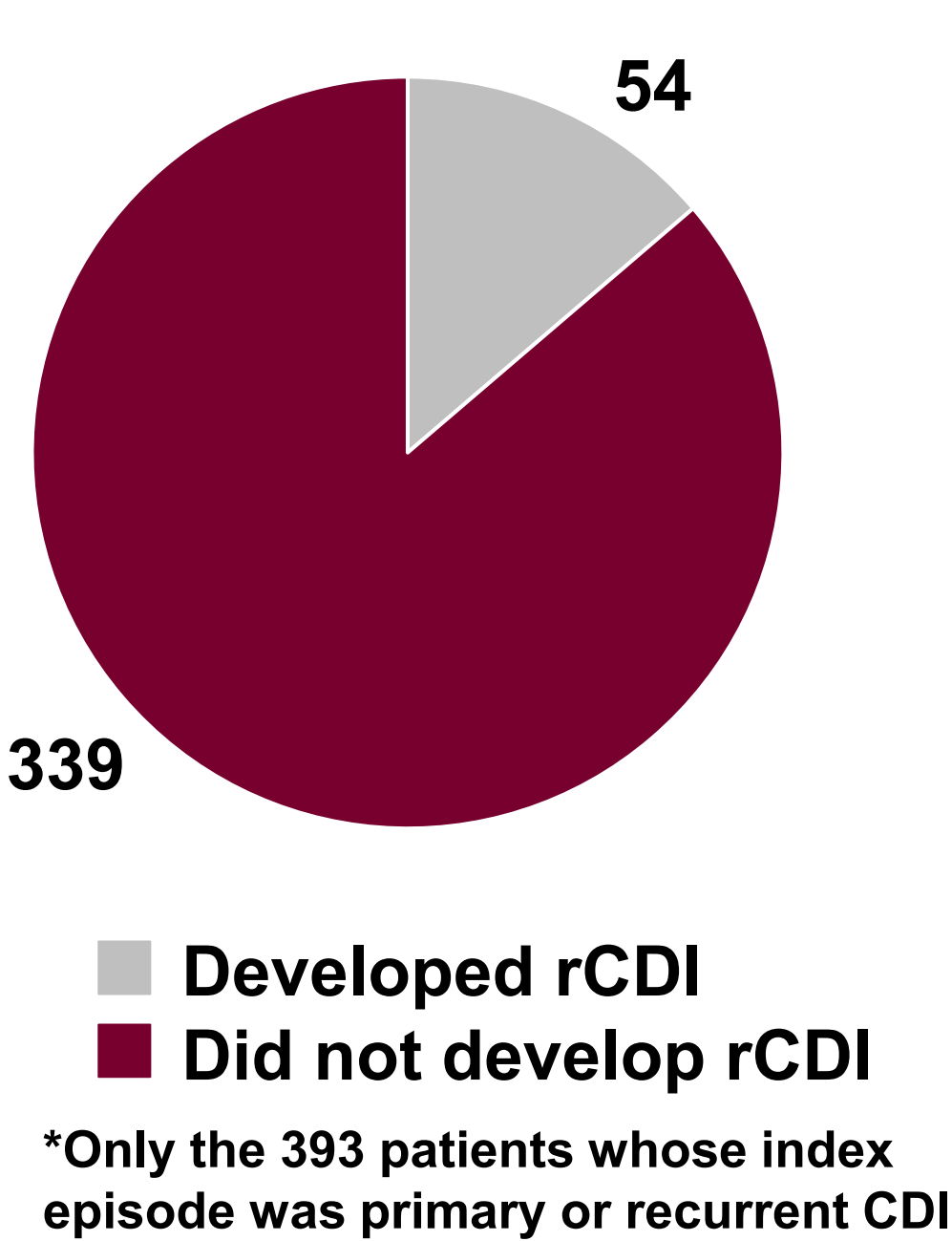


Table 2: Re-hospitalization for rCDI

Variable	Patients (n = 54)
Hospitalization for recurrence, n (%)	25 (46.3)
Primary CDI, n (%)	18 (72.2)
Recurrent CDI, n (%)	7 (28.0)

Table 3: Specialty Care of Patients with rCDI

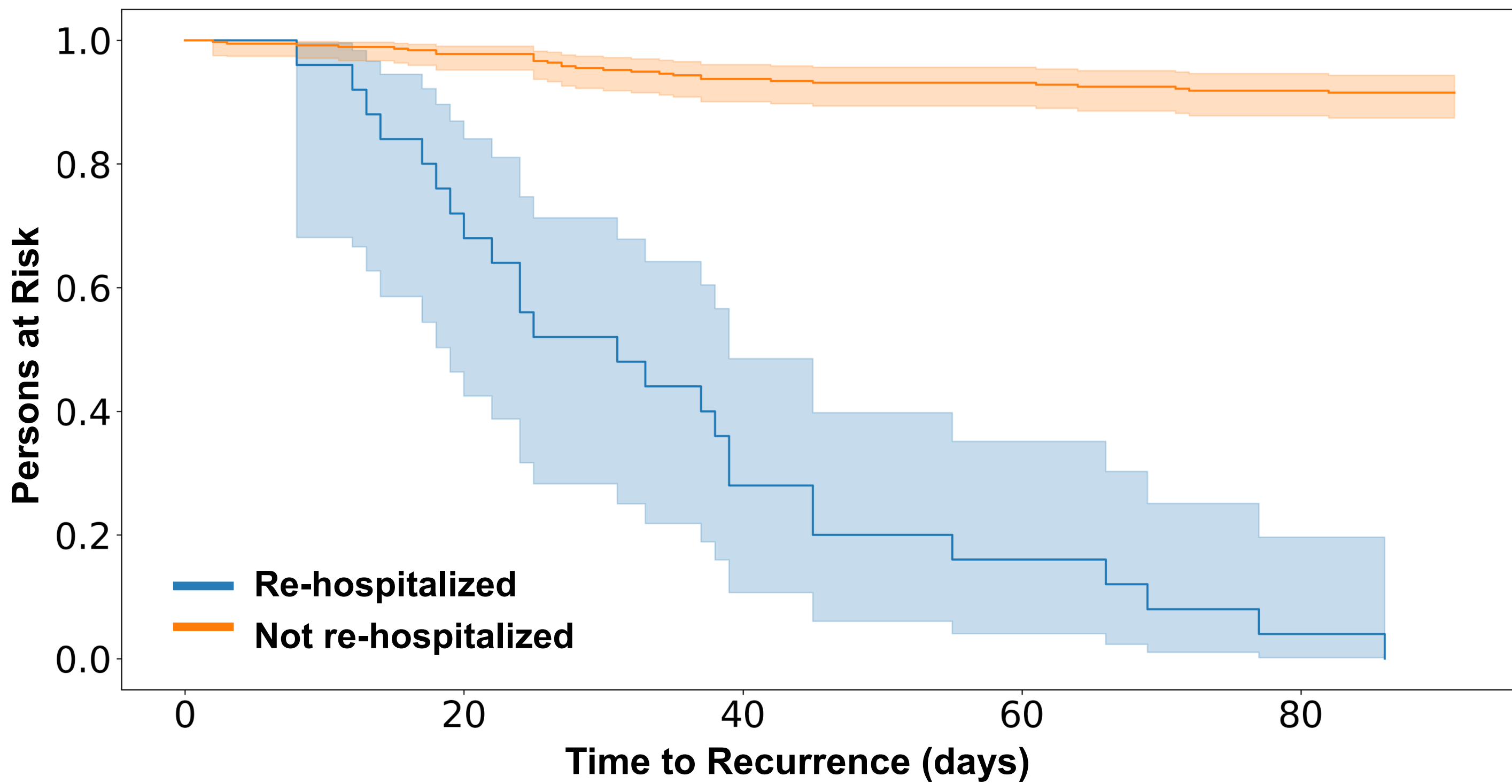
Variable	Patients (n = 393)
ID Consult during index hospitalization, n (%)	80 (20.4)
GI Consult during index hospitalization, n (%)	93 (23.7)
Follow-up appointments within 30 days, n (%)	
Any follow-up appointment	113 (28.8)
No follow-up appointment	280 (71.2)
ID follow-up appointment	17 (4.3)
GI follow-up appointment	12 (3.1)
Evaluated by ID/GI*	161 (41.0)

*ID/GI consult during index hospitalization OR ID/GI follow-up appointment within 30 days

Table 4: rCDI and Re-hospitalization by Specialty Evaluation

	ID Inpatient Consult	No ID Inpatient Consult	P-value
rCDI, n/N (%)	5/80 (6.3)	49/313 (15.7)	0.03
Re-hospitalized for rCDI, n/N (%)	3/25 (13.6)	3/30 (11.1)	0.81

Figure 3: Time to Recurrence



- Those re-hospitalized for rCDI developed their recurrence sooner (40% within 45 days, p < 0.005)

Discussion & Conclusions

- Nearly 50% of hospitalized patients who had rCDI had to be readmitted to the hospital for their rCDI.
- Patients evaluated by ID while inpatient had decreased rates of recurrent *C. difficile* but made no impact on re-hospitalization
- Only 13% of patients who developed rCDI were seen by ID post-hospitalization
- Recurrence occurred significantly earlier in patients who were re-hospitalized. The impact of early follow-up on re-hospitalization should be further studied.
- Inpatient consultation and timely follow-up of hospitalized CDI patients by specialty providers as compared to non-specialty providers or lack of follow-up, should be studied prospectively to determine the impact on rCDI re-hospitalization