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### 933. Risk Factors for *Clostridium difficile* Infection Recurrence

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**Background.** In 2011 the United States had approximately 83,000 *Clostridium difficile* infection (CDI) first recurrences. Identifying patients at risk of recurrent CDI (rCDI) can help tailor management and prevention.

**Methods.** Active laboratory- and population-based surveillance for CDI was conducted in 10 geographically-diverse US sites. Adult initial CDI cases (iCDI) were defined as the first positive *C. difficile* toxin or molecular assays on stool specimens from patients  $\geq 18$  years old with diarrhea or CDI treatment (metronidazole, vancomycin or

fidaxomicin) during 2013 who did not have a previous positive specimen in  $\geq 1$  year; rCDI cases were the subset with a subsequent positive test and diarrhea or treatment 2-26 weeks after the first positive test. Demographics, clinical characteristics, and iCDI treatment were assessed for association with rCDI. Multivariable logistic regression modeling was used to identify risk factors. Validation was performed through bootstrapping.

**Results.** Of 4790 iCDI cases, 42% were  $\geq 65$  years old, 63% community-associated, 63% treated with metronidazole, and 20% treated with  $\geq 2$  CDI antibiotics; 17% (843) developed rCDI. In multivariable analysis, treatment with  $\geq 2$  CDI antibiotics, white race, chronic renal insufficiency, diabetes mellitus and antibiotic use in the 12 weeks prior to iCDI increased the odds of rCDI (table). The Hosmer-Lemeshow test indicated good model fit ( $p = 0.64$ ). Bootstrap resampling selected the same set of variables with the exception of diabetes mellitus; the average C index was 0.59.

Table. Multivariable Logistic Regression Model of Risk Factors for rCDI

Characteristic	Adjusted Odds Ratio	95% CI	p Value
Monotherapy	Reference		
No CDI-specific antibiotic	0.53	0.26-1.12	0.10
$\geq 2$ CDI antibiotics	1.37	1.12-1.68	<0.01
White race	1.49	1.16-1.92	<0.01
Chronic renal insufficiency	1.41	1.10-1.79	<0.01
Diabetes mellitus	1.31	1.06-1.61	<0.01
Preceding antibiotic use	1.50	1.21-1.85	<0.01

**Conclusion.** Multiple factors for rCDI have been identified, including characteristics present at the onset of iCDI as well as treatment with combination therapy, which may reflect more severe or refractory disease. Additional study is warranted to develop a prediction tool identifying patients at high risk for rCDI.

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