

CAPSULE COMMENTARIES

Capsule Commentary on Novosad et al., Treatment of *Clostridioides Difficile* Infection and Non-compliance with Treatment Guidelines in Adults, 10 US Geographical Locations, 2013–2015

Kelly R. Reveles, PharmD, PhD^{1,2}

¹College of Pharmacy, The University of Texas at Austin, Austin, TX, USA; ²Pharmacotherapy Education & Research Center, UT Health San Antonio, San Antonio, TX, USA.

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This retrospective study by Novosad et al.¹ described *Clostridioides difficile* infection (CDI) antibiotic prescribing practices and adherence to the 2010 IDSA/SHEA CDI treatment recommendations² using data from the Emerging Infections Program from 2013 to 2015. The investigators found that among the 18,243 CDI cases identified, metronidazole was the most commonly prescribed antibiotic (78%), followed by vancomycin (42%), and fidaxomicin (2%). Of particular concern, guideline adherence for severe CDI was only 47%.

This multicenter study across 10 geographically diverse areas in the USA is one of the largest to investigate adherence to CDI guideline recommended therapy; however, the retrospective design and use of electronic health records is inherently subject to information bias, particularly for outpatients. Furthermore, more recent CDI practice guidelines³ have been published and adherence to new recommendations was not evaluated.

Despite these limitations, this study has important implications for clinical practice and future research. First, adherence to clinical practice guidelines has been previously associated with improved patient outcomes, including CDI attributable mortality and hospital length of stay^{4, 5}; thus, non-adherence could potentially impact patient health. While this study identified potential factors affecting adherent prescribing, the specific reasons for non-adherence are unclear. It was particularly intriguing that hospital admission was most predictive of guideline adherence. This might reflect the use of standardized hospital treatment algorithms or more aggressive therapy in inpatients compared to outpatients. This might also reflect problems with outpatient provider education or access to care. Next, while the current study evaluated prescribing guideline adherence, patient adherence to the prescribed antibiotics could not be evaluated. The more recent CDI clinical practice

guidelines recommend oral vancomycin or fidaxomicin as first-line therapy, regardless of severity. In the outpatient setting, these antibiotics can be cost-prohibitive compared to metronidazole, which might impact patient adherence, and ultimately risk for poor health outcomes (e.g., prolonged diarrhea or recurrent infection). To move the field forward, further studies are needed to assess implementation and adherence to the 2017 CDI treatment guidelines,³ but also to qualitatively evaluate specific reasons for prescribing and patient non-adherence, such that these barriers can be overcome in the future.

Corresponding Author: Kelly R. Reveles, PharmD, PhD; Pharmacotherapy Education & Research Center UT Health San Antonio, San Antonio, TX, USA (e-mail: Kdaniels46@utexas.edu).

Compliance with Ethical Standards:

Conflict of Interest: The author declares that she does not have a conflict of interest.

REFERENCES

1. Novosad SA, Mu Y, Winston LG, Johnston H, Basiliere E, Olson DM, Farley MM, Revis A, Wilson L, Perlmutter R, Holzbauer RM, Whitten T, Phipps EC, Dumyati GK, Beldavs ZG, Ocampo VLS, Davis CM, Kainer M, Gerding DN, Guh AY. Treatment of *Clostridioides difficile* infection and non-compliance with treatment guidelines in adults, 10 U.S. Geographical Locations, 2013-2015. *J Gen Intern Med*. <https://doi.org/10.1007/s11606-019-05386-9>.
2. Cohen SH, Gerding DN, Johnson S, Kelly CP, Loo VG, McDonald LC, Pepin J, Wilcox MH. Clinical practice guidelines for *Clostridium difficile* infection in adults: 2010 update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). *Infect Control Hosp Epidemiol* 2010;31(5):431-55.
3. McDonald LC, Gerding DN, Johnson S, Bakken JS, Carroll KC, Coffin SE, Dubberke ER, Garey KW, Gould CV, Kelly C, Loo V, Shaklee Sammons J, Sandora TJ, Wilcox MH. Clinical practice guidelines for *Clostridium difficile* infection in adults and children: 2017 update by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). *Clin Infect Dis* 2018;66(7):987-994.
4. Crowell KT, Julian KG, Katzman M, Berg AS, Tinsley A, Williams ED, Koitun WA, Messaris E. Compliance with *Clostridium difficile* treatment guidelines: effect on patient outcomes. *Epidemiol Infect* 2017;145(11):2185-2192.

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5. **Patel I, Wungjiranirun M, Theethira T, Villafuerte-Galvez J, Castillo N, Akbari M, Alonso CD, Leffler DA, Kelly CP.** Lack of adherence to SHEA-IDSA treatment guidelines for Clostridium difficile infection is associated with increased mortality. *J Antimicrob Chemother* 2017;72(2):574-581.

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