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Reply to Jaber et al.

TO THE EDITOR—We appreciate the comments of Jaber et al.[1] regarding our *Clostridium difficile*–associated disease (CDAD) severity grading system.[2] We agree that although diarrhea is the hallmark symptom of CDAD, a comprehensive CDAD severity grading system must also incorporate many of the symptoms that Jaber et al.[1] mention. In fact, only 31 (84%) of 37 patients in our study had diarrhea that was clinically important enough to be documented in their medical charts within 48 hours of CDAD diagnosis, despite the fact that all of them had unformed stool samples collected for *C. difficile* toxin testing.

We would like to emphasize that our CDAD severity grading system is based on the National Cancer Institute's Common Terminology Criteria for Adverse Events (CTCAE), version 3.0, for both diarrhea and colitis.[3] Because of space limitations, we were unable to list all of the CTCAE in our article.[2] In this letter, we provide a Table that details how the CTCAE are used in our grading system. Many of the signs and symptoms mentioned by Jaber et al.[1] are part of the CTCAE for colitis. Grade 2 colitis includes abdominal pain and mucus or blood in stool. Grade 3 colitis includes fever, ileus, and peritoneal signs. Grade 4 colitis includes perforation, gastrointestinal bleeding, ischemia, necrosis, and toxic megacolon. In our patient sample, 24% of patients experienced abdominal pain within 48 hours of CDAD diagnosis, 8% had bloody stool, and 2% had ileus. None of the patients in our study experienced peritoneal signs, perforation, ischemia, necrosis, or toxic megacolon within 48 hours of CDAD diagnosis. Hypotension was captured by the need for intravenous fluids, which is a criterion for grade 2 or 3 diarrhea. Vasopressor use is a component of hemodynamic collapse (which is a criterion for grade 4 diarrhea). In addition

TABLE. Proposed *Clostridium difficile*–Associated Disease (CDAD) Severity Grading System

Condition, source of criteria	System components, by severity category		
	Mild	Moderate	Severe
Colitis			
CTCAE	Grade 1: Asymptomatic; pathologic or radiographic findings only	Grade 2: Abdominal pain; mucus or blood in stool	Grade 3: Abdominal pain, fever, change in bowel habits with ileus; peritoneal signs Grade 4: Life-threatening consequences (ie, perforation, bleeding, ischemia, necrosis, and/or toxic megacolon) Grade 5: Death
Additions	...	...	Hypothermia
Diarrhea			
CTCAE	Grade 1: Increase of <4 stools per day over baseline, mild increase in ostomy output compared to baseline	Grade 2: Increase of 4-6 stools per day over baseline, IV fluids indicated <24 hours, moderate increase in ostomy output compared to baseline, not interfering with ADL	Grade 3: Increase of ⩾7 stools per day over baseline, incontinence, IV fluids indicated ⩾24 hours, hospitalization, severe increase in ostomy output compared to baseline, interfering with ADL Grade 4: Life-threatening consequences (ie, hemodynamic collapse) Grade 5: Death
Additions	Grade 1 or ⩽500 mL intestinal output per day	Grade 2 or 501-1,000 mL intestinal output per day	CTCAE grade 3 or 1,001-2,000 mL intestinal output per day **or** CTCAE grade 4 or ⩾2,000 mL intestinal output per day

NOTE. ADL, activities of daily living; CTCAE, Common Terminology Criteria for Adverse Events; IV, intravenous.

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to these symptoms and those listed in the CTCAE for diarrhea, we added hypothermia.

The nature of our study population (ie, allogeneic hematopoietic stem cell transplant recipients) precludes the use of several of the other severity criteria mentioned by Jaber et al.[1] Many of the patients were neutropenic, making white blood cell counts frequently inapplicable. All of the subjects were immunosuppressed, and therefore immunosuppression is not a useful criterion for assessing the risk of poor outcomes due to CDAD in this patient population. Measurement of the lactate level is not routinely done, and it is unlikely that many of our patients would have had a sample for lactate measurement obtained within 48 hours of CDAD diagnosis. Patients with a significant increase in lactate level would likely be hypotensive as well, and hypotension is captured under the criteria for diarrhea, grades 2-4.

Our primary goal in creating a CDAD severity grading system was to develop a scale that could identify patients who are at high risk for poor outcomes, early in their clinical course. Previous CDAD severity grading systems, including those mentioned by Jaber et al.,[1] were not limited to symptoms present early in a patient's clinical course. Pepin et al.[4] included death within 30 days of diagnosis in their definition of a complicated CDAD case. Dallal et al.[5] developed their CDAD severity system based on outcomes, not presenting symptoms; the defining criteria for fulminant colitis were death or the requirement for emergency colectomy. Although the grading systems developed by Pepin et al.[4] and Dallal et al.[5] undeniably identify cases of severe CDAD, their ability to classify CDAD severity at the time of diagnosis has not been validated. The studies of Pepin et al.[4] and Dallal at al.,[5] as well as our own, were also limited by being retrospective. To the best of our knowledge, no studies exist that prospectively validate any CDAD severity grading system. We are currently conducting a prospective study of CDAD in allogeneic hematopoietic stem cell transplant recipients, and this study should provide additional data on the usefulness of our CDAD severity grading system in that patient population.

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Efficacy of Sodium Hypochlorite-Based Disinfectants Against *Clostridium difficile* Spores

TO THE EDITOR—In their recent article, Fawley et al.[1] presented data that indicated certain chlorine-based germicides were able to inactivate *C. difficile* spores, when used at recommended working concentrations. These results coincide with those of other studies on *C. difficile* spores that have been conducted using chlorine-based germicides at the recommended working strength and with recommendations by the Centers for Disease Control and Prevention.[2-6] Studies such as these provide valuable information for infection control professionals in healthcare facilities, especially since the US Enivornmental Protection Agency does not currently recognize a test method for inactivation of *C. difficile* spores.

As valuable as the reported efficacy information is, however, the rest of the article by Fawley et al.[1] quickly loses relevance. The mean sporulation rates outlined in the abstract are especially misleading because the assumption is that all studies conducted were done with the recommended working strength of the germicides, which was not the case. The sporulation testing that was described actually involved deter-