Adherence to Treatment Guidelines for Incident *Clostridium difficile* Infection in Critically Ill Adults

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Background

The 2010 IDSA/SHEA guidelines for management of *Clostridium difficile* infection (CDI) utilized severity to guide treatment. Severity of CDI is based on peripheral leukocyte count (WBC), serum creatinine (Cr) ratios and clinical criteria such as hypotension, shock, ileus and megacolon. Many of these metabolic derangements and clinical syndromes are common among intensive care unit (ICU) patients without CDI, thus increasing the potential difficulty in determining the severity and appropriate treatment for CDI among ICU patients. We sought to evaluate adherence to treatment guidelines in this population.

Methods

A retrospective observational study of critically ill adults with incident CDI diagnosed ≥48 hours after ICU admission, admitted to a tertiary care center between January 1, 2011 and December 31, 2013 was completed. Data on demographics, clinical details, laboratory values and medications were abstracted.

Screening was considered positive based on PCR result alone. Incident CDI was defined as a positive test ≥ 48 hours after ICU admission.

If baseline creatinine was not available, ICU admission creatinine was used as a surrogate. Severity was interpreted using WBC, Cr, vasopressor use within 24 hours before or after CDI test time and motility agent use preceding CDI test time.

Treatment of Initial CDI Based on Severity per 2010 SHEA/IDSA guidelines

	Definition:	Treatment:
Mild to Moderate	WBC < 15,000 cells/μL and a serum creatinine < 1.5 times baseline	Metronidazole orally
Severe	WBC ≥15, 000 cells/ μL or serum creatinine ≥ 1.5 baseline	Vancomycin orally
Severe/ Complicated	Hypotension, Shock, Ileus or megacolon	Vancomycin via enteral access PLUS metronidazole IV AND if ileus, vancomycin retention enemas.

Demographics

Patients	N = 67
Age	66 (19 – 98)
Male	39 (58.2%)
Charlson Comorbidity Index	5 (0 – 15)
APACHE III (on admission)	43 (14 – 115)
Baseline creatinine unavailable	31 (46.3%)

Results presented as medians with ranges or counts with percentages.

CDI Severity Assessment

CDI severity	N = 67
Mild/Moderate	34 (50.7%)
Mild/Moderate PLUS vasopressor or motility agent	26 (76.5% of mild/moderate)
Severe or Severe, complicated	33 (49.3%)
Severe, complicated by vasopressor	6 (18.2% of severe or severe, complicated)
Severe, complicated by motility agent	23 (69.7% of severe or severe, complicated)

Results presented as counts with percentages.

CDI Treatment

CDI Treatment	N=67
Metronidazole	39 (58.2%)
Vancomycin	8 (11.9%)
Combination Therapy	18 (26.9%)
No Therapy	2 (3.0%)

Results presented as counts with percentages.

Treatment Concordance with Severity

CDI severity	No treatment*	Concordant	Discordant	"Undertreated" if Discordant
Mild/Moderate (N=34)	1	23	10	0
Severe (N=27)	1	0	26	15
Severe, Complicated by vasopressors (N=6)	0	2	4	4
Total (N=67)	2 (3.0%)	25 (38.5%)	40 (61.5%)	----------

Results presented as counts with percentages. *Due to death or transition to comfort measures

Additional Results

Two patients required colectomy (both with discordant treatment but neither "undertreated"). Eleven patients had a subsequent positive CDI at least 14 days after initial testing and of these, 9 had severity discordant therapy with 4 being "undertreated."

Conclusion

This study highlights that determination of attributable severity of illness among critically ill patients with CDI is difficult to assess by current guidelines definitions and clinician treatment may be discordant with these definitions in many cases, particularly among 'severe' cases. Further study is necessary to develop appropriate severity score methods and treatment decision algorithms for CDI among the critically ill.

References

1. Cohen SH, Gerding DN, Johnson S, et al. 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):431-455