How smart is the chart? Completeness of the medical record in documenting diarrhea in patients tested for *Clostridioides difficile* infection

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To the Editor—Diagnosis of *Clostridioides difficile* infection (CDI) is based on clinical symptoms consistent with CDI coupled with detection of toxigenic *C. difficile* and/or its toxins in stool.[1] Diagnostic testing is challenging because asymptomatic carriage of toxigenic *C. difficile* is common and colonized individuals may test positive in the absence of significant diarrhea, often defined as 3 or more unformed stools per day, or if diarrhea is present but due to an alternative cause.[1–6] Thus, efforts to avoid inappropriate testing are recommended, particularly if sensitive nucleic acid amplification tests are used as standalone tests.[1,2]

Current guidelines for CDI recommend that facilities should conduct periodic chart review to assess the appropriateness of testing.[1] The validity of these assessments depends on the completeness and accuracy of medical record documentation. Therefore, we interviewed patients tested for *C. difficile* by polymerase-chain reaction (PCR) to assess the completeness of diarrhea documentation and concordance between patient-reported symptoms and medical record documentation.

The study protocol was approved by the Cleveland VA Medical Center's Institutional Review Board. We conducted a prospective cohort study of 100 consecutive patients being tested for CDI during a 6-week period. A standalone commercial PCR assay was used for CDI testing.

Medical records were reviewed for documentation related to bowel habits, including baseline bowel habits and changes from baseline. Documentation of diarrhea was recorded for practitioners (ie, physicians, nurse practitioners, physician assistants) and nursing staff, including information on the frequency and consistency of stools.

Patients were interviewed in person or by telephone regarding their symptoms within 2 days of the PCR test order. Family members providing care were interviewed if patients had dementia or delirium or expressed uncertainty regarding their symptoms. Patients were first asked if they had diarrhea based on their own interpretation of what constitutes diarrhea. They then were asked about baseline bowel habits, change from baseline, the number of stools per day, and stool consistency. Patients were asked to rate their stools based on the Bristol Stool Chart with unformed stools defined as type 6 or 7.[7] Diarrhea was defined as 3 or more unformed stools in a 24-hour period. Clinically significant diarrhea was defined as 3 or more unexplained, new-onset, unformed stools in the 24-hour period.[2]

Of the 100 patients studied, 65 were inpatients and 35 were outpatients. Of the 100 tests ordered, 2 were discontinued by the laboratory due to submission of formed stool and 10 were not completed because no specimen was received. Of the 88 completed tests, 12 (14%) were positive.

Table 1 shows the results of the patient or family member interviews and the medical record review for documentation of diarrhea. Of the 100 patients, 86 stated that they had diarrhea, but only 60 met criteria for diarrhea based on presence of ≥3 unformed stools in a 24-hour period; 8 patients (13%) did not meet criteria for clinically significant diarrhea because they had a clear alternative explanation for diarrhea (eg, laxatives). Of the 40 patients not meeting criteria for diarrhea, 20 had unformed stools but <3 bowel movements per day, 6 had formed stools with increased frequency, and 14 did not have diarrhea (ie, testing ordered for inappropriate indications such as blood in stool, inflammation on colonoscopy, and abdominal pain without diarrhea).

Of the 100 patients, 10 had no medical record documentation regarding bowel habits and no indication of why the test was ordered; none met criteria for diarrhea. Practitioners documented diarrhea for 75 patients, including 51 (85%) of 60 meeting criteria for diarrhea and 24 (60%) of 40 not meeting criteria for diarrhea, but the number of bowel movements and the consistency of stools was documented in fewer than half of the patients. Of 75 patients noted to have diarrhea by practitioners, 15 (20%) did not meet criteria for diarrhea based on interviews. Nursing staff documented bowel habits less often than providers, particularly for outpatients. Only 8 (9%) of 35 outpatients had documentation of bowel habits versus 29 (45%) of 65 inpatients.

In our facility, documentation of diarrhea in the medical record was suboptimal. Overall, 10% of patients with orders for CDI testing had no medical record documentation regarding bowel habits. Furthermore, 20% of patients noted to have diarrhea by practitioners did not meet criteria for diarrhea based on patient interviews. Conversely, 15% of patients meeting criteria for diarrhea did not have documentation of diarrhea by practitioners. Practitioners and nursing staff often did not record information on the frequency and consistency of stools. Thus, efforts to improve documentation of diarrhea are needed if periodic medical record review is to be used to assess the appropriateness of CDI testing.

Our results also highlight the need to educate healthcare personnel and patients about the definition of clinically significant diarrhea. Many patients considered diarrhea to be present if a single stool was unformed or if there was an increase in the frequency of formed

Table 1. Diarrhea Assessments Based on Patient Interviews and Documentation in Medical Records for 100 Patients Tested for *Clostridioides difficile* Infection

Variable	Total (N=100), No. (%)	Meeting Criteria for Diarrhea[a] (N=60), No. (%)	Not Meeting Criteria for Diarrhea[a] (N=40), No. (%)
Patient interview			
Self-reported diarrhea[b]	86 (86)	60 (100)	26 (65)
≥3 unformed stools per day	60 (60)[c]	60 (100)	0 (0)
<3 unformed stools per day	20 (20)	0 (0)	20 (50)
Formed stool but with increased frequency	6 (6)	0 (0)	6 (15)
No diarrhea (normal stool frequency and consistency)	14 (14)	0 (0)	14 (35)
Practitioner documentation[d]			
Diarrhea	75 (75)	51 (85)	24 (60)
No. of bowel movements	46 (46)	33 (55)	13 (33)
Consistency of stools	46 (46)	32 (53)	14 (35)
Nursing documentation			
Diarrhea	18 (18)	11 (18)	7 (18)
No. of bowel movements	20 (20)	11 (18)	9 (23)
Consistency of stools	24 (24)	12 (20)	12 (30)

[a]Diarrhea defined as 3 or more unformed (Bristol scale 6 or 7) stools in a 24-hour period as determined by patient interview.[b]Patients were first asked if they had diarrhea without any comment on how diarrhea should be defined.[c]Of 60 patients with ≥3 unformed stools per day, 8 (13%) did not meet criteria for clinically significant diarrhea because they had a clear alternative explanation for diarrhea (eg, laxatives, chronic diarrhea due to chronic pancreatitis).[d]Practitioners included physicians, nurse practitioners, and physician assistants.

stools. Education of patients could empower them to participate in efforts to reduce inappropriate CDI testing.[8,9] Education of personnel to obtain information on frequency and consistency of stools could improve the accuracy of diarrhea documentation.

Our study had some limitations. Only one healthcare facility was included. At the time of the study, no interventions were in place to limit inappropriate CDI testing. The lack of documentation by nurses in outpatient settings is not unexpected. Finally, in some cases, the information on bowel movements provided by patients or family members may have been inaccurate.

In conclusion, education of personnel and patients about the definition of clinically significant diarrhea and efforts to improve documentation of diarrhea are needed to support CDI diagnostic stewardship interventions.

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Cost of personal protective equipment during the first wave of the coronavirus disease 2019 (COVID-19) pandemic

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To the Editor—As the world prepared and responded to the coronavirus disease 2019 (COVID-19) pandemic in early 2020, a rapid increase in demand for personal protective equipment (PPE) led to severe shortages worldwide. The PPE demand rose as a result of panic purchasing, hoarding, and misinterpretation of public health information.[1–3] This led to shortages so wide that the World Health Organization released several memorandums regarding 'rational use' of PPE to try and reconcile the spike in utilization of PPE as

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