Infection Control & Hospital Epidemiology (2020), **41**, 1338–1340
doi:10.1017/ice.2020.287

Concise Communication

What is the current state of patient education after *Clostridioides difficile* infection?

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Abstract

In a survey of hospitals and of patients with *Clostridioides difficile* infection (CDI), we found that most facilities had educational materials or protocols for education of CDI patients. However, approximately half of CDI patients did not recall receiving education during their admission, and knowledge deficits regarding CDI prevention were common.

(Received 2 December 2019; accepted 25 April 2020; electronically published 10 August 2020)

Interest in the empowerment of patients to serve as partners in efforts to prevent healthcare-associated infections is growing.[1,2] Engaging patients to remind providers about hand hygiene can positively influence personnel hand hygiene performance.[3,4] Similar reminders might be helpful in ensuring timely removal of devices such as urinary catheters.[5] Patients can also take personal actions such as hand hygiene to reduce their risk for acquisition and transmission of pathogens.[6]

Clostridioides difficile infection (CDI) is an attractive target for patient empowerment initiatives. CDI patients experience reduced quality of life and are motivated to avoid recurrence and to prevent transmission.[7–9] Patients can influence certain modifiable risk factors for CDI. For example, systemic antibiotic therapy, the major risk factor for recurrence, is often prescribed unnecessarily.[7] Engagement of CDI patients in antimicrobial stewardship has been successful in reducing inappropriate antibiotic use after fecal microbiota transplantation.[7] Patients can also potentially reduce their risk for recurrence and transmission through actions such as hand washing, bathing, and environmental disinfection.[10] To develop effective strategies for engagement of CDI patients, more information on the current state of CDI patient education is needed.

Methods

Multicenter survey on CDI patient education

We conducted a multicenter survey to assess education of CDI patients during hospital admissions. We distributed a written survey to infection prevention staff at a convenience sample of 18 hospitals. The survey included questions related to CDI-specific patient education, including the availability and type of educational materials, protocols for providing education to patients, and the level of confidence that the education was provided to and understood by patients.

Survey of CDI patients

At 3 of the surveyed hospitals where the authors are based, study personnel surveyed convenience samples of inpatients with CDI regarding CDI education and knowledge. The hospitals included a 600-bed tertiary-care hospital and 102-bed and 215-bed Veterans' Affairs (VA) hospitals; none of the facilities were experiencing CDI outbreaks. A verbal survey was completed either in person after completion of hospital discharge instructions or by telephone within 3 days after discharge. The 25-item survey included questions regarding prior CDI episodes, education provided during the current episode, type of education provided (verbal, written materials, other), self-directed education (eg, internet search), and impact on quality of life. The survey also included questions assessing knowledge of the effectiveness of different methods of hand hygiene and cleaning products and factors affecting risk of recurrence. The surveys were conducted as quality improvement projects were approved by the infection prevention and/or antimicrobial stewardship programs at each facility.

Results

Multicenter survey on CDI patient education

All 18 hospitals completed the survey, including 7 VA hospitals, 8 tertiary-care non-VA hospitals, and 3 community hospitals. Of the 18 facilities completing the survey, 13 (72%) reported having written educational materials on CDI available for CDI patients. Also, 12 facilities (67%) noted that verbal education

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Cite this article: DeBenedictus CM, *et al.* (2020). What is the current state of patient education after *Clostridioides difficile* infection?. *Infection Control & Hospital Epidemiology*, 41: 1338–1340, https://doi.org/10.1017/ice.2020.287

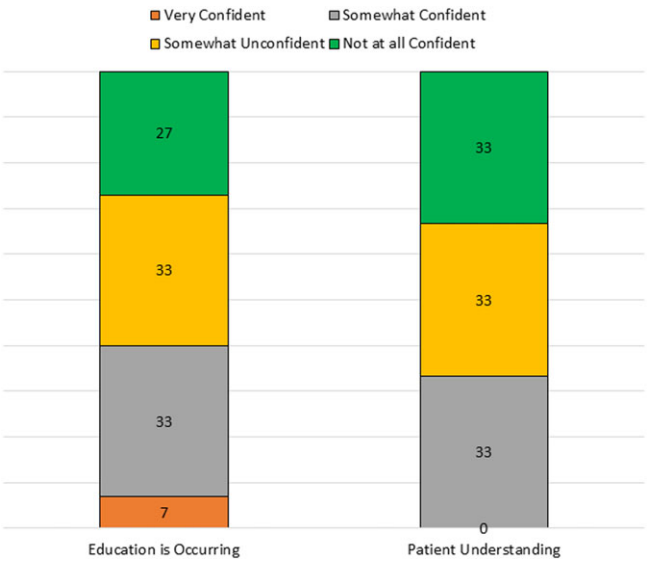

Fig. 1. Confidence of infection prevention personnel regarding education of patients with *Clostridioides difficile* infection.

was provided: 8 by nurses and 4 by physicians. Furthermore, 12 of the 18 facilities (67%) reported that education was provided on the day of CDI diagnosis.

Figure 1 shows the facility survey responses regarding CDI education. Of the 18 respondents, 10 (56%) lacked confidence that education was routinely provided. Also, 12 (67%) lacked confidence that patients and families understand the education.

Survey of CDI patients

Of 57 CDI patients approached, 48 (84%) completed the survey, of whom 40 (83%) were men and 36 (75%) were reporting their initial episode. The average age of the respondents was 67 years (range, 42–89). Of 12 patients with prior episodes, 6 (50%) reported that their primary care provider had discussed their CDI diagnosis, including discussion regarding what to do if antibiotics were needed in the future.

O the 48 patients respondents, 27 (56%) reported receiving education about CDI while in the hospital: 6 (12%) were given written information, 23 (48%) received verbal information, and 2 patients received written and verbal information. Also, 16 patients (33%) reported researching CDI, with most accessing online sources. Figure 2 shows the results for questions regarding the level of agreement with specific statements regarding the type of education received and impact on quality of life. Approximately half of patients agreed that they were given information on how to clean their hands and home, but only 13% and 8% received information on what to do if given a prescription for an antibiotic or whether they should take medications that lower stomach acid, respectively. In addition, 60% reported that the infection affected their quality of life. Specific comments on the impact of CDI on quality of life included being unable to leave their house due to diarrhea and fear of getting CDI again.

For the assessment of knowledge regarding CDI prevention, 37 of 48 (77%) patients correctly chose soap and water for hand hygiene; 9 (19%) chose hand sanitizer, and 2 (4%) chose a bleach-containing product. Also, 37 patients (77%) correctly chose bleach for bathroom cleaning; 8 (17%) chose soap and water; 2 (4%) chose antiseptic wipes; and 1 did not answer. Furthermore, 19 patients (40%) correctly identified antibiotic treatment as the greatest risk for recurrence; 24 (50%) chose not keeping themselves clean; 2 (4%) chose not taking a probiotic; and 3 (6%) replied that they did not know.

Discussion

Most of the hospitals we surveyed had educational materials or protocols for education of CDI patients. However, infection prevention staff often lacked confidence that education was being provided to or understood by patients. Approximately half of CDI patients did not recall receiving education about CDI during their admission, and deficits in knowledge regarding CDI prevention were common. Only 40% of patients chose antibiotic treatment as the greatest risk for recurrence, and only 10% received information on what to do if they were prescribed antibiotics.

Our findings highlight several important issues related to CDI education. First, healthcare facilities may need to evaluate the effectiveness of their CDI education materials to determine how often this is actually provided and how often it is understood by patients. Second, CDI patient education should include a focus on the risk of future antibiotic use. Antimicrobial stewardship interventions that include education and empowerment of CDI patients to work with providers might be effective in reducing unnecessary antibiotic use and CDI recurrence.[7] Finally, primary care providers should be included in efforts to improve CDI education. Approximately half of patients with recurrent CDI had discussed CDI with their primary care provider.

Our study has several limitations. First, a convenience sample of hospitals primarily from the Midwest was surveyed. Second, the surveys of patients only included 3 hospitals, the number of patients surveyed was small, and most participants were men. We did not compare responses among the 3 facilities. Third, our study population did not include long-term care facility residents, outpatients, or pediatric patients. Fourth, patients were surveyed up to 3 days after discharge and some may have forgotten education provided in the hospital. Finally, we did not examine the content of the educational information provided to patients.

In summary, our findings suggest that there is a need for improvement in education of CDI patients. Further studies are needed to identify effective strategies for patient education. Opportunities exist for antimicrobial stewardship and infection prevention programs to engage patients in efforts to reduce the risks for transmission and for recurrence of infection.

https://doi.org/10.1017/ice.2020.287 Published online by Cambridge University Press

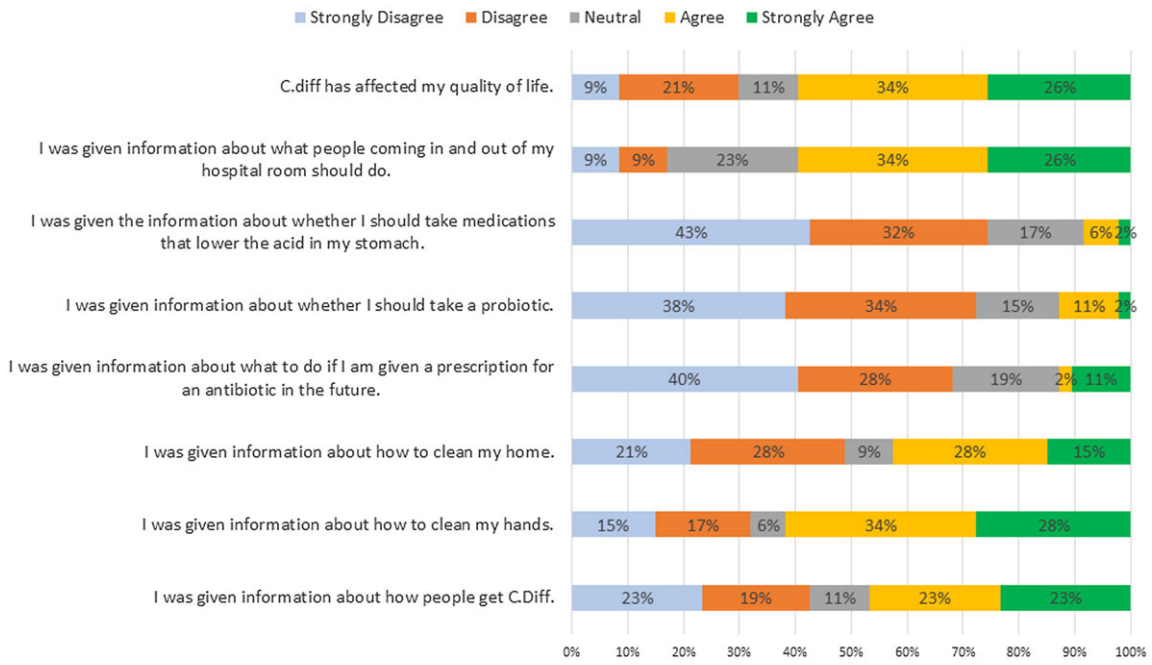

Fig. 2. Level of agreement of patients with *Clostridioides difficile* infection (CDI) with statements regarding CDI education and impact on quality of life.

Acknowledgments. We thank the infection prevention staff and patients who participated in the study and Sarah L. Krein, PhD, RN, for helpful input on the survey questions.

Financial support. This work did was supported by the Department of Veterans' Affairs.

Conflicts of interest. All authors report no potential conflicts relevant to this article.

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