Medical Online Independent Education Significantly Improves Physician Competence Regarding the First-Line Management of *Clostridioides difficile* Infection

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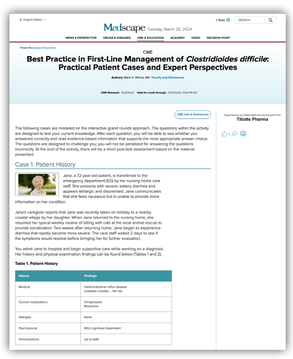
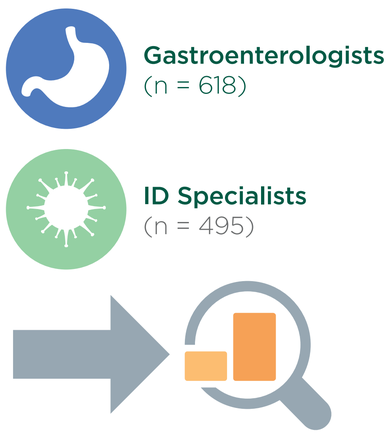
BACKGROUND

Clostridioides difficile infection (CDI) is the most common cause of infectious diarrhea in hospitals with an increasing prevalence in community-based care settings.[1] Optimizing antibiotic therapy selection and using antimicrobial stewardship (AMS) principles and new guideline recommendations can lessen the frequency of recurrence and antimicrobial resistance, and improve overall patient outcomes.[2] Here we assess if independent online medical education can improve gastroenterologists' and infectious disease (ID) specialists' competence in the selection of antibiotic treatments and the use of AMS principles for the first-line management of patients with CDI.

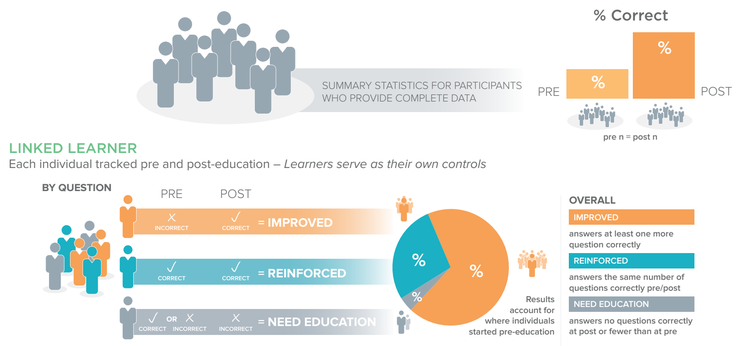
METHODS

This independent medical education activity was a text-based patient case module featuring 2 patients who were experiencing primary CDI and requiring first-line therapy.





How to Read the Linked Learner Assessment

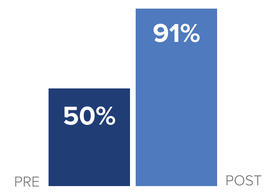


RESULTS

OVERALL

Gastroenterologists (n = 121)

AGGREGATED RESULTS



COHEN'S d

1.37

EFFECT SIZE	EDUCATIONAL IMPACT
< .20	MODEST
.20 - .49	SMALL
.5 - .79	MODERATE
≥0.80	LARGE

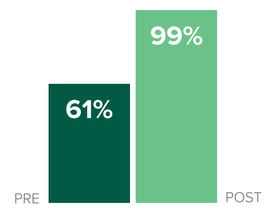
CHI-SQUARE TEST

***P* <.001**

SIGNIFICANCE (*P* <.05)

ID Specialists (n = 111)

AGGREGATED RESULTS



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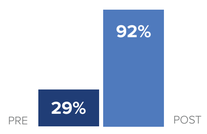
QUESTION 1 RESULTS

The question led to large and significant knowledge gains for both specialties with a 55% and 64% increase in knowledge for ID physicians and Gastroenterologists, respectively. Very few physicians require further education following this activity regarding recommended guideline therapies.

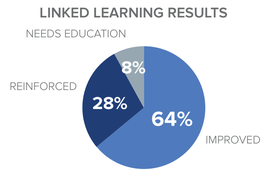
QUESTION: Jane, a 72-year-old patient, is transferred to the emergency department by the care team at her nursing home. She presents with severe watery diarrhea and appears lethargic and disoriented. She feels nauseous but is unable to provide more information on her condition. Enzyme immunoassay (EIA) for glutamate dehydrogenase (GDH) and toxins confirm the presence of toxigenic C difficile *in her stool sample. Bloodwork shows a white blood cell (WBC) count of 16,000 cells/iL. Based on most new guidelines, which treatment should be initiated for this patient?* (Correct Answer: Fidaxomicin)

Gastroenterologists (n = 121)

AGGREGATED RESULTS



LINKED LEARNING RESULTS



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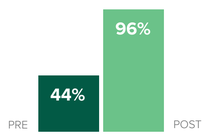
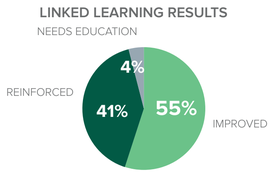
AGGREGATED RESULTS



LINKED LEARNING RESULTS



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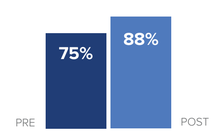
QUESTION 2 RESULTS

This question revealed both groups of physicians have high baseline knowledge regarding the selection of antibiotics when economic resources and access to are limited. Despite this the education led to significant knowledge gains for both groups.

QUESTION: A 52-year-old patient presents to the ED reporting severe watery diarrhea nearly every hour for the past day. He underwent orthopedic surgery the previous week for which he was given a single prophylactic perioperative dose of an intravenous cephalosporin antibiotic. He has a mild fever and appears dehydrated based on a pinch test. C difficile test results are positive; however, due to an ongoing C difficile outbreak, the hospital administration advises clinicians to reserve first-line treatment for high risk patients because more cases are anticipated in coming days. Based on the guidelines and the hospital directive, what agent should this patient be treated with? (Correct Answer: Vancomycin)

Gastroenterologists (n = 121)

AGGREGATED RESULTS



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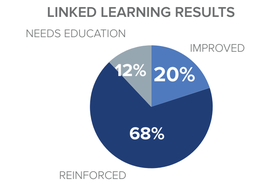

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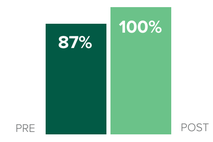

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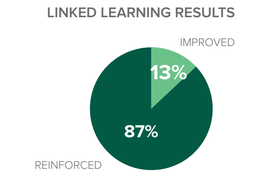

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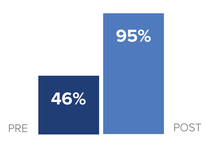
QUESTION 3 RESULTS

The knowledge gains regarding optimal use AMS principles in the management of patients with CDI were significant and similar for both groups at 49% for ID physicians and 50% for gastroenterologists.

QUESTION: After outbreaks of CDI and vancomycin-resistant enterococci (VRE), your hospital orders a review of practice to assess the factors that may have contributed. You are appointed to a task force dedicated to developing a facility-wide AMS program. What step should be taken to prevent future CDI outbreaks and reduce development of antimicrobial resistance? (Correct Answer: Increased auditing of antibiotic prescriptions)

Gastroenterologists (n = 121)

AGGREGATED RESULTS



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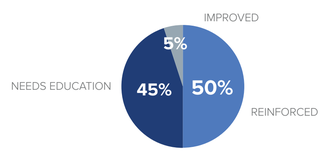

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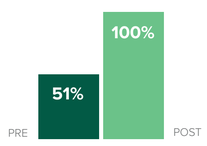
ID Specialists (n = 111)

AGGREGATED RESULTS



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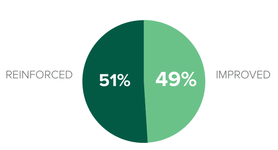

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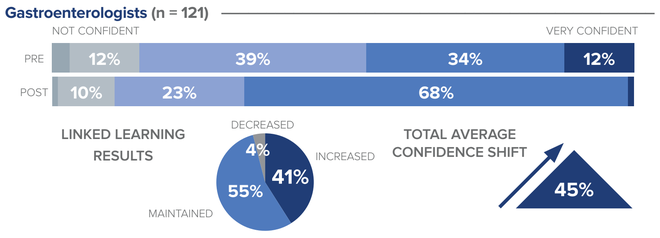
CONFIDENCE ANALYSIS

41% of gastroenterologists and 43% ID specialists had a measurable improvement in confidence regarding their ability to select the most appropriate antibiotic for the management of primary CDI. Following education, the confidence shift for gastroenterologists (45%) and ID physicians was high (42%).

QUESTION: How confident are you right now in your ability to select the most appropriate antibiotic for primary CDI? (Select ranking from 1 [Not confident] to 5 [Very confident])

Gastroenterologists (n = 121)



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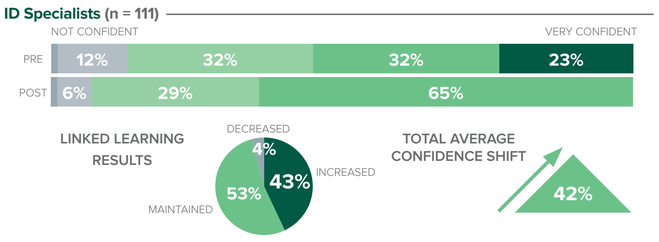

CONCLUSIONS

- The prevention of CDI recurrence in patients with primary CDI is a clinical challenge and requires optimised antibiotic selection
- To minimise the possibility of resistance, antimicrobial stewardship principles should be applied in patients with CDI as they have been shown to significantly reduce the incidence of infections and colonisation with antibiotic-resistant bacteria and C difficile infections (*P* < .001)[3]
- Online medical education significantly improved physician competence and confidence regarding their ability to select the most appropriate therapy and use AMS approaches in the first-line management of patients with primary CDI
- These findings highlight the importance of independent medical education to facilitate best practice in antibiotic selection and the importance of integrating AMS principles when managing patients with primary CDI.

ACKNOWLEDGEMENTS

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For more information, contact:

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REFERENCES

1. Czepiel J, Dróżdż M, Pituch H, et al. *Eur J Clin Microbiol Infect Dis.* 2019;38:1211-1221.
2. Merino E, Salavert M. Rev Esp Quimioter. 2022;35 *Suppl 3(Suppl 3)*:97-101.
3. Baur D, Gladstone BP, Burkert F, et al. *Lancet Infect Dis*. 2017;17:990-1001.

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