

# Gut Guardians: Harnessing Probiotic Drinks as a Shield Against *C. diff* Invaders

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## Background

Patients with *Clostridioides difficile* (*C. diff*) infection (CDI) had the most significant death risk across all disease types during the Covid-19 pandemic. We observed increase in inpatient CDI above the Centers for Medicare & Medicaid Services (CMS) benchmarks in 2021 and 2022. Persons receiving antibiotics are 7 to 10 times more likely to develop CDI. The American Gastroenterology Association (AGA) recommends use of 6 probiotics strains to prevent CDI in patients on antibiotics. However, this practice has not been fully implemented or studied in a hospital setting.

## Learning Objectives

- Explain how CDI negatively impacts outcomes in hospitalized patients.
- Discuss the effects of antibiotics in the gastrointestinal tract.
- Describe the potential benefits of probiotics on gastrointestinal flora.

## Methods

The project was conducted as a prospective evidence-based quality improvement project on 11 units with high *C. diff* rate from April to September 2023. The intervention was a commercially available probiotic drink with 5 of the 6 probiotic strains recommended by AGA. Patients on day 1 or 2 of first antibiotic treatment were offered the probiotic drink twice daily. Patients on dialysis, tube feed, NPO, clear liquids and immunocompromised were excluded. Patients were educated to continue the probiotic drink during the antibiotic therapy and 7 days post completion. Results were favorable, so this practice was expanded house wide in October 2023. We tracked occurrence of CDI, patient tolerance and doses of the probiotic drink, length of stay, and number of antibiotics administered.

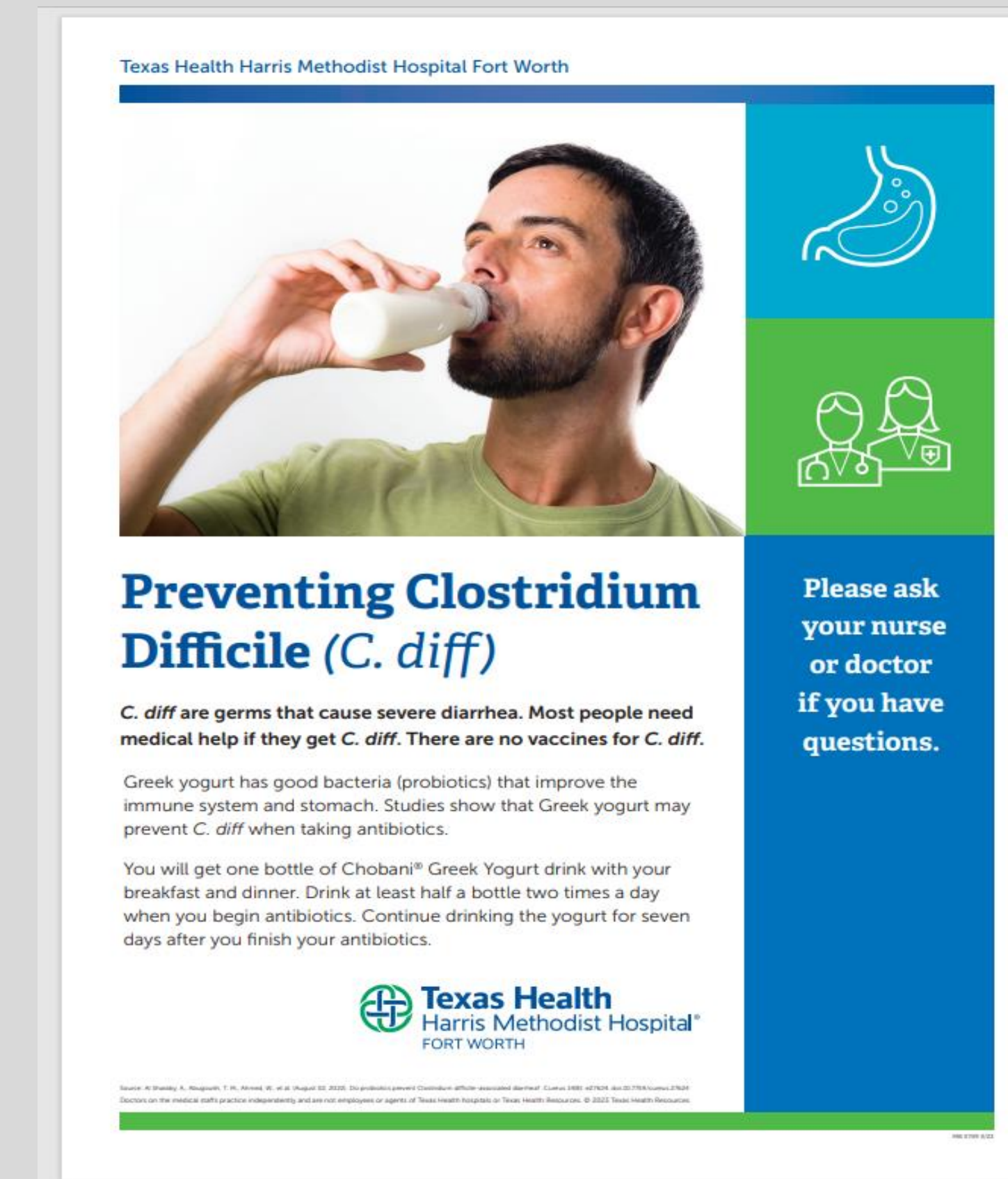
## Probiotic Strains per AGA Guidelines

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Probiotics strains per AGA guidelines	Activia (93mL)	Chobani Greek Yogurt (207mL)	Lifeway Kefir (946mL)	Danactive (93mL)	Lala Foods (207mL)
Saccharomyces boulardii					
Lactobacillus acidophilus (CL1285)		X	X		X
Lactobacillus casei (LBC80R)		X	X	X	
Lactobacillus delbrueckii subsp bulgaricus	X	X		X	X
Bifidobacterium bifidum		X			X
Streptococcus salivarius subsp thermophilus	X	X		X	X



## Patient Education



## Results

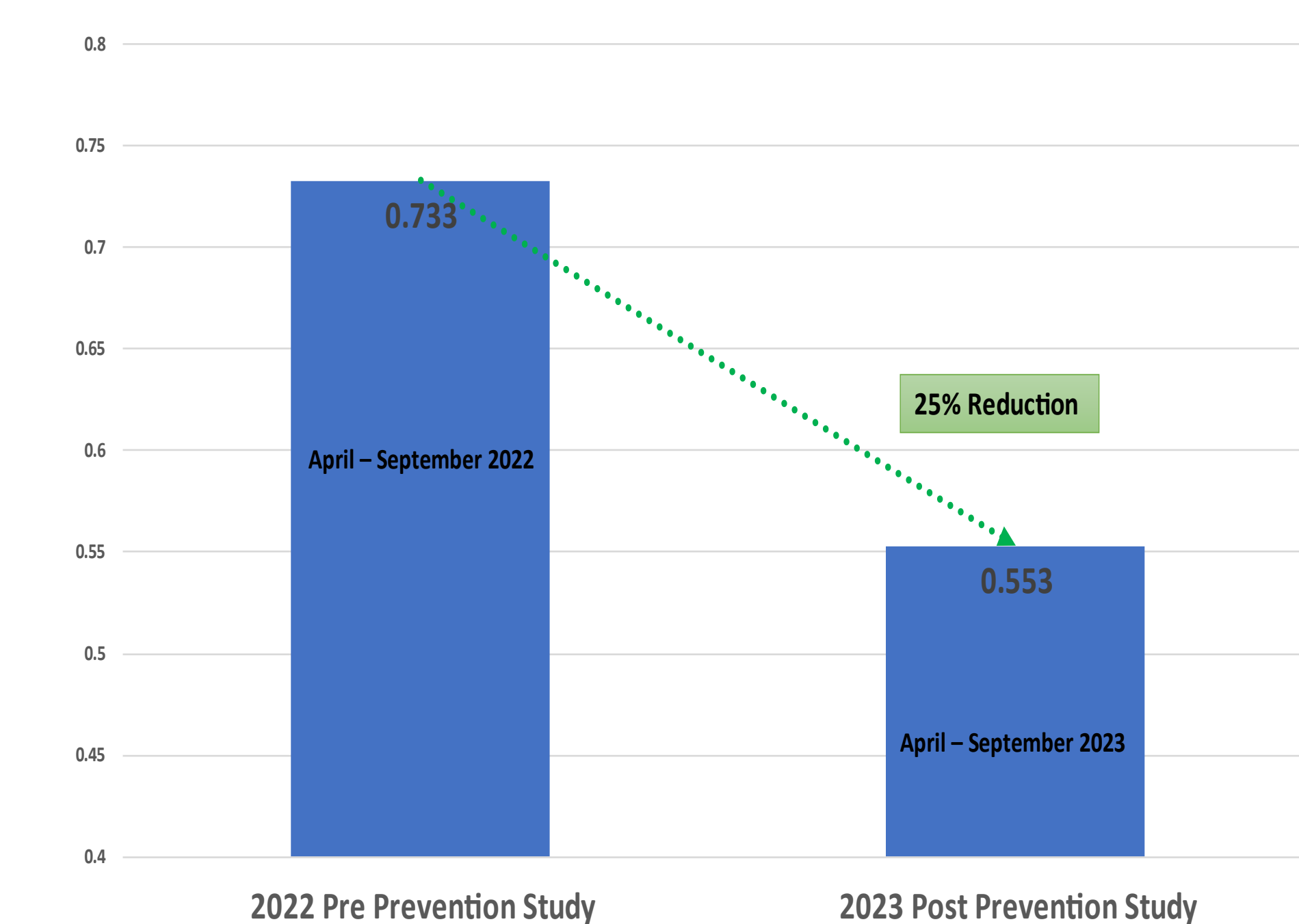
We enrolled 905 patients to this project. None of the patients that received the probiotic developed hospital-acquired (HAI) CDI. We noted a 25% decrease in the total HAI CDI standardized infection ratio (SIR) in the 2nd and 3rd quarters of 2023 compared to the same period in 2022. Overall CDI SIR decreased 30% in 2023 in comparison to 2022. Patients tolerated the probiotic drink with few to no complaints. Length of stay averaged 6 days with patients receiving an average of 2 types of antibiotics.

## Conclusions

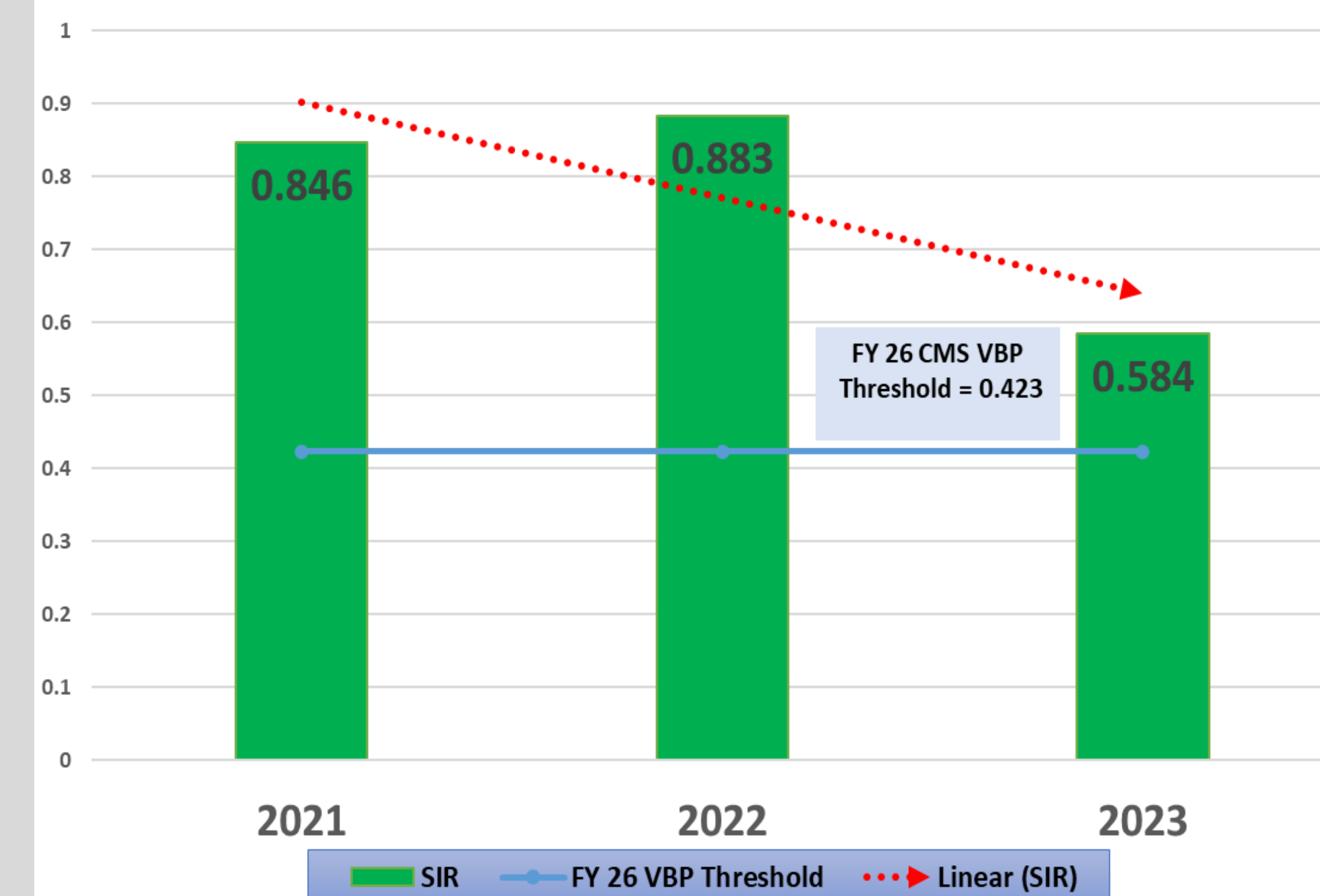
We find the probiotic drink effective in reducing CDI in hospitalized patients on antibiotics. Probiotic drink is low cost, easy to implement, and well-tolerated. Based on the positive results, the practice continues throughout the hospital while continuing to monitor CDI SIR.

## Data Analysis

C diff HAI SIR – Pre and Post Prevention Study  
SIR – Standardized Infection Ratio



C diff HAI SIR Compared to CMS Value Based Purchasing Threshold 2021-2023



## References

- Han L, Shi H, Li Y, et al. Excess Deaths of Gastrointestinal, Liver, and Pancreatic Diseases During the COVID-19 Pandemic in the United States. *Int J Public Health* 68:1606305. doi:10.3389/ijph.2023.1606305
- Grace L Su, Cynthia W. Ko, et al. AGA Clinical Guidelines on the Role of Probiotics in the Management of Gastrointestinal Disorders. *Gastroenterology* 2020; 159:697-705
- <https://www.cdc.gov/cdiff/risk.html#:~:text=People%20are%207%20to%2010,diff%20infection.>

## Acknowledgements

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## Disclosures

We have nothing to disclose.

