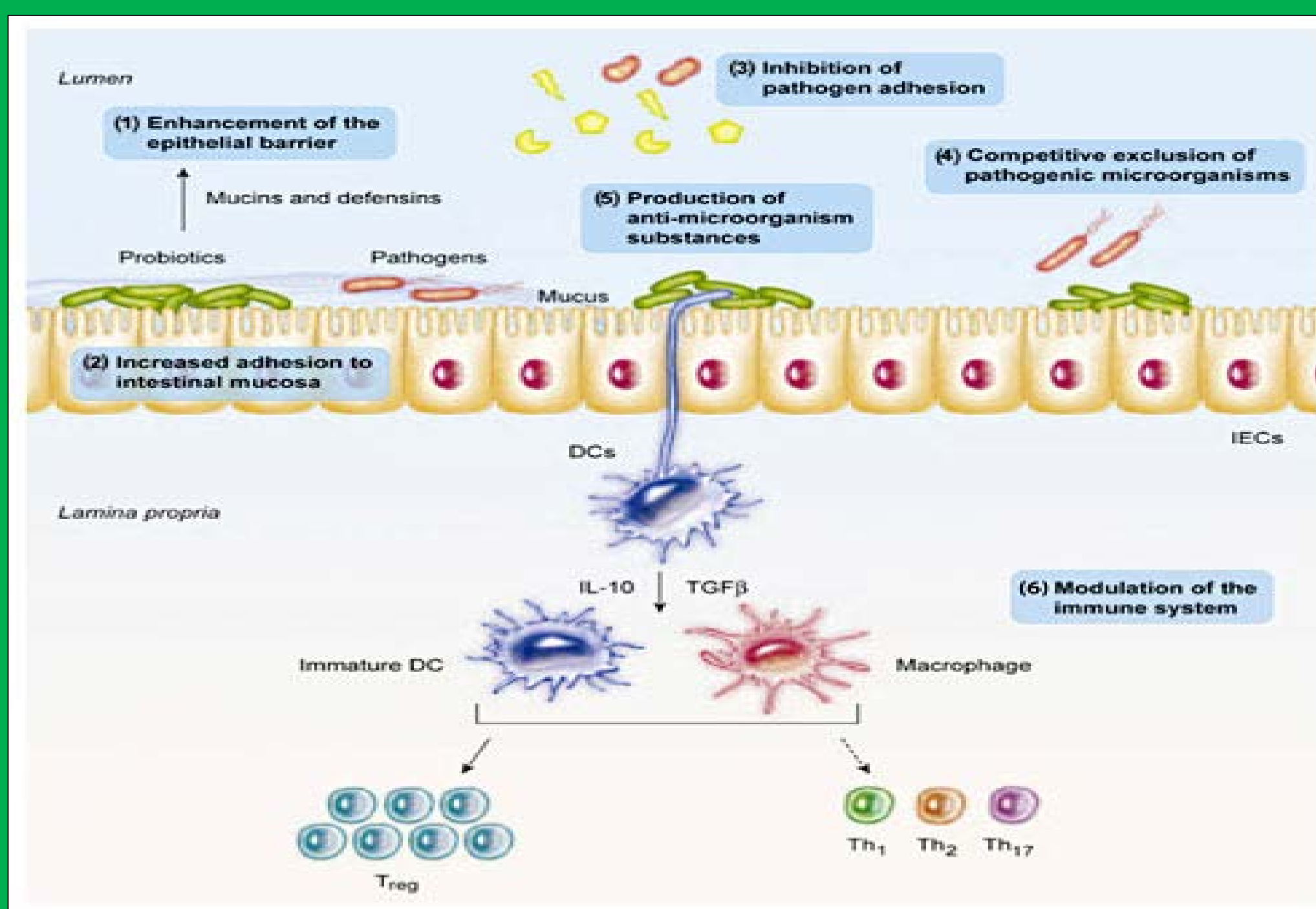


## Background

- Lactobacilli are gram-positive, facultative anaerobic rods that live in the human gastrointestinal and genitourinary tracts.<sup>1</sup>
- Lactobacillus* bacteremia is a rare type of infection, and there is limited data currently available to assess its significance.
- While studies on this topic are limited, previously proposed risk factors related to *Lactobacillus* bacteremia include several underlying diseases, compromised immune defenses, significant exposure to antibiotic therapy ineffective in treating lactobacilli, and prior surgery.<sup>1</sup>
- Another potential risk factor to consider is the use of *Lactobacillus*-containing probiotics.

## Probiotic Mechanism of Action



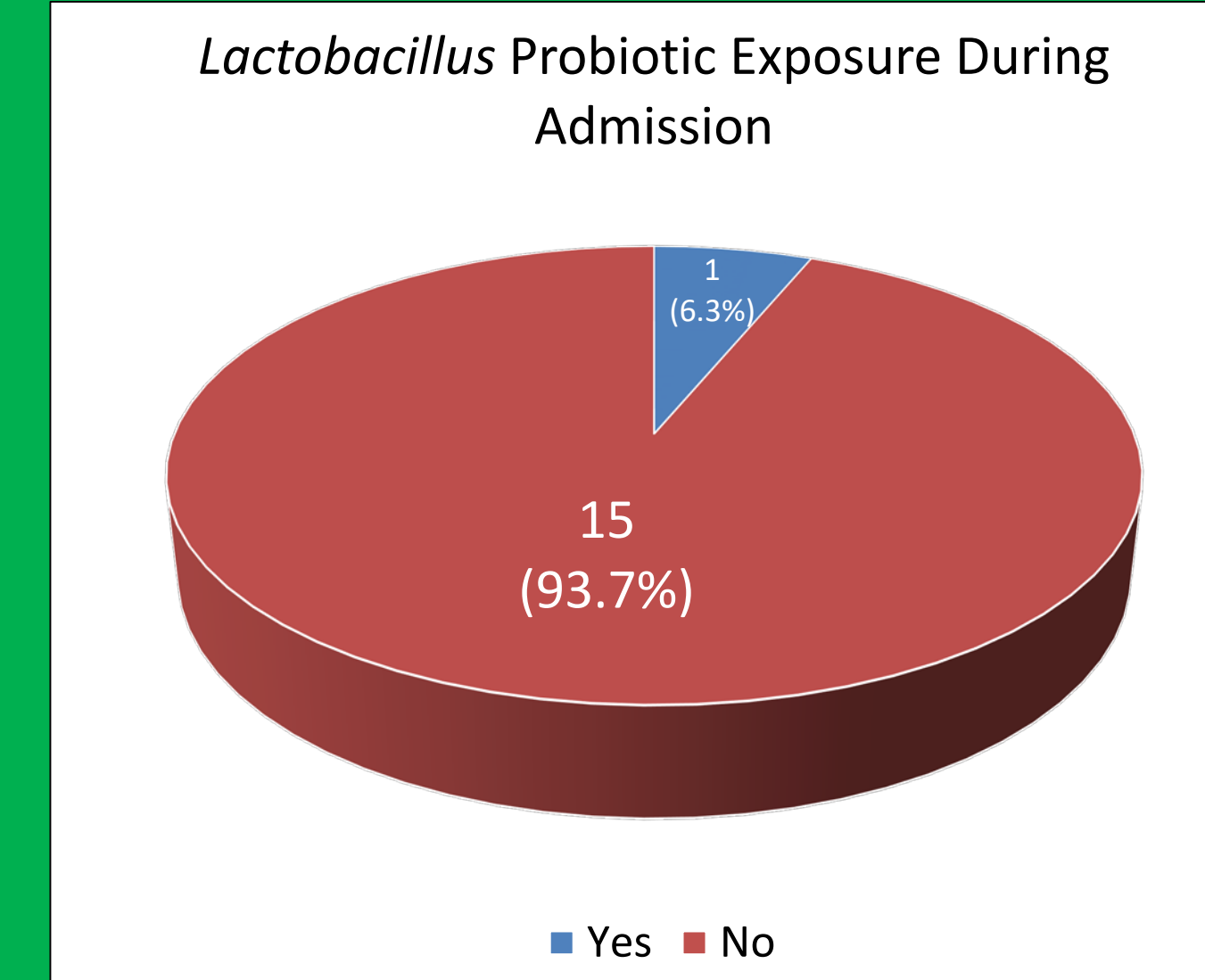
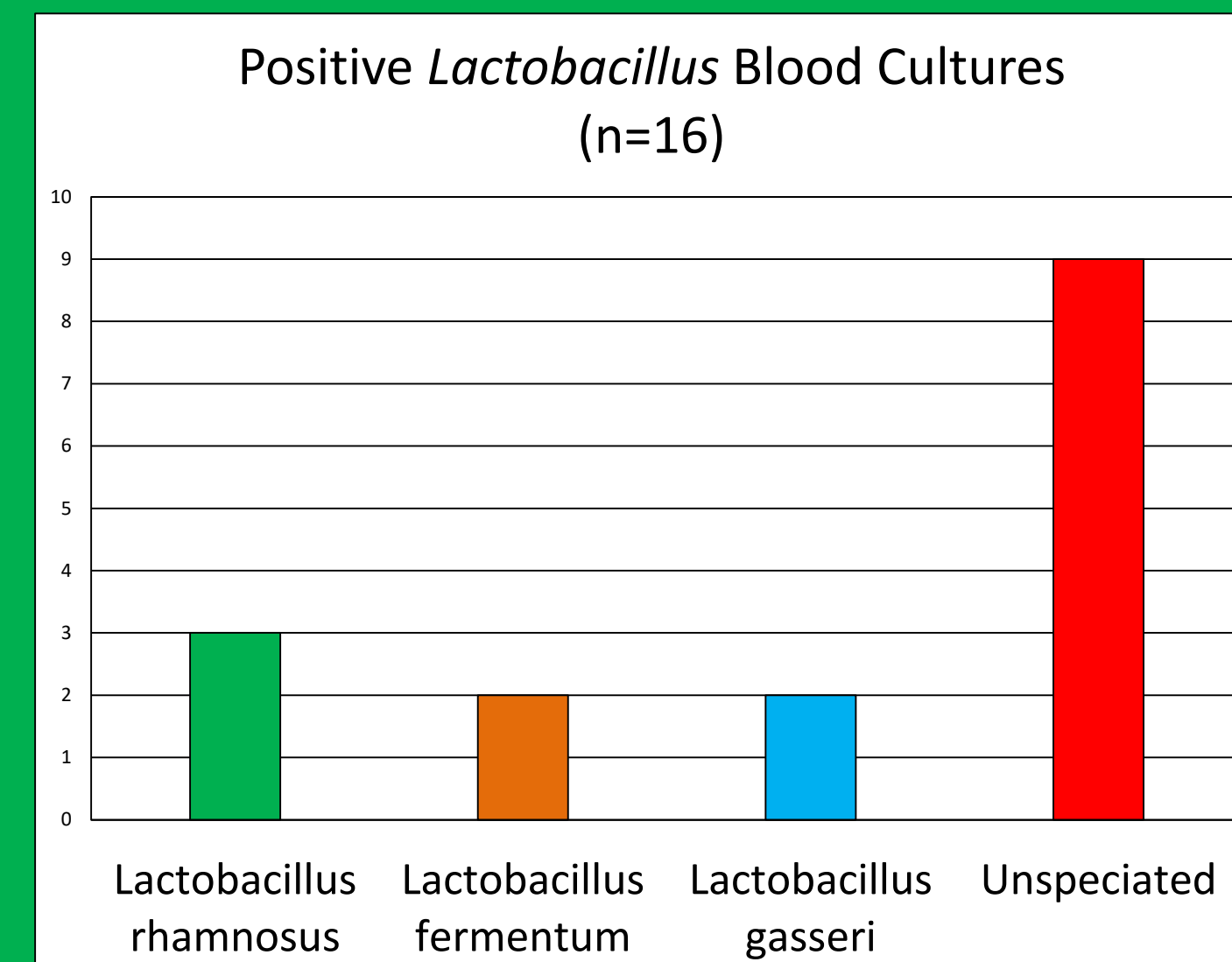
## Purpose

To identify potential risk factors for the development of *Lactobacillus* bacteremia.

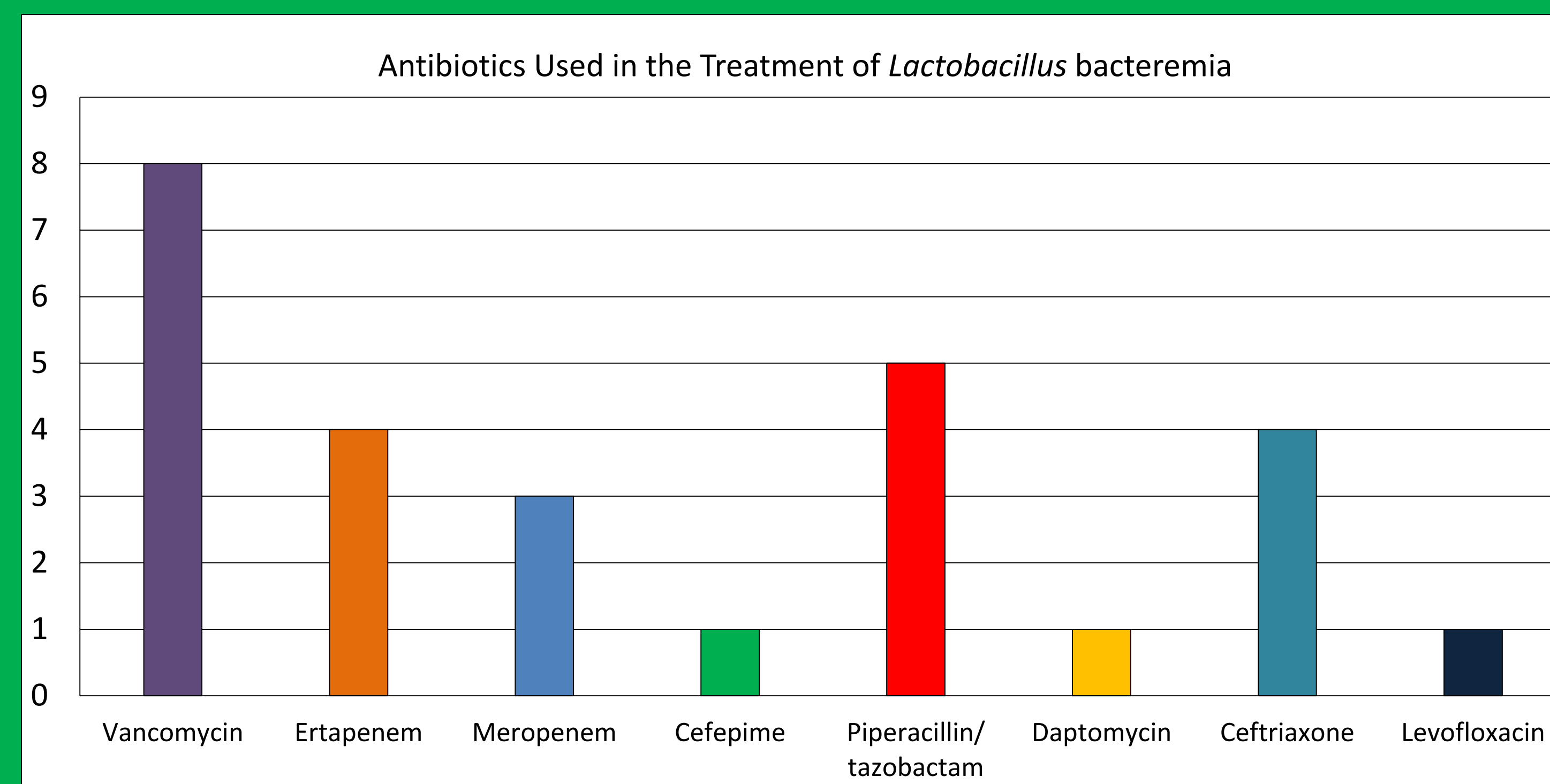
## Methods

- This study was a retrospective chart review that consisted of patients with blood cultures positive for *Lactobacillus* species from June 2016 to March 2019
- Baseline demographics and patient characteristics were collected.
- Endpoints assessed include treatment received, exposure to *Lactobacillus* probiotics, recent broad-spectrum antibiotic use, acid-suppressive or immunosuppressive therapy, recent hospitalizations, and comorbidities that consisted of gastrointestinal (GI) disease, liver disease, and cancer.
- Descriptive statistics were used to describe the population characteristics.
- Sums of each category were also used to identify trends.

## Results



Risk Factor	Count
Recent Hospitalization (within 3 months)	11
History of GI Surgery	9
Broad Spectrum Antibiotics Prior	8
Concomitant Acid-Suppressive Therapy	8
History of GI Disease	7
Central Lines or Foley Catheters	5
Coexisting <i>Candida</i> Infection	5
Concomitant Liver Disease	2
Concomitant Immunosuppressive Therapy	2
Concomitant Cancer	1



Culture #1 ( <i>Lactobacillus fermentum</i> )	Culture #2 ( <i>Lactobacillus rhamnosus</i> )	Culture #3 ( <i>Lactobacillus rhamnosus</i> )
Penicillin – Susceptible	Penicillin – Susceptible	Penicillin – Susceptible
Meropenem – Susceptible	Meropenem – Resistant	Meropenem – Intermediate

## Discussion

- Patients age 61 on average and consisted of eight males and eight females.
- No patients had prior exposure to *Lactobacillus* probiotics outside of the hospital, and only one (6.3%) received *Lactobacillus* probiotics during hospital admission. This lack of incidence is in line with other studies, and it suggests that probiotic exposure is not a major risk factor *Lactobacillus* bacteremia.<sup>1</sup>
- Of the variables assessed, recent hospitalization was the most prevalent at 68.8%. History of GI surgery, broad spectrum antibiotic use, and history of GI disease also appeared to be common among this study population. The results of this study were similar to other studies that have assessed these risk factors.<sup>1</sup>
- One unique risk factor that our study looked at was the use of acid-suppressive therapy during admission. Eight of the patients evaluated (50%) were on concomitant acid suppressive therapy at the time of the positive blood culture.
- Another unique find in our study was that five patients (31.3%) also had a positive culture for concomitant *Candida* infection at the same time as their positive blood culture for *Lactobacillus*.
- Regarding treatment, 12 patients (75%) had a repeat blood culture performed after receiving antimicrobial treatment, with only one of these patients having a recurrent positive test. While the treatment received varied among different patients, commonly used antibiotics resulting in negative blood cultures included vancomycin, ceftriaxone, piperacillin/tazobactam, and carbapenems

## Conclusions

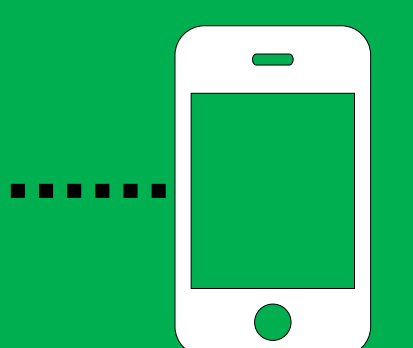
- The use of *Lactobacillus* probiotics does not appear to be a significant factor leading to the eventual development of *Lactobacillus* bacteremia.
- Recent hospitalization within the previous three months, prior broad-spectrum antibiotic use, concomitant use of acid-suppressive therapy, and a history of GI surgery or GI disease were common in patients with *Lactobacillus* bacteremia.

## Future Directions

- In this study, there was no standardized method for treating cases of positive *Lactobacillus* blood cultures, and treatment regimens varied from patient to patient. Further research should be done in order to develop a consistent and effective approach when using antibiotics to treat *Lactobacillus* bacteremia.

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- \*The authors of this presentation have nothing to disclose in relation to this presentation



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