### Background

- *Clostridium difficile*, or *C. Diff*, is a bacterial strain that can cause colitis, resulting in severe, potentially life-threatening diarrhea.
- The U.S. is estimated to have 500,000 C. Diff cases annually, and the cost of treatment is estimated to exceed $4.8 billion per year.
- The greatest risk factor identified for C. Diff Infection (CDI) is disruption to the GI flora caused by antibiotic therapy.
- Certain antibiotics and duration of therapy seem to affect this risk.
- Other risk factors include age > 65, certain disease states (chronic kidney disease, diabetes), proton pump inhibitors, and exposure to healthcare settings.
- Oral vancomycin 125mg once or twice daily is standard prophylaxis for high-risk patients.
- There is some evidence supporting the use of certain probiotic strains for C. Diff prophylaxis, but more research is needed to determine how effective these products are.

### Purpose

To determine which, if any, probiotic strains are effective for C. Diff prophylaxis, and how these strains compare with traditional vancomycin prophylaxis strategies.

### Methods

- Setting: University of Kansas Medical Center
- Retrospective cohort study, with data between 2017-2020
- Data extracted from HERON (Healthcare Enterprise Repository for Ontological Narration)
- A searchable database of de-identified patient care records
- Inclusion criteria:
  - Exposed to antibiotics during hospital stay (clindamycin, cephalosporins, penicillins, etc.)
  - Taken oral vancomycin or probiotics
  - Over 18 years old
- Exclusion criteria:
  - Under 18 years old
  - No exposure to antibiotics during stay
- Data extracted included:
  - Patient demographics
  - Date of first C. diff diagnoses and number of recurrent infections
  - Name, dose, formulation, rout of administration, number of doses given, start date, and end date for antibiotics, PPIs, and probiotics received while inpatient
  - Analyses run using SPSS v.27, Microsoft Excel
  - The University of Kansas Medical Center IRB approved the study

### Preliminary Results

#### Table 1: Patient Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>PO Vancomycin Group (n=13317)</th>
<th>Probiotics Group (n=458)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y, median (range)</td>
<td>62 (18-103)</td>
<td>66 (19-100)</td>
</tr>
<tr>
<td>Male gender %</td>
<td>6974 (52%)</td>
<td>183 (40%)</td>
</tr>
<tr>
<td>Race (N, %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>9773 (73%)</td>
<td>375 (82%)</td>
</tr>
<tr>
<td>African American</td>
<td>2123 (16%)</td>
<td>55 (12%)</td>
</tr>
<tr>
<td>Other</td>
<td>1427 (11%)</td>
<td>30 (7%)</td>
</tr>
<tr>
<td>Medical Documentation (N, %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any documented CDI</td>
<td>1375 (10%)</td>
<td>92 (20%)</td>
</tr>
<tr>
<td>CDI specified as recurrent</td>
<td>187 (1%)</td>
<td>15 (3%)</td>
</tr>
<tr>
<td>Exposure to high-risk antibiotics (lincomides, fluoroquinolones, cephalosporins, carbapenems)</td>
<td>12486 (94%)</td>
<td>444 (97%)</td>
</tr>
<tr>
<td>Exposure to moderate risk antibiotics (Penicillins)</td>
<td>10544 (79%)</td>
<td>366 (80%)</td>
</tr>
<tr>
<td>Exposure to proton pump inhibitors</td>
<td>9677 (73%)</td>
<td>368 (80%)</td>
</tr>
</tbody>
</table>

#### Figure 1: Bacterial Ingredients of Used Probiotics

- **Lactobacillus combo (unspecified)**: 27 (6%)
- **Saccharomyces boulardii**: 64 (14%)
- **Lactobacillus rhamnosus**: 288 (63%)
- **Lactobacillus acidophilus**: 315 (69%)

### Conclusions

Pending

### Limitations

- No access to outpatient data
- Data pulled from a single center
- Patient comorbidities not captured in data
- Not generalizable to pediatric population
- Data on low-risk antibiotics (macrolides, sulfamethoxazole/trimethoprim, tetracyclines, IV vancomycin) was not included

### Next Steps

- Evaluate prevention effectiveness of various probiotic products
- Compare vancomycin prophylaxis to successful probiotics
- Analyze for other possible factors contributing to CDI risk

### References


### Disclosures

The authors have no conflicts of interest to disclose.