

## Introduction

- Clostridioides difficile* is an anaerobic, gram positive, toxin and spore-forming bacterial pathogen responsible for 453,000 cases and 29,000 deaths reported to the CDC in 2013. Incidence among children is increasing.<sup>1,2</sup>
- With the introduction of gastrointestinal multiplex PCR (mPCR) tests, clinicians have received an increased number of positive tests for *C. difficile* given the ease of syndromic testing.
- Patients who test positive via mPCR may not have a positive toxin assay which would be indicative of true infection and antibiotics may not be needed in these cases.
- Studies have shown that children have a higher rate of being colonized by toxigenic *C. difficile* with no associated illness and therefore they may be at increased risk of unneeded antibiotic exposure.<sup>2-5</sup>

## Objectives

The goal of this study was to assess the symptoms of patients who test positive for *C. difficile* and determine the downstream impact on antibiotic use at a pediatric hospital.

## Methods

This study was retrospective chart review of 461 patients identified via the electronic health record based on those who had an order placed for the gastrointestinal (GI) mPCR or *C. difficile* PCR test.

### Inclusion and Exclusion Criteria

- Patients with an order placed for *C. difficile* PCR or GI mPCR from May 2018 to March 2020

### Data Collection

- Patients had their symptoms categorized at the time of diagnosis and were collected via retrospective chart review by one investigator
- Symptoms collected included fever, emesis, abdominal pain, and diarrhea

### Outcomes

- Primary: The difference in symptoms between cytotoxin positive and negative patients
- Secondary: The difference in co-pathogen detection on mPCR and *C. difficile* antibiotic days of therapy

### Statistics

- A T-test and ANOVA test were used when appropriate

## Results

Figure 1. *Clostridioides difficile* Cytotoxin Positive vs Negative by Age of Patient

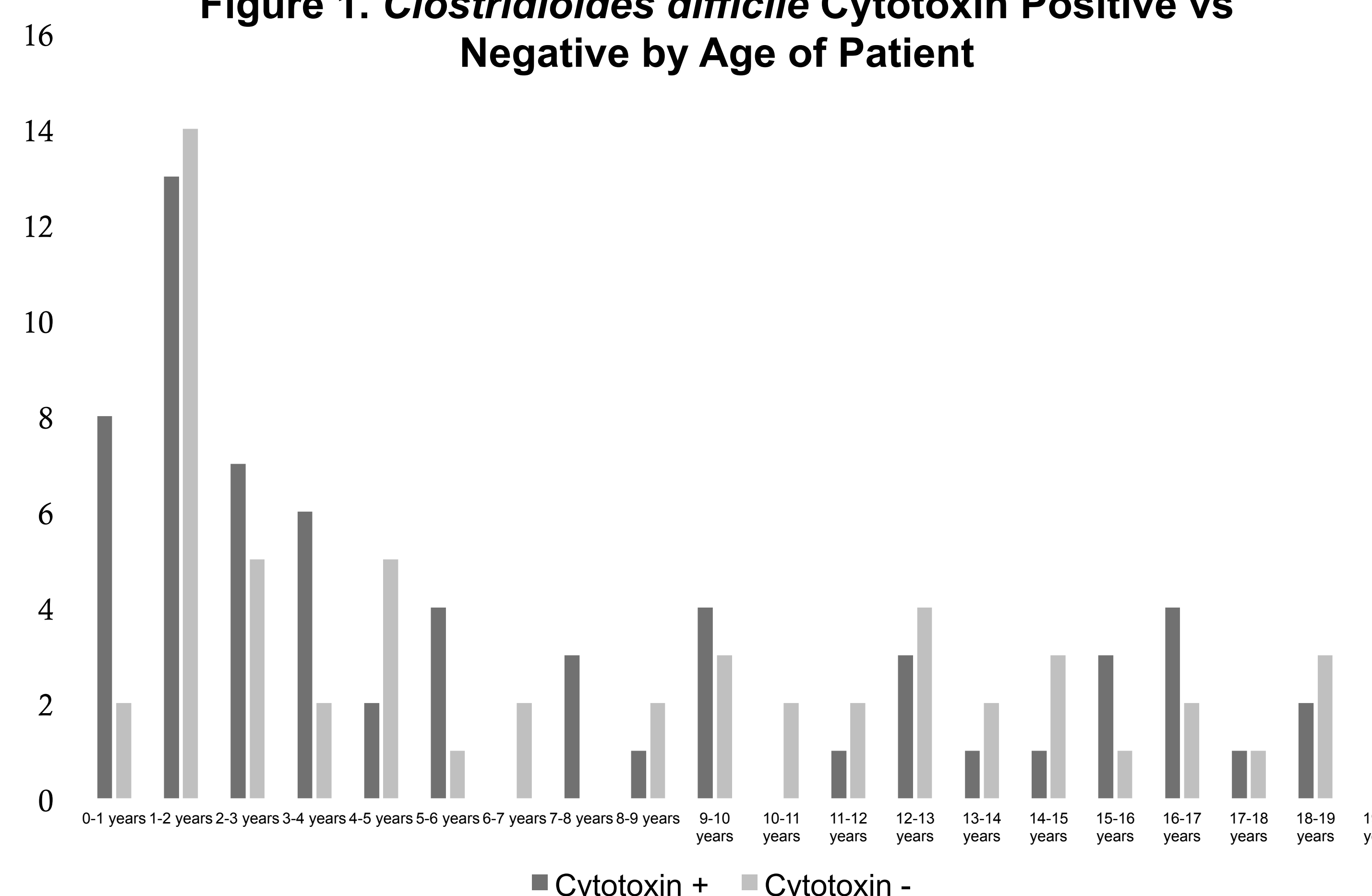


Figure 2. Empiric Treatment in *C. difficile* PCR Positive, Cytotoxin Negative Patients

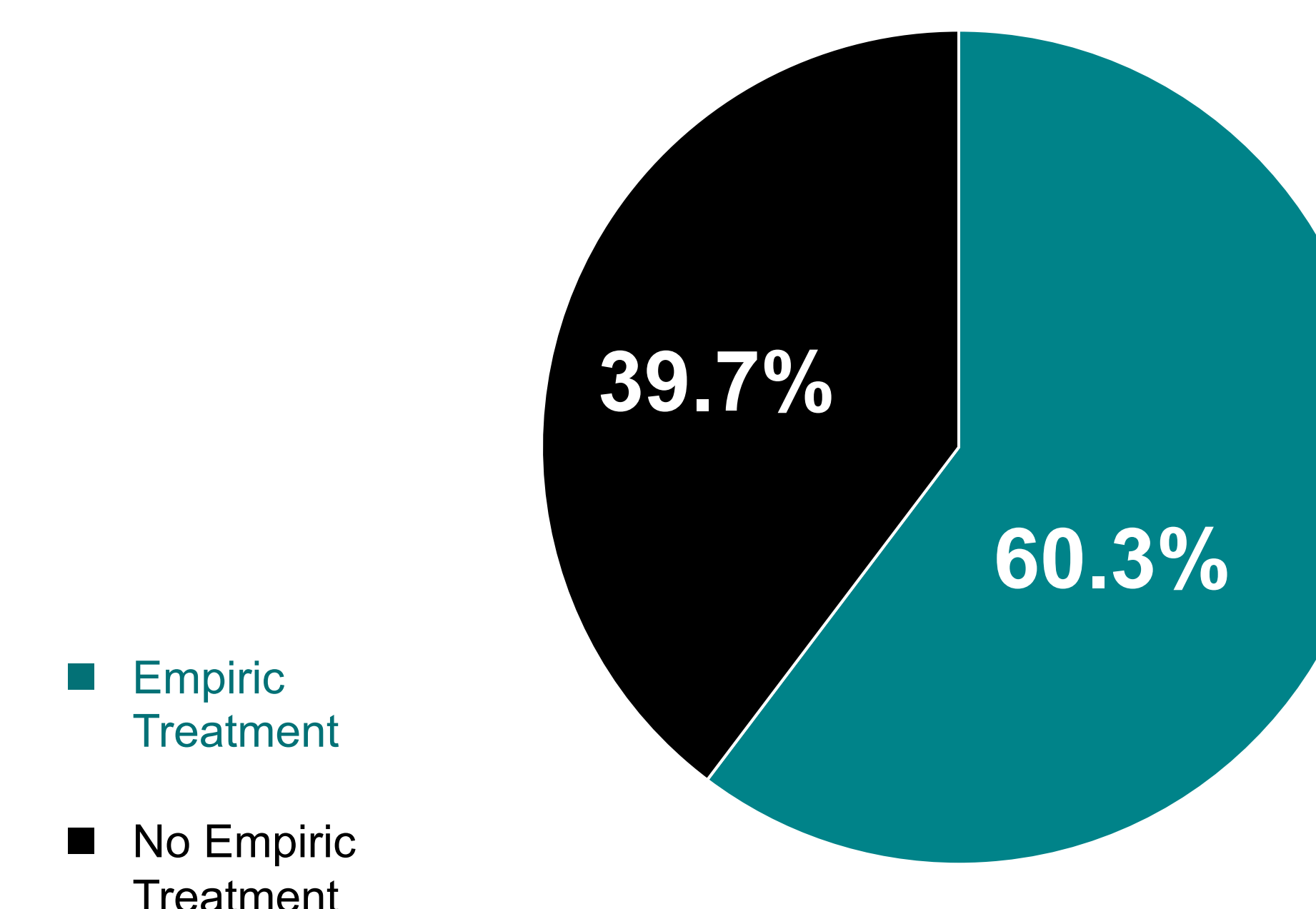


Table 1: Comparison of *Clostridioides difficile* Cytotoxin Production by Symptom and Characteristic

Parameter	Cytotoxin Positive (n=64)	Cytotoxin Negative (n=58)	P-Value < 0.05
Positive mPCR Results for <i>C. difficile</i> (%)	8.0	9.8	No
Fever (%)	42.2	44.8	No
Emesis (%)	37.5	41.4	No
Abdominal Pain (%)	31.3	37.9	No
Diarrhea (%)	75.0	81.0	No
Average Number of Symptoms (#)	1.86 (SE: 0.11)	2.05 (SE: 0.14)	No
Concurrent GI Pathogen on mPCR(%)	29.7	37.8	No
WBC (#)	9.93 (SE: 0.98)	9.56 (SE: 1.07)	No

GI – Gastrointestinal; WBC – white blood cell

Table 2. Difference in Antibiotic Use in Cytotoxin Positive vs Cytotoxin Negative Patients

Parameter	Cytotoxin Positive (n=64)	Cytotoxin Negative (n=58)	P-Value < 0.05
Empiric Treatment Received (%)	76.5	60.3	Yes
Length of Treatment (days)	11 (SE: 0.86)	7.5 (SE: 0.84)	Yes

SE – Standard error

## Limitations

- Past medical history, except recent antibiotic exposure, was not collected which may confound symptoms
- Small number of cytotoxin test performed compared to mPCR and *C. difficile* PCR tests performed

## Conclusion

- Our results show a significant amount of antibiotic use for patients with cytotoxin negative *C. difficile*
- No differences in symptomatology were detected between cytotoxin positive and negative patients
- Diagnostic stewardship of mPCR tests may be needed to effectively impact this unneeded antibiotic use, specifically the duration of antibiotic therapy

## References

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