Table 1: CD Toxin B PCR Ct Values Compared with FGP Result Release, Co-Pathogen Detection, and EIA Results

	Median Ct		Median Ct	*P*-value
FGP-CD+ result released (*n* = 1)	20.64	FGP-CD+ result not released (*n* = 47)	28.77	NS
FGP-CD+ only (*n* = 24)	26.83	Co-pathogen (*n* = 24)	29.34	NS
EIA toxin+ (*n* = 14)	23.23	EIA toxin− (*n* = 34)	31.11	0.0005

Disclosures. **A. Leber**, Nationwide Children's Hospital: Research Contractor, Research support.

1092. Tuning Down *Clostridioides difficile* PCR Sensitivity Reduces Treatment for *C. difficile* Infection in Toxin-Negative Patients With No Increase in Adverse Outcomes

Matthew Hitchcock, MD, MPH[1]; Marisa Holubar, MD, MS[1]; Lucy Tompkins, MD, PhD[1] and Niaz Banaei, MD[1,2,3]; [1]Department of Medicine, Division of Infectious Diseases and Geographic Medicine, Stanford University School of Medicine, Stanford, California, [2]Department of Pathology, Stanford University School of Medicine, Stanford, California, [3]Clinical Microbiology Laboratory, Stanford University Medical Center, Palo Alto, California

Session: 132. Diarrhea Diagnostic Dilemmas
Friday, October 5, 2018: 12:30 PM

Background. Studies have shown that toxin detection identifies those who require treatment for *C. difficile* infection (CDI) and free toxin can be predicted with high negative predictive value from PCR cycle threshold (CT). CT-toxin was introduced at our institution in two phases: from October 2016 to October 2017, CT-toxin was reported with the PCR result (split reporting) and CDI therapy was discouraged if CT-toxin was negative (PCR+/CTtox−). Interim analysis showed that CDI treatment had no effect on outcomes in these CTtox− patients, so starting November 2017, only CT-toxin was reported. Outcomes in PCR+/CTtox− patients treated during split reporting and untreated during the toxin-only period are detailed here.

Methods. Patients tested from October 2016 to February. 2018 with a positive Xpert *tcdB* PCR (Cepheid, Sunnyvale, CA) and CTtox− result were included. Clinical data were collected by retrospective chart review in the split reporting period and prospective review in the toxin-only period and analyzed using SPSS at $\alpha = 0.01$.

Results. Of 186 unique PCR+/CTtox- patients during split reporting, 99 (53%) were treated, compared with 6 (12%, $n = 51$) in the toxin-only period ($P < 0.001$). In comparing treated patients during split reporting to untreated patients during toxin-only reporting ($n = 45$), there were no significant differences in age, sex, prior antibiotic use, CDI in the previous 6 months, Charlson Comorbidity Index, patient location, immune status, or data at testing, including WBC count, creatinine, albumin, and stools/day. There were no cases of fulminant CDI in either group and no difference in outcomes (table).

Conclusion. Reporting of CT-toxin alone significantly reduced treatment for CDI compared with split reporting in CTtox− patients with no increase in adverse outcomes in short-term follow-up. Further study is needed to confirm these findings in a larger cohort.

Table: Outcomes in Patients With PCR+/CTtox− Result by Treatment Status and Reporting Period. Categorical Variables Are Denoted as n (%) and Continuous Variables as Mean [Standard Deviation]

Outcomes	Split Reporting Treated (*n* = 99)	CT-Toxin Only Reporting Untreated (*n* = 45)	*P*-value
Days to diarrhea resolution (<3 stools/day)	2.8 [1.9]	2.2 [2.1]	0.2
CTtox+ CDI within 8 weeks	8 (8.1)	4 (8.9)	0.9
30-Day all-cause mortality	9 (9.1)	3 (6.7)	0.8

Disclosures. **All authors:** No reported disclosures.

1093. Single Molecule Counting Technology for Ultrasensitive Quantification of *Clostridium difficile* Toxins A and B

Phoebe Katzenbach, BA; Gipshu Dave, MS; Ali Mukherjee, PhD; John Todd, PhD; Jeffrey Bishop, PhD; Johanna Sandlund, MD, PhD and Joel Estis, MS; Singulex, Inc., Alameda, California

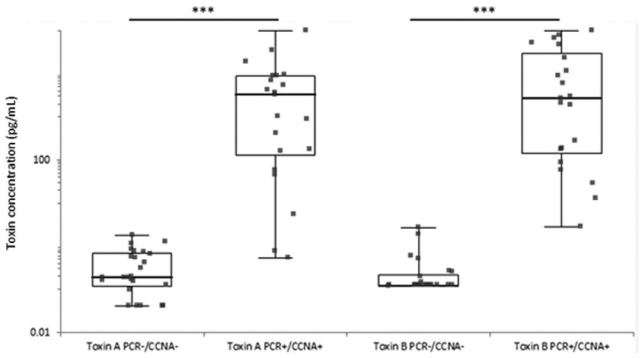
Session: 132. Diarrhea Diagnostic Dilemmas
Friday, October 5, 2018: 12:30 PM

Background. *Clostridium difficile*, a spore-forming, anaerobic, Gram-positive bacterium, is the leading cause of nosocomial diarrhea. *C. difficile* infection (CDI) is mediated by two toxins, A (TcdA) and B (TcdB), and the role of each toxin in CDI pathogenesis remains unclear. Many assays used in CDI diagnostics, such as most NAATs and cell cytotoxicity neutralization assay (CCNA), detect presence of only *tcdB* or TcdB. In this study, an ultrasensitive immunoassay (UIA) powered by Single Molecule Counting technology was used for quantification of TcdA and TcdB, to assess toxin dynamics in CDI.

Methods. Banked samples from 46 patients with suspected CDI were tested with PCR (BD MAX™ Cdiff Assay) and CCNA, and TcdA and TcdB were quantified using the UIA (tested in triplicate). The limits of detection (LoDs) for the TcdA and TcdB assays are 0.04 and 0.12 pg/mL, respectively.

Results. There were 21 PCR+/CCNA+ and 25 PCR−/CCNA− samples. Both toxins were measured above LoD in all PCR+/CCNA+ samples, ranging up to 100,000 pg/mL. The average CV for the PCR+/CCNA+ samples was 9%. The median TcdA concentrations in PCR−/CCNA− and PCR+/CCNA+ samples were 0.19 pg/mL (IQR 0.12–0.67) and 3,301 pg/mL (125–8,737), respectively. The median TcdB concentrations in PCR−/CCNA− and PCR+/CCNA+ samples were 0.12 pg/mL (0.12–0.21) and 2,690 pg/mL (145–30,307), respectively. In the PCR+/CCNA+ samples, TcdA was one or more logs higher than TcdB in two samples, one or more logs lower than TcdB in six samples, and within one log of TcdB in 13 samples. In one sample (4.8% of PCR+/CCNA+ samples), TcdA was at moderately high concentration while TcdB was below a provisional cutoff, indicating that only TcdA was expressed. There was a significant correlation between TcdA and TcdB (Spearman $r = 0.753$).

Conclusion. The UIA allows for toxin quantification over a concentration range of ≥5 logs, suggesting that the quantitative TcdA and TcdB assays could be of value in CDI characterization and clinical decision making. The TcdA/TcdB ratio varied, and toxin quantification could be a useful tool in further understanding their individual roles in CDI. The TcdA concentration was not lower than TcdB (trended higher), indicating that detection of *tcdB* or TcdB alone may not be sufficient for accurate CDI diagnostics.



Disclosures. **P. Katzenbach**, Singulex, Inc.: Employee, Salary. **G. Dave**, Singulex, Inc.: Employee, Salary. **A. Mukherjee**, Singulex, Inc.: Employee, Salary. **J. Todd**, Singulex, Inc.: Employee, Salary. **J. Bishop**, Singulex, Inc.: Employee, Salary. **J. Sandlund**, Singulex, Inc.: Employee, Salary. **J. Estis**, Singulex, Inc.: Employee, Salary.

1094. Performance of Toxin Enzyme Immunoassays and PCR Cycle Threshold for Differentiating *Clostridium difficile* Infection From Colonization in Children With Diarrhea

Aakash Balaji, BS[1]; Robyn Espinosa, MPH[2]; Kathleen Todd, BS, MT(ASCP)[3]; Kerry Steed, Research Assistant[4] and Larry Kociolek, MD, MSCI[5,6]; [1]Northwestern University Feinberg School of Medicine, Chicago, Illinois, [2]Ann & Robert H. Lurie Children's Hospital of Chica, Chicago, Illinois, [3]Microbiology, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois, [4]Northwestern University, Chicago, Illinois, [5]Pediatric Infectious Diseases, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, Illinois, [6]Pediatrics, Northwestern University Feinberg School of Medicine, Chicago, Illinois

Session: 132. Diarrhea Diagnostic Dilemmas
Friday, October 5, 2018: 12:30 PM

Background. *Clostridium difficile* colonization is common in children. PCR does not distinguish infection (CDI) from colonization. Toxin enzyme immunoassay (EIA) and PCR cycle threshold (Ct) may predict CDI in PCR+ adults, but assay performance in children is poorly understood.

Methods. Stools from children aged 2–21 years with laboratory-identified (labID) CDI (*tcdB* PCR+; GeneXpert) underwent: toxin EIA (QUIK CHEK Complete [QCC] and Immunocard [IC]); cell culture cytotoxicity neutralization assay (CCCNA); and *C. difficile* stool culture (Cx). Children were determined to have clinical CDI (cCDI) by chart review and/or parent communication if all were noted: at least three unformed stools (Bristol type 5–7) in 24 hours; response to CDI treatment within 5 days; and no other likely diarrheal etiology. EIA and PCR Ct performance were measured for various reference standards (RefStd) based on stool assay results and/or cCDI classification.

Results. A total of 253 PCR+ stools were included. All stools underwent QCC; 218 (86%) were quantity sufficient for IC. Discordant EIA results occurred in 19/218 (8.7%) stools. Table 1 lists EIA sensitivity (Sn), EIA specificity (Sp), and median PCR Ct for each RefStd. Figure 1 shows the receiver operating characteristic (ROC) curve for PCR Ct to identify PCR+/CCCNA+/cCDI+ children (area under curve = 0.76). The difference between sensitivity (71%) and specificity (72%) was minimized at Ct < 23.5.

Conclusion. Only a minority of PCR+ children meets strict clinical and laboratory CDI criteria. More stringent CDI definitions are associated with increasing toxin EIA Sn and lower PCR Ct (i.e., greater stool *C. difficile* inoculum). However, both toxin EIA and PCR Ct perform suboptimally as stand-alone tests to distinguish CDI from colonization in PCR+ children.