Evaluation of Fecal Biomarkers for Monitoring Antibiotic Treatment of a Patient Infected with *Clostridium difficile*

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**RESULTS II**

- Monitoring GDH and lactoferrin may be useful as indicators for effectiveness of treatment in patients with CDI.
- Identifying a response to treatment may improve patient outcomes and result in better antibiotic stewardship.
- Future studies are needed to determine if monitoring response to treatment will decrease the risk for relapse.

**INTRODUCTION**

The current, widespread epidemic of *C. difficile* diarrhea affects most often the elderly, the already ill and those in hospitals. Exposure to antibiotics is an important risk factor. After diagnosis the progression from treatment, with ironically yet further antibiotics, to recovery can be straightforward or it may be complicated by the reappearance of symptoms. Since about one in five patients have a symptomatic relapse and as serial relapses can occur, relapses are potentially expensive as well as devastating to the individuals affected. The speedy identification of treated patients still at risk of relapse would allow physicians an earlier and possibly wider choice of treatments, ranging from observation and stopping the antibiotic that produced the condition in the first instance, to the use of vancomycin over metronidazole, or fidaxomicin over both, conserving the effectiveness of these important drugs.

**AIM**

To evaluate fecal biomarkers for responses to treatment using serial stool samples.

**METHODS**

**Patient history** - A 66 year old male developed *C. difficile* infection (CDI) following antibiotic treatment for oral infection. After treatment failure with metronidazole, the patient began vancomycin followed by 1 month of rifaximin and symptoms resolved. One month following rifaximin treatment, the patient suffered a clinical relapse with diarrhea and abdominal pain and began treatment with Dificid®.

**Stool specimens** - A total of 33 stool samples were collected from a patient with CDI before, during and after antibiotic treatment. The study was approved by TechLab’s IRB and the patient gave his informed consent to the study. Bristol Stool Chart was used to report consistency. Toxins A & B were determined using the TECHLAB TOX-B (tissue culture) and ABII tests as instructed by the Package Inserts and results were reported as Yes/No and with optical densities at 450/620nm (Duo OD), respectively.

Fecal lactoferrin was measured quantitatively using the IBD-SCAN as instructed by the Package Insert and results are reported as µg/mL stool. Glutamate dehydrogenase (GDH) was determined by the TECHLAB CHEK-60 test according to the Package Insert and quantitatively (ng/mL) using a modified TECHLAB CHEK-60 Test.

**Bacterial culture** - Ethanol spore selection with CCFA was used to identify culture-positive specimens. Isolates were subcultured to BHI and grown for 72h.

Ribotyping analysis - DNA was extracted from broth cultures using the QIAamp Mini Kit (Qiagen, Valencia, CA) and results were compared to a standard ribotype library.

**RESULTS I**

**RESULTS II**

**CONCLUSIONS**

- Monitoring GDH and lactoferrin may be useful as indicators for effectiveness of treatment in patients with CDI.
- Identifying a response to treatment may improve patient outcomes and result in better antibiotic stewardship.
- Future studies are needed to determine if monitoring response to treatment will decrease the risk for relapse.