

Addition of Reflexive Test for *Clostridium difficile*

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Currently the clinical microbiology lab tests stools for the presence of *C. difficile* using a combined Glutamate Dehydrogenase (GDH) and toxin assay. GDH is a common antigen produced by all vegetative *C. difficile* and this assay has a very high negative predictive value (99%). Thus, a negative GDH and toxin effectively rules out CDI. The test should not be repeated unless several days have passed and the clinical syndrome has changed. The current assay also has a very high positive predictive value (99%) when both the GDH and toxin are positive. Patients with this result have *C. difficile* infection (CDI) and should be appropriately treated and isolated. The interpretation of a positive GDH and negative toxin assay is difficult as this may represent either non-toxigenic *C. difficile* colonization or a false-negative toxin assay.

In mid-September the clinical microbiology lab implemented a DNA based test (Illumigene™) that is performed on all GDH positive, toxin negative stools. This new assay uses loop-mediated isothermal DNA amplification technology to detect the presence of the Pathogenicity Locus (genetic sequence which carries the toxin gene) which is present in all strains of toxigenic *C. difficile*. Stool specimens that have a GDH positive, toxin negative result will be automatically tested using this test and a physician order is not needed. Patients with a positive confirmatory DNA test result are considered to have toxigenic *C. difficile* and require contact isolation. Treatment of patients with a positive confirmatory DNA test result is warranted if symptoms of CDI are present. Patients with a negative confirmatory DNA test result do not require isolation, nor is treatment for CDI recommended.

Clostridium difficile Assay Results

GDH Result	Toxin Assay Result	Interpretation	Recommendations
Negative	Negative	No <i>C. difficile</i> present	No further action. Repeat testing is discouraged.
Positive	Positive	Toxigenic <i>C. difficile</i> is present	Utilize contact isolation precautions and begin therapy according to management algorithm. Repeat testing is discouraged.
Positive	Negative	Non-toxigenic <i>C. difficile</i> or false-neg toxin assay	DNA confirmatory test for toxin performed. Interpret based on this result. Repeat testing is discouraged.
Negative	Positive	Indeterminate	Repeat test x 1.

GDH positive, toxin negative:

- **DNA Confirmatory Test (+)**
 - *C. difficile* with toxin gene is present
 - Isolate and treat as appropriate if symptoms are present
- **DNA Confirmatory Test (-)**
 - 2 possibilities: 1) *C. difficile* is present and does not have the toxin gene **or** 2) false positive GDH
 - No treatment or isolation indicated

More information on *C. difficile* testing and treatment can be found on the Antimicrobial Stewardship Website (www.nebraskamed.com/asp).