LabMed Report

A publication of:
Munson Healthcare Laboratories
Grand Traverse Pathology, PC
Physicians Diagnostic Support Service

IN THIS ISSUE: Clostridium difficile testing

June 2017 Vol. 9

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Beginning July 3, 2017, the Munson Medical Center laboratory will perform *C. difficile* testing using a two-step algorithm. The initial screening test will be a combination glutamate dehydrogenase (GDH) and *C. difficile* toxin antigen assay.

Patients who test GDH positive and toxin negative will be reflexively tested using our current *C. difficile* PCR. Because the GDH assay detects non toxigenic *C. difficile*, the PCR will determine whether a patient is colonized with toxigenic or non toxigenic *C. difficile.* Clinically, a patient with a GDH-positive, toxin-negative result who is PCR-positive for toxigenic *C. difficile* is likely to be colonized but not infected by C. difficile, though there is potential for low-level or waxing-and-waning disease (especially under treatment for *C. difficile*, though no test of cure should be performed).

The following are the main reasons for this change.

1. There is a high rate of asymptomatic colonization in hospitalized patients[1] that cannot be demonstrated by PCR but can be suggested by the absence of a marker of pathogenesis (*C. difficile* toxin). It has been demonstrated that patients with a negative toxin antigen test, if left untreated for *C. difficile*, do not suffer complications of C. difficile disease[2].
2. This algorithm has been shown to be 100% sensitive and 99.6% specific for the diagnosis of *C. difficile* disease[3].
3. The results for patients who screen negative should be reported more quickly with the GDH/toxin assay.

Key points regarding the new test are as follows:

- Only test diarrheal (i.e., unformed, takes the shape of the container) stool (≥3 loose stools/day for 1 day). Formed stool will be rejected for testing.
- Non toxigenic *C. difficile* does NOT require isolation precautions or treatment.
- Colonizing toxigenic *C. difficile* can cause infection at a later point in time.
- *C. difficile* results for patients under two years of age should be interpreted with caution due to the high rate of asymptomatic carriage in this population.
- Contact precautions will be determined by the Infection prevention department and is mainly based on the presence of diarrhea regardless of the clinical interpretation of the result.

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Thus, the algorithm in the appropriate patient will be:

Stool is tested for GDH antigen and Toxin A/B
Both positive=Positive, consistent with C. difficile infection
GDH positive, toxin negative=>PCR for gene for C. difficile:
PCR positive= Discrepant: infection vs. colonization; consider recollection
PCR negative=Negative, testing is not consistent with C. difficile infection (nontoxigenic C. difficile)
GDH negative, toxin positive: Discrepant: infection vs. colonization; consider recollection
GDH and toxin negative=Negative, testing is not consistent with C. difficile infection

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