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Abstract (publication only)

Evaluation of the VIDAS® Glutamate Dehydrogenase Test (bioMérieux) for algorithm-based Clostridium difficile testing

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Objectives: Recent guidelines propose new algorithms for *C. difficile* detection, based on a 2-step approach with glutamate dehydrogenase (GDH) testing, in addition to toxin detection, nucleic acid amplification tests (NAAT) or toxigenic culture. GDH is an enzyme produced by all *C. difficile* strains (toxigenic and non-toxigenic), which makes it an excellent screening tool for the microorganism. In this algorithm, a GDH test is performed first. If negative, no further tests are executed. A toxin test and toxigenic culture or NAAT are only carried out on GDH-positive samples. The new VIDAS® *C. difficile* GDH (bioMérieux, BM) test is an automated test based on an Enzyme Linked Fluorescent Assay. We wanted to evaluate the performance of the VIDAS® *C. difficile* GDH test in the proposed algorithm. **Methods:** First, we analysed 59 samples retrospectively. The collection consisted of 27 specimens positive for toxigenic *C. difficile* and some challenge pathogens such as atoxigenic *C. difficile*, *C. clostridioforme* and *Gardia lamblia*. Samples were stored at -80°C. Presence of toxigenic *C. difficile* was tested by using toxin A/B on miniVIDAS® (BM) and of culture on CLO agar (BM) (reference method). Next, we prospectively tested 48 consecutive routine samples. **Results:** In the retrospective cohort, 25 of 27 *C. difficile* positive samples analysed were identified correctly using the GDH test, corresponding to a sensitivity of 93%. GDH demonstrated a specificity of 84% with 5 out of 32 samples producing a false positive result. One false positive case occurred in a sample containing *G. lamblia*. The positivity rate of toxigenic *C. difficile* among the samples analysed prospectively was 12.5%. As compared to the reference method, the sensitivity of GDH was 100% and the specificity was 90%. **Conclusion:** We evaluated a two-step algorithm for the detection of *C. difficile* in routine settings, based on the VIDAS® GDH test. In a prospective study a sensitivity of 100% was found indicating that VIDAS GDH (BM) has potential as first-line screening tool for *C. difficile* (no false negatives). A large scale study is planned to further investigate the strengths and potential weaknesses of the VIDAS® *C. difficile* GDH test as part of a GDH-driven algorithm.