

Recent advances in *Clostridium difficile* infection diagnosis

Since 2002, several countries have reported increased prevalence of infection or outbreaks, which have been attributed to the emergent *C. difficile* PCR ribotype 027. After the recognition of this, the majority of the affected countries have developed surveillance studies to monitor the spread of this strain and strict infection control measures have been implemented. This also had a substantial impact on the laboratory diagnosis of CDI. Most laboratories use EIAs for the detection of toxins A and B; the majority of these tests have good specificity, but because of their low sensitivity, additional tests are necessary to set up the laboratory diagnosis of CDI. Cytotoxicity assay is the most sensitive and specific tests for the detection of toxin production of *C. difficile*, but the turnaround time is too long and this technique requires a good tissue culture laboratory background. Stool culture is the most sensitive method, however this also requires at least 24-48 hours incubation and after isolation, confirmation of toxin production is necessary. Because of the rapidity, sensitivity and specificity of molecular techniques, increasing number of commercially available tests for the detection of toxin A and B genes is now available however, their diagnostic accuracies are variable and depend on the prevalence of *C. difficile* infection. Some laboratories apply two-step algorithm for the detection of *C. difficile*. In this case, the screening test is usually GDH assay, if this test gives positive result, the result should be confirmed by cytotoxicity assay, EIAs or NAAT. In general, the multistep algorithm may provide more sensitive and cost-effective alternatives for the laboratory diagnosis of CDI however, laboratory should monitor the circulating strains, because the type of strains may have an impact on the performance of GDH assay. In addition to this, the use of multistep algorithm may lead to delay in the time to results, thus an optimal strategy should be introduced to solve the above-mentioned problems. On the basis of various surveys, it has been confirmed that the use of more sensitive methods may reduce the total institutional cost and may contribute to the decrease in the nosocomial transmission of CDI.