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A new trend in diarrhea diagnosis (Efficacy of multiplex PCR in clinical diagnosis)

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Acute gastroenteritis is a common cause of morbidity and mortality worldwide, and diarrhea has been the second leading cause of death among children under the age of 5, accounting for 1 in 9 child deaths worldwide. Diarrhea may result from infection with a variety of microbial pathogens, including bacteria, viruses, or parasites. Thus, the rapid and accurate diagnosis of the underlying pathogen in patients with diarrhea is important for establishing good clinical practices aimed at reducing morbidity and mortality. Historically, the diagnosis of infectious diarrhea has been made using microscopy, antigen tests, culture, and real-time PCR. Recently, several multiplex PCR-based methods have been developed and used clinically, with the advantages of shorter hands-on time and improved sensitivity.

In this session, we will discuss about the needs for diagnostics for detecting diarrhea pathogens from clinic perspective and the results of clinical evaluation using Allplex Gastrointestinal (GI) Virus Panel Assay. The Allplex GI-Virus Assay is a recent one step multiplex real-time reverse transcription (RT)-PCR assay that uses a multiple detection temperature technique (MuDT) for detecting rotavirus, norovirus genogroup I (GI) and genogroup II (GII), adenovirus type 40/41, astrovirus, and sapovirus simultaneously. The performance of the Allplex assay was compared with that of another multiplex PCR assay (Seeplex Diarrhea-V Ace Detection) and that of genotyping, using 446 stool samples from patients with acute gastroenteritis. The overall agreement rates in the results between the Allplex and Seeplex assays were 98.7% for rotavirus, 99.1% for norovirus GI, 93.3% for norovirus GII, 98.0% for adenovirus, and 99.6% for astrovirus. Meanwhile, the overall agreement rates between the Allplex assay and genotyping were 99.1% for rotavirus, 99.1% for norovirus GI, 98.7% for norovirus GII, 89.7% for adenovirus, 98.2% for astrovirus, and 99.8% for sapovirus. The Allplex assay showed superior capabilities compared with the Seeplex assay, and thus could be useful in identifying gastrointestinal viral infection in patients with acute gastroenteritis symptoms.