

Molecular diagnostic testing for acute infectious diarrhea

Molecular diagnostic testing for acute infectious diarrhea (bacteria and virus)

Acute diarrhea is the second most common condition in children, surpassed only by respiratory infections. Every year, approximately 2 million pediatric patients lose their lives due to diarrhea, highlighting the importance for a prompt and accurate diagnosis. The causes of diarrhea are classified as bacterial (10-20%) and viral (70-80%), and the recent development of molecular diagnostic testing allows for prompt and accurate differential diagnosis.

Accurate diagnosis of bacterial infections helps prevent misuse of antibiotics and control the spread of infectious diarrhea. Additionally, for viral causes, these advanced diagnostic methods have improved the ability to detect cases that were previously undetectable using conventional diagnostic approaches, allowing a more precise and rapid identification.

Benefits of molecular diagnostic testing

Differentiating between causative bacteria and viruses in cases of acute diarrhea based solely on clinical symptoms can be challenging. Bacterial cultures, a conventional method for detecting bacterial pathogens, require 48-96 hours, while microscopic examination and antigen detection methods have low sensitivity. Additionally, although single polymerase chain reaction (PCR), a molecular diagnostic approach, is available, conducting one test at a time is time-consuming and imposes a financial burden on patients.

Seegene Medical Foundation performs direct multiplex real-time PCR testing using the patient's stool sample, without the need for a bacterial or viral culture. This method offers high sensitivity and specificity, enabling early diagnosis in the early stages of infection. It also facilitates rapid reporting of results, leading to prompt treatment and effective patient management. Moreover, accurate reporting helps reduce the unnecessary prescription of antibiotics. For these reasons, multiplex real-time PCR is increasingly being utilized in clinical practice.

TEST INFORMATION

Code No. | Test Name

72264 | Gastrointestinal Pathogen bacteria Panel, Multiplex real-time PCR

72242 | Gastrointestinal Pathogen virus Panel, Multiplex real-time PCR

Specimen

Stool 2g

Schedule

Mon-Sat / 1 day

Method

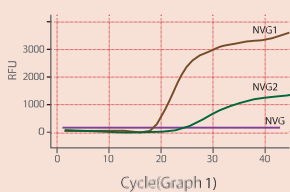
Multiplex real-time PCR

Types of tests

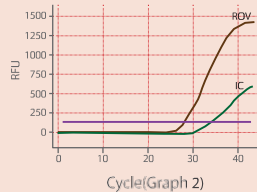
» Gastrointestinal Pathogen virus Panel

[Example of results]

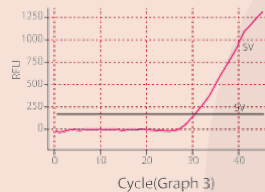
• Norovirus GI, Norovirus GII



• Rotavirus



• Sapovirus



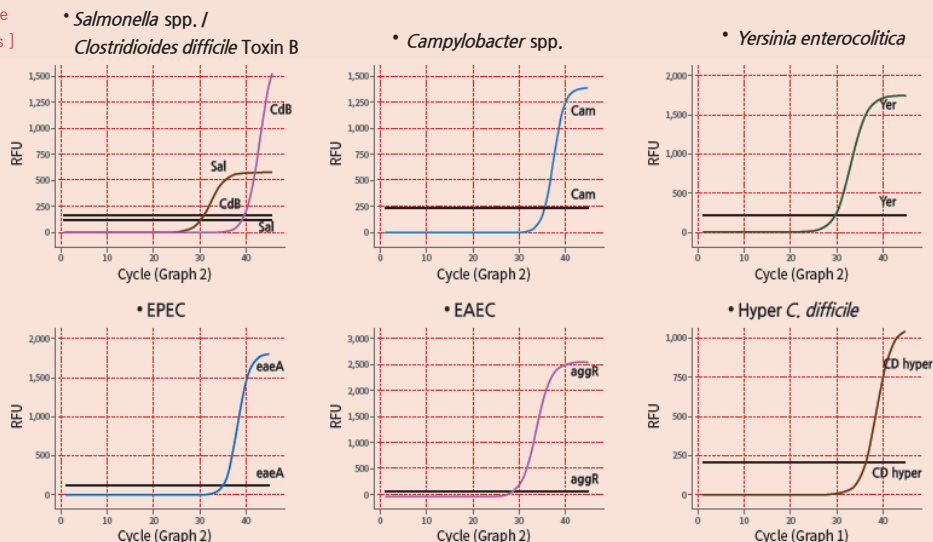
[Items in result reporting]

- Norovirus G I
- Norovirus Gil
- Rotavirus (Goup A)
- Adenovirus (Enteric)
- Astrovirus
- Sapovirus



» Gastrointestinal Pathogen bacteria Panel

[Example of results]



[Items in result reporting]

- *Salmonella* spp.
- *Shigella* spp. / EIEC
- *Vibrio* spp.
- *Campylobacter* spp.
- *Aeromonas* spp.
- *Clostridioides difficile* Toxin B
- *Yersinia enterocolitica*
- *E. coli* O157
- Shiga Toxin
- EPEC
- ETEC
- EAEC
- Hyper *C. difficile*

Test information

Code No.	Test name	Items	Specimen	Schedule
72264	Gastrointestinal Pathogen bacteria Panel, Multiplex real-time PCR	<i>Salmonella</i> spp. <i>Shigella</i> spp. / EIEC <i>Vibrio</i> spp. <i>Campylobacter</i> spp. <i>Aeromonas</i> spp. <i>Clostridioides difficile</i> Toxin B <i>Yersinia enterocolitica</i> <i>E. coli</i> O157 Shiga toxin EPEC ETEC EAEC Hyper <i>C. difficile</i>	Stool or Rectal swab	Mon-Sat / 1day
72242	Gastrointestinal Pathogen virus Panel, Multiplex real-time PCR	Norovirus GI Norovirus GII Rotavirus Adenovirus (Enteric) Astrovirus Sapovirus	Stool or Rectal swab	Mon-Sat / 1day

Reference

- Higgins RR, Beniprashad M, Cardona M, Masney S, Low DE, Gubbay JB. Evaluation, and verification of the Seeplex Diarrhea-V ACE assay for simultaneous detection of adenovirus, rotavirus, and norovirus genogroups I and II in clinical stool specimens. *J Clin Microbiol* 2011;49(9):3154-62.
- Bessede E, Delcamp A, Sifre E, Buissonniere A, Megraud F. New methods for detection of Campylobacters in stool samples in comparison to culture. *J Clin Microbiol* 2011;49(3):941-4.
- Coupland LJ, McElarney I, Meader E, Cowley K, Alcock L, Naunton J, et al. Simultaneous detection of viral and bacterial enteric pathogens using the Seeplex® Diarrhea ACE detection system. *Epidemiol Infect* 2013;141(10):2111-21.
- Clinical practice guidelines for gastrointestinal infections. Korean Society of Infectious Diseases, Korean Society of Chemotherapy, Korean Society of Clinical Microbiology. *Infect Chemother* 2010;42(6):323-361