LAB #:000000-0000-0
PATIENT:Sample Patient
ID: P0000000000
SEX: Female
DOB:
AGE: 35

CLIENT #:12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

GI Pathogen Profile, multiplex PCR; stool

Viruses

	Inside	Outside	Reference
Andenovirus F40/41	Negative		Negative
Astrovirus	Negative		Negative
Norovirus GI/GII		Positive	Negative
Rotavirus A	Negative		Negative
Sapovirus (I, II, IV and V)	Negative		Negative

Diarrheagenic *E. Coli/Shigella*

	Inside	Outside	Reference
E. coli O157	Negative		Negative
Enteroaggregative *E. coli* (EAEC)	Negative		Negative
Enteropathogenic *E. coli* (EPEC)	Negative		Negative
Enterotoxigenic *E. coli* (ETEC) *lt/st*		Positive	Negative
Shiga-like toxin-producing *E. coli* (STEC) *stx1/stx2*	Negative		Negative
Shigella/Enteroinvasive *E. coli* (EIEC)	Negative		Negative

Parasites

	Inside	Outside	Reference
Cryptosporidum	Negative		Negative
Cyclospora cayetanensis	Negative		Negative
Entamoeba histolytica	Negative		Negative
Giardia duodenalis (AKA *intestinalis & lamblia*)	Negative		Negative

Pathogenic Bacteria

	Inside	Outside	Reference
Campylobacter (jejuni, coli and upsaliensis)	Negative		Negative
Clostridium difficile (Toxin A/B)	Negative		Negative
Plesiomonas shigelloides	Negative		Negative
Salmonella	Negative		Negative
Vibrio (parahaemolyticus, vulnificus and cholerae)	Negative		Negative
Vibrio cholerae	Negative		Negative
Yersinia enterocolitica	Negative		Negative

SPECIMEN DATA

Comments:

Date Collected: 01/07/2016
Date Received: 01/11/2016
Date Reported: 01/11/2016

Methodology: FilmArray multiplex PCR

Introduction

The GI Pathogen Profile, multiplex PCR provides assessment of 22 specific gastrointestinal pathogenic microbes using FDA-cleared, real-time PCR. The Centers for Disease Control (CDC) estimates that 350 million acute diarrheal illnesses occur annually, and notes that diarrheal syndromes are often similar in presentation. Viruses are the primary cause of acute diarrhea, and the least commonly tested for. The identification of symptomatic pathogenic bacteria, viruses and parasites in a rapid-turnaround format improves clinical decisions and treatment options. Due to increasing antimicrobial resistance, it is recommended that clinicians check for current antibiotic recommendations on the Centers for Disease Prevention and Control website http://www.cdc.gov/ for bacterial infections. There are no sensitivities offered on the GI Pathogen Profile, multiplex PCR; a Bacteriology culture and sensitivities may be ordered from Doctor's Data for patients with persistent symptoms.

The GI Pathogen Profile identifies four parasites by multiplex PCR. While many patients and clinicians wish to pursue natural alternatives when treating parasitic infections, the University of Maryland Health Center (UMHC) notes that conventional treatments eradicate parasites more quickly and with fewer side effects. UMHC also suggests that natural supports may be used adjunctively in during anti-parasitic treatment with conventional agents, and to prevent parasites from growing. UMHC recommendations may be reviewed at http://umm.edu/health/medical/altmed/condition/intestinal-parasites. Because it may take time for all the dead cells from a resolved infection to clear from the gut, the GI Pathogen Profile, multiplex PCR may report positive findings up to 21 days after recovery.

Norovirus GI/GII

Norovirus GI/GII has been detected in this specimen. Norovirus infection may occur via direct person-to-person contact, the fecal-oral route, by touching contaminated objects, or after the ingestion of contaminated food or water. Norovirus outbreaks have also occurred after recreational exposure in fresh water. Peak infection season occurs during the winter months in temperate climates. Evidence indicates that assimilation of aerosolized vomit may also cause infection, and that occasionally the virus may be shed prior to the onset of symptoms. Norovirus symptoms develop 12-48 hours after exposure; typical symptoms include acute-onset vomiting with watery, non-bloody diarrhea and abdominal cramps. Patients may also experience fever, headache, muscle aches, or fatigue. Symptoms are self-limiting and usually resolve spontaneously within 48 hours. However illness may be severe for very young, very old or immunocompromised patients. Rehydration therapy may be used to replace fluids and electrolytes lost due to diarrhea, and symptomatic support for other symptoms may be used. Anti-emetics may provide relief from vomiting, but may be contraindicated in young children. Several small studies suggest that zinc supplements may reduce the severity and duration of gastrointestinal viral infections. Evidence indicates that probiotics may provide moderate clinical benefit in the treatment of watery diarrhea, especially in infants and young children. Probiotic strains that have been studied include Lactobacillus casei GG and Saccharomyces boulardii. [1,2,3]

Enterotoxigenic Escherichia coli (ETEC)

Enterotoxigenic E. coli (ETEC) has been detected in this specimen. There are several "pathotypes" of diarrheagenic E. coli and Shigella, which differ in disease mechanism, clinical presentation and severity of illness. ETEC is a primary cause of traveler's diarrhea, and is transmitted via the fecal-oral route through contaminated food or water. The average incubation period is approximately 40 hours. Symptoms of ETEC infection include profuse, watery diarrhea (free of polymorphonuclear leukocytes) and abdominal cramping, occasionally with fever, nausea or vomiting, chills, anorexia, headache, muscle aches and bloating. A more severe form of ETEC may resemble cholera, with approximately 7 days of "rice-water" stools and dehydration. Most infections resolve within 4-7 days, but may take up to three weeks. Infections are usually self-limited and may only require supportive care and rehydration (fluids and electrolytes), however severe infections and immunocompromised individuals may require additional support. Antibiotics may shorten the duration of the diarrhea by 24-36 hours. For adults, antibiotics for E. coli may include doxycycline, trimethoprim/sulfamethoxazole, fluoroquinolones, and rifaximin; consult with a pharmacist for pediatric recommendations. Anti-motility agents are contraindicated in children.[4,5,6]

References

1. Centers for Disease Control and Prevention (2015). 1600 Clifton Road Atlanta, GA 30329-4027, USA. Norovirus. http://www.cdc.gov/norovirus/hcp/clinical-overview.html . Accessed 09 November 2015
2. Kahn, Zartash Zafar, MD. (2015). Norovirus. Medscape http://emedicine.medscape.com/article/224225-overview . Accessed 09 November 2015
3. Tablang, Michael Vincent F., MD (2014). Viral Gastroenteritis. http://emedicine.medscape.com/article/176515-overview . Accessed 09 November 2015
4. Centers for Disease Control and Prevention. 1600 Clifton Road Atlanta, GA 30329-4027, USA. Enterotoxigenic E. coli (ETEC). http://www.cdc.gov/ecoli/etec.html . Accessed 30 October 2015
5. Maddappa, Tarun, MD, MPH. (2015). Escherichia Coli Infections. Medscape http://emedicine.medscape.com/article/217485-overview . Accessed 29 October 2015
6. Todar, Kenneth, PhD.. Pathogenic E. coli (page 4). Todar's Online Textbook of Bacteriology http://textbookofbacteriology.net/e.coli_4.html . Accessed 30 October 2015