Background

Diarrhea is a common problem in companion animals. Identifying infectious causes of diarrhea is an important component of the diagnostic workup, but it is often overlooked. Performing fecal ova and parasite screens and supplementary *Giardia* testing is fairly routine, but rarely are additional diagnostic tests performed to identify infectious causes of diarrhea. This may in part be because traditional methods for identifying gastrointestinal infections have been expensive, of low diagnostic sensitivity and slow to yield results. It is common for dogs and cats to be treated with broad spectrum anthelmintic and antibiotic therapies. If diarrhea persists, infectious causes are considered unlikely and dietary trials and symptomatic treatment is often pursued. If this approach is unsuccessful, intestinal biopsies may be obtained in some cases in an attempt to yield a definitive diagnosis that may lend itself to specific treatment. Treatment failure with persistent or recurrent diarrhea, lack of a definitive diagnosis and expense of ineffective medications can lead to client dissatisfaction and noncompliance as well as jeopardize the pet’s health.

**IDEXX Diarrhea RealPCR Panels**

The IDEXX diarrhea RealPCR panels allow you to screen for multiple infectious causes of diarrhea from a single fecal sample. These panels offer a comprehensive tool to identify common intestinal pathogens to help you more quickly and accurately identify the infectious agents that may be contributing to diarrhea in your patients.

The panels are specifically designed for dogs and cats, and they detect the most likely infectious causes of diarrhea in each species. These diarrhea panels can be used to complement your routine fecal tests (e.g., fecal ova and parasite screen and SNAP® *Giardia* Test in dogs and cats with diarrhea). The diarrhea panels are not intended to be used as a screening tool in healthy pets except in a shelter-type environment for surveillance.

The canine diarrhea panel includes RealPCR tests for *Giardia* spp., *Cryptosporidium* spp., *Salmonella* spp., *Clostridium perfringens* enterotoxin A gene, canine enteric coronavirus, canine parvovirus 2 and canine distemper virus. The feline diarrhea panel includes RealPCR tests for *Tritrichomonas foetus*, *Giardia* spp., *Cryptosporidium* spp., *Toxoplasma gondii*, *Salmonella* spp., *Clostridium perfringens* enterotoxin A gene, feline coronavirus (FeCoV) and feline panleukopenia virus.

**Interpreting Results**

Results of IDEXX diarrhea RealPCR panels should be interpreted in light of patient signalment, history, clinical presentation, vaccination history and other laboratory data. For example, a positive parvovirus PCR test result in a 3-month-old puppy with acute onset of vomiting, bloody diarrhea and leukopenia is very diagnostic for parvovirus enteritis. However, a positive coronavirus PCR test result in a 5-year-old well-vaccinated dog with chronic intermittent diarrhea, a good appetite and otherwise clinically healthy is likely an incidental finding, and further diagnostics to determine the etiology of the diarrhea should be considered. This dog, however, may be chronically shedding coronavirus and may be a source of infection for other dogs.

The chart on the following page contains a list of the fecal pathogens in the IDEXX Canine and Feline Diarrhea RealPCR Panels and summarizes the following for each pathogen: the common clinical signs, the prevalence reported in the literature, the prevalence from diarrhea RealPCR panels submitted over a 5-month period, the clinical significance including zoonotic potential, additional diagnostic tests that should be considered when this organism is identified and treatment recommendations.

It is interesting to point out that the prevalence data from the literature for most organisms is similar to the IDEXX RealPCR prevalence data. Differences may stem from the animal populations studied and the diagnostic tests used to detect the pathogen in these studies.

**When to Use IDEXX Diarrhea RealPCR Panels**

1. To identify the pathogen(s) that may be causing or contributing to diarrhea in dogs and cats
2. To support timely diagnosis and initiation of appropriate therapy
3. As a surveillance tool for dog or cat populations (e.g., shelters, breeding facilities)
4. To identify and minimize human exposure to zoonotic pathogens
<table>
<thead>
<tr>
<th>Organism</th>
<th>Species Affected</th>
<th>Clinical Signs</th>
<th>Prevalence (in literature)</th>
<th>IDEXX RealPCR Prevalence</th>
<th>Clinical Significance</th>
<th>Additional Diagnostics Recommended</th>
<th>Treatment</th>
</tr>
</thead>
</table>
| *Clostridium perfringens* Enterotoxin A Gene  | Dog, Cat         | • Acute/chronic/intermittent small- and/or large-bowel diarrhea  
• Canine nosocomial diarrhea¹  
• Hemorrhagic diarrhea (e.g., HGE) in dogs | • 7%–14% in nondiarrheic dogs³,²  
• 41% in diarrheic dogs¹,²  
• 0%–1.9% in nondiarrheic animals¹,⁴  
• 0%–1.4% in diarrheic animals³,⁴  
• 7.3% in kittens⁵  
• 4.7% in shelter cats⁶  
• 3%–10% PCR prevalence in dogs⁷,⁸  
• Overall 8% in dogs⁹  
• 36%–50% in puppies⁸  
• Up to 100% in dogs in shelters and kennels⁹  
• Overall 4% in cats³  
• 9.8% in shelter cats³  
• 31% in purebred cattery cats¹⁰ | 39% in dogs  
37.8% in cats  
0.1% in dogs  
0.4% in cats  
3% in dogs  
5.4% in cats | • Detection is likely significant¹  
• No zoonotic potential  
• Detection is likely significant¹  
• Zoonotic potential  
• Detection is significant¹  
• Zoonotic potential  
• Detection is significant¹  
• No zoonotic potential | Strengthen significance of a positive *C. perfringens* enterotoxin A gene  
PCR test result by *C. perfringens* enterotoxin by ELISA¹² | • Ampicillin/amoxicillin  
• Metronidazole  
• Tylosin  
• Resistance to tetracyclines  
• High-fiber diet  
• Controversial  
• Only if systemic illness  
• Based on sensitivity sting  
• Fluoroquinolones, chloramphenicol, trimethoprim-sulfa and amoxicillin  
• Treatment often ineffective  
• Azithromycin  
• Tylosin  
• Paromycin (caution: nephrotoxicity)  
• Fentbendazole  
• Febantel-praziquantel-pyrantel (Drontal¹⁰ Plus)  
• Metronidazole (less effective)  
• Ronidazole¹² |
| *Salmonella* spp.                              | Dog, Cat         | • Fever/sepsis  
• Anorexia, diarrhea (may or may not be hemorrhagic), vomiting, weight loss | Acute/chronic/intermittent small- and/or large-bowel diarrhea | 0% in dogs  
0.4% in cats  
6% in dogs  
5.4% in cats | • Detection is significant¹  
• Zoonotic potential  
• Detection is significant¹  
• Zoonotic potential  
• Detection is significant¹  
• No zoonotic potential | *Culture and sensitivity* | *Diagnostics*  
*Additional*  
*Recommended* |
| *Cryptosporidium* spp.                         | Dog, Cat         | • Acute/chronic/intermittent small- and/or large-bowel diarrhea | Acute/chronic/intermittent small- and/or large-bowel diarrhea | 8.3% in dogs  
5.1% in cats | • Detection is significant¹  
• Zoonotic potential  
• Detection is significant¹  
• No zoonotic potential | | |
| *Giardia* spp.                                 | Dog, Cat         | • Acute/chronic/intermittent small- and/or large-bowel diarrhea | Acute/chronic/intermittent small- and/or large-bowel diarrhea | 9.2% in cats | • Detection is significant¹  
• Zoonotic potential  
• Detection is significant¹  
• No zoonotic potential | | |
| *Tritrichomonas foetus*                        | Cat              | Chronic or recurrent large-bowel diarrhea | 31% in purebred cattery cats¹⁰  
14.4% of cats with diarrhea in UK¹¹ | | | | |

¹ Vaccination with a modified live vaccine may result in positive results for up to a few weeks post vaccination.
² IDEXX RealPCR prevalence data from a total number of 918 samples for dogs and 944 samples for cats collected over a 5-month time frame.
³ Detection is likely significant: The organism may be the cause of the clinical signs, contributing to the clinical signs or may indicate carrier state.
⁴ Detection is significant: The organism is likely the cause of the gastrointestinal signs.
⁵ Detection may not be significant: The organism is not likely the cause of the gastrointestinal signs.
⁶ Test code 4030, best performed on a fresh sample.
| Toxoplasma gondii  
| Coccidia  |
| Canine Enteric Coronavirus  
| RNA virus  |
| Feline Coronavirus (FeCoV)  
| RNA virus  |
| Canine Parvovirus 2  
| DNA virus  |
| Feline Panleukopenia Virus  
| DNA virus  |
| Canine Distemper Virus  
| RNA virus  |

<table>
<thead>
<tr>
<th>Cat</th>
<th>Dog</th>
<th>Cat</th>
<th>Dog</th>
<th>Cat</th>
<th>Dog</th>
</tr>
</thead>
</table>
| • Usually asymptomatic  
| • Self-limiting  
small-bowel diarrhea  
possible  |
| • Clinical signs  
typically mild without  
coinfection  
| • Coronaviral enteritis  
— Transient, mild diarrhea, vomiting  
| • Feline infectious peritonitis  
(FIP): fever, weight loss, inappetance  
| • Acute anorexia, diarrhea  
(may or may not be hemorrhagic), vomiting, dehydration  
| • Mild  
— Respiratory: coughing, ocular nasal discharge  
— Systemic: fever  
— Respiratory: coughing, ocular nasal discharge  
— Gastrointestinal: anorexia, vomiting, diarrhea  
— Neurological: seizures, myoclonus, ataxia  |
| 0.9% of feline fecal samples  |
| 15%–26% family pets  
59.3% in nondiarrheic  
shelter dogs  
73.3% in diarrheic  
shelter dogs  |
| Up to 80% of cats from  
catteries, shelters, large  
multicat households  
Approximately 25% of cats  
from households with  
1–2 cats and urban/ 
suburban feral cats  |
| 19.2% in cats with  
diarrhea at the Clinic of  
Small Animal Medicine,  
Ludwig-Maximilians  
University, Munich,  
Germany  |
| 0.5% in cats  | 10.6% in dogs  | 60.2% in cats  | 3.5% in dogs  | 3.2% in cats  | 1.2% in dogs  |
| • Detection may not be  
significant  
| • Detection may not be  
significant  
| • Detection is  
significant  
| • Detection is  
significant  
| • Detection is  
significant |
| • Zoonotic risk high for  
pregnant women  
| • No zoonotic potential  
| • No zoonotic potential  
| • No zoonotic potential |
| IgG and IgM ELISA if  
eextraintestinal signs  
present  |
| To detect chronic shedders,  
perform FeCoV PCR test on  
feces weekly for  
4 consecutive weeks  
If FIP suspected, a positive,  
FeCoV PCR test result on  
ascites or pleural fluid,  
whole blood or tissues  
supports diagnosis  |
| CBC: leukopenia common  
| CBC: leukopenia common  |
| CBC: lymphopenia common  
| Chest radiographs if  
respiratory signs |
| • Clindamycin  
(preferred)  
| • Supportive  
| • Supportive  |
| • Pyrimethamine-sulfonamide  
combination  
| • Identify and treat  
secondary or concurrent infections  
| • Treat secondary infections  |
| • Rarely indicated for  
gastrointestinal signs  
No effective treatment for  
FIP; supportive care  
| • Supportive  
| • Supportive |
| • Anticonvulsants if  
seizuring  
| 18  
| 14  
| 15  
| 12  
| 11 |
**Ordering Information**

<table>
<thead>
<tr>
<th>Test Code</th>
<th>Test Name, Contents and Specimen Requirements</th>
</tr>
</thead>
</table>
| 2625      | Canine Diarrhea RealPCR™ Panel<br>
Giardia spp., Cryptosporidium spp., Salmonella spp., Clostridium perfringens enterotoxin A gene, canine enteric coronavirus, canine parvovirus 2 and canine distemper virus RealPCR tests<br>5 g of fresh fecal material; 1 g minimum |
| 2627      | Feline Diarrhea RealPCR™ Panel—Comprehensive<br>
Trichomonas foetus, Giardia spp., Cryptosporidium spp., Toxoplasma gondii, Salmonella spp., Clostridium perfringens enterotoxin A gene, feline coronavirus (FeCoV) and feline panleukopenia virus RealPCR tests<br>5 g of fresh fecal material; 1 g minimum |

**Specimen requirements:** 5 g fecal material (1 mg minimum) in a sterile container, keep refrigerated

**Limitations:** A PCR test may not detect silent carriers, especially if they are not actively shedding the infectious agent. In addition, a negative PCR test result may be caused by treatment, occurrence of new strain variations (especially parvovirus) or number of organisms below limit of detection.

**Contacting IDEXX**

Laboratory Customer Support

If you have any questions regarding test codes, turnaround times or pricing, please contact our Laboratory Customer Support Team at 1-888-433-9987, option 3, option 5.

**Expert Feedback When You Need It**

Our team of internal medicine specialists is always available for complimentary consultation. Please call 1-888-433-9987, option 4, option 2, if you have questions.

**Turnaround time**

The IDEXX nationwide network of reference laboratories provides daily courier service or IDEXX-Direct™ service to pick up your samples and forward them to our IDEXX Molecular Diagnostics Laboratory in California. IDEXX RealPCR tests are run daily, Monday–Friday. Samples received on Saturday or Sunday are processed on Monday. You can expect results within 1–3 working days, depending on shipping time.

**References**