Feline upper respiratory disease (URD) is a common group of related illnesses. Determining which organisms are involved is essential to deciding appropriate treatment. The IDEXX Feline Upper Respiratory Disease RealPCR™ Panel is sensitive and specific for feline calicivirus, feline herpesvirus type 1 (FHV-1), H1N1 influenza virus and Mycoplasma felis, especially in cats with active infections. The Feline URD RealPCR™ Panel tests for all six pathogens at once, helping you make a diagnosis quickly, so you can direct specific therapy against the infecting agent(s).

The IDEXX Molecular Diagnostics Laboratory, directed by Christian Leutenegger, DrVetMed, PhD, FVH, offers real-time PCR (polymerase chain reaction) testing—providing you with convenient and affordable access to the accuracy of PCR as part of your routine test menu. Results are returned in just 1–3 working days.

With IDEXX RealPCR™ tests and panels, you can count on:

• The latest innovation in PCR technology. Real-time PCR is a closed-tube system that delivers short assay run times that virtually eliminate false-positive results, diagnoses faster.
• Surprising cost savings. IDEXX RealPCR tests and panels cost about the same as our other laboratory tests.

Feline Upper Respiratory Disease

URD in cats can be caused by one or more of the organisms listed below. Of the more than 7,000 samples submitted and tested with the Feline URD RealPCR Panel during a 12-month period, 71% were positive for one or more of the six infectious agents. Coinfections were identified in 42.4% of positive samples, which highlights the benefit of testing for multiple pathogens in a single sample.

Bordetella bronchiseptica can infect the airways and lung parenchyma, leading to lower airway disease and/or pneumonia. Exposure to dogs may increase the risk of infection in cats.

Chlamydia felis, formerly known as Chlamydia psittaci, can cause a persistent unilateral or bilateral conjunctivitis, often with marked chemosis.

Feline calicivirus is a common cause of URD. Vaccination does not prevent infection but reduces severity of infection. Most cats with feline calicivirus become silent carriers, shedding the virus continually. More virulent strains can cause serious systemic illness and death. More commonly, this virus causes acute URD. Oral ulceration is a common clinical finding.

Feline herpesvirus type 1 (FHV-1), also called feline rhinotracheitis, is a common cause of URD. Vaccination does not prevent infection but reduces severity of disease. Most cats with FHV-1 become silent carriers, shedding the virus after times of stress. In addition to causing URD and conjunctivitis, FHV-1 can cause more severe ocular disease, including various types of keratitis, corneal ulceration, corneal sequestrum, keratoconjunctivitis sicca (KCS), symblepharon and anterior uveitis.

H1N1 influenza virus was first confirmed in cats in November 2009 and is thought to have been contracted from infected owners. It is the same strain that is responsible for the worldwide pandemic in humans.

Mycoplasma felis has been associated with unilateral or bilateral conjunctivitis, chronic rhinosinusitis, pneumonia, pleuritis and arthritis.

Transmission

Organisms are transmitted from infected cats through saliva and ocular and nasal discharges and can be aerosolized through sneezing, coughing and even breathing. Infection can be caused by direct physical contact with other cats, cages, toys, food bowls and even people who have handled infected cats. Clinically healthy cats that have been infected with URD may be silent carriers that continue to shed one of these pathogens. Healthy cats and queens can act as reservoirs for the organisms.

Diagnostic Tests

There are multiple tests available for detection of these organisms. While each of these tests has benefits, each is also limited in some aspect. Virus isolation for FHV-1, feline calicivirus and H1N1 influenza virus is insensitive because virus isolation is difficult. Serology and fluorescent antibody testing may indicate previous vaccination or exposure, they cannot differentiate active infection. Microbial culture can be time-consuming, and Chlamydia felis and Mycoplasma felis are particularly difficult to culture, requiring special handling and media. Cytology and/or ELISA can be used to detect Chlamydia felis but are not highly sensitive.
## Feline URD RealPCR Panel Diagnostic Details

<table>
<thead>
<tr>
<th>Organisms included in the panel</th>
<th>RealPCR prevalence</th>
<th>Clinical signs</th>
<th>Chronic carriers</th>
<th>Vaccination</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bordetella bronchiseptica</strong></td>
<td>10.7%</td>
<td>URD usually coinfection with virus</td>
<td>Some cats become chronic carriers</td>
<td>Noncore vaccine· Intra-nasal</td>
<td>URD/bronchitis/pneumonia· Supportive for infection; culture and sensitivity if RealPCR positive</td>
</tr>
<tr>
<td><strong>Chlamyphila felis (formerly Chlamydia psittaci)</strong></td>
<td>8.0%</td>
<td>Conjunctivitis, often with marked chemosis, is most common clinical sign; can be persistent or recurrent unilateral or bilateral</td>
<td>Some cats become chronic carriers</td>
<td>Noncore vaccine· Injectable</td>
<td>Conjunctivitis· Tetracycline or chloramphenicol topical antibiotic ointment URD· Supportive· Oral tetracycline/doxycycline or chloramphenicol if systemic clinical signs</td>
</tr>
<tr>
<td><strong>Feline calicivirus</strong></td>
<td>26.0%</td>
<td>URD with sneezing, ocular and nasal discharge, inappetence, oral ulceration, fever</td>
<td>80% of acute cats become chronic carriers; constant shedding</td>
<td>Core vaccine· Injectable· Intra-nasal· Does not protect cats from infection, reduces severity of the illness</td>
<td>URD· Supportive· Antibiotics for secondary bacterial infections· Lysine/alpha interferon for immune stimulation· Pediatric Neo-Synephrine® for nasal congestion Conjunctivitis· Topical triple-antibiotic ointment for secondary bacterial infections</td>
</tr>
<tr>
<td><strong>Feline herpesvirus type 1 (FHV-1)</strong></td>
<td>26.5%</td>
<td>URD with sneezing, ocular and nasal discharge, inappetence, oral ulceration, fever</td>
<td>100% of acute kittens become chronic carriers; intermittent shedding</td>
<td>Core vaccine· Injectable· Intra-nasal· Does not protect cats from infection, reduces severity of the illness</td>
<td>URD· Supportive· Antibiotics for secondary bacterial infections· Lysine/alpha interferon for immune stimulation· Pediatric Neo-Synephrine for nasal congestion Conjunctivitis· Topical triple-antibiotic ointment for secondary bacterial infections Severe ocular disease· Topical antiviral therapy with or without oral antiviral therapy· Topical analgesic</td>
</tr>
<tr>
<td><strong>H1N1 influenza virus</strong></td>
<td>IDEXX: 2 detected· AVMA: Several reported</td>
<td>URD/pneumonia clinical presentation ranges from mild to severe respiratory distress that has resulted in death</td>
<td>Not known</td>
<td>No vaccine available</td>
<td>URD/pneumonia· Supportive care· Antibiotics for secondary bacterial infections</td>
</tr>
<tr>
<td><strong>Mycoplasma felis</strong></td>
<td>42.9%</td>
<td>Conjunctivitis can be unilateral or bilateral</td>
<td>No evidence of chronic carriers</td>
<td>No vaccine available</td>
<td>Conjunctivitis· Tetracycline or chloramphenicol topical antibiotic ointment URD/chronic rhinosinusitis/pneumonia/pleuritis/arthritis· Oral tetracycline/doxycycline or chloramphenicol· Pediatric Neo-Synephrine for nasal congestion</td>
</tr>
</tbody>
</table>
IDEXX RealPCR uses real-time PCR technology to indicate the presence of a pathogen by detecting the organism’s DNA in the patient sample. Real-time PCR accurately detects viruses and difficult-to-culture bacteria, and the sensitivity, specificity and speed of this advanced diagnostic tool make it the gold standard for molecular diagnostic testing in human and veterinary medicine. The Feline URD RealPCR Panel is a simple, accurate and affordable way to determine the infectious agents that may be contributing to a cat’s respiratory illness, helping you to make informed treatment and management decisions for your patient and your practice.

When to use: Consider the Feline URD RealPCR Panel in cats with persistent or recurrent URD, persistent conjunctivitis, chronic snuffles/rhinitis or serious ocular disease. Other indications may include shelters to document background levels of respiratory pathogens, guide population vaccine and treatment choices, and help identify the cause of URD outbreaks; and breeding catteries to detect and segregate carriers.

Note: It is common for clinically healthy cats, especially in a shelter or cattery situation, to be carriers of respiratory pathogens. Identifying carrier cats may be useful information for altering husbandry practices. IDEXX does not advocate euthanasia of clinically healthy cats based upon a positive Feline URD RealPCR Panel result.

Specimen requirements: Deep pharyngeal swab (with visible organic material on swab; please rub firmly) and a conjunctival swab (wipe eye clean; swab inside of eyelid) in the same tube; collect prior to antibiotic administration. Please submit dry, plastic-stemmed swabs, without transport media, in a serum tube or an empty, sterile tube; keep refrigerated. When acquiring a pharyngeal swab, precautions should be taken to prevent cat from biting and/or ingesting part of the swab.

Limitations: PCR may not detect silent carriers of FHV-1 and feline calicivirus if the cats are not actively shedding the virus. This limitation applies more to FHV-1 than to feline calicivirus, because cats with feline calicivirus tend to shed virus continually.