IDEXX Reference Laboratories offers the Canine Distemper Virus (CDV) Quant RealPCR™ Test

Revolutionary test differentiates infected dogs from vaccinated dogs

Background

The IDEXX Molecular Diagnostic Laboratory has been offering the Canine Distemper Virus (CDV) RealPCR™ Test since fall of 2007. This test was invaluable in the diagnosis of distemper in thousands of dogs, but was confounded by recent vaccination in a subset of patients. In 2011, a new test offering, the Canine Distemper Virus (CDV) Quant RealPCR™ Test, became available to provide guidance in these patients and was added to our Canine Respiratory Disease (CRD) RealPCR™ Panels.

Recent vaccination complicates interpretation of positive distemper RealPCR test results

One limitation of any sensitive real-time PCR test is the possible detection of vaccinal virus. Because most distemper vaccines consist of attenuated strains, highly sensitive real-time PCR test systems will pick up the replicating vaccine strain in about 20% of dogs over the course of a few weeks after each immunization. Until now, because many dogs develop clinical signs of illness within days of adoption from a kennel or shelter, where they have often received a recent vaccination, interpreting a positive test result has been challenging.

CDV Quant RealPCR Test provides the solution

The CDV Quant RealPCR Test provides a quantitative measure of the CDV viral load. This quantitative information allows the test to discriminate vaccine interference from infection with a wild-type strain of distemper virus. Put simply, the amount of virus present during infection is typically exponentially more than would be detected due to recent vaccination. This test protocol was developed by the IDEXX Molecular Diagnostics Laboratory team, directed by Christian Leutenegger, DrVetMed, PhD, FVH, in collaboration with veterinarians from the University of Florida.[1]

CDV Quant RealPCR results and interpretation

The CDV Quant RealPCR Test results will provide the quantity of canine distemper virus particles detected in the specimen submitted and include one of three comments depending on the range within which your patient's results fall.

1. **CDV vaccine strain**: Below 105,000 CDV RNA particles per swab(s)

   CDV viral load is low, within the range expected for vaccine interference. If the dog has been vaccinated with a modified-live CDV strain within the past few weeks, the positive CDV result may be due to detection of the vaccine strain. If the dog has not been vaccinated recently or received the recombinant CDV vaccine, the positive CDV result is consistent with the early or recovery phases of a wild-type infection, particularly if there is known exposure or if there are compatible clinical signs; retesting in 1–2 weeks is recommended.

2. **Indeterminate**: Between 105,000 and 1 million CDV RNA particles per swab(s)

   CDV viral load is indeterminate, above the levels seen with vaccine interference, but below the levels typically seen with wild-type infection, and no reliable discrimination between vaccine and wild-type strains can be made. Retesting within a few days is indicated.

3. **CDV wild-type infection**: Above 1 million CDV RNA particles per swab(s)

   The CDV viral load is high, well above the levels seen with vaccine interference. The positive CDV PCR result is most likely caused by a wild-type strain and indicates infection.

When to use

The CDV Quant RealPCR Test should be considered in all dogs with respiratory signs that may be attributable to distemper and a history of receiving vaccination within 4 weeks of presentation.

A Canine Comprehensive Respiratory Disease (CRD) RealPCR Panel is recommended in the majority of dogs to look for other infectious causes of clinical signs as well as to identify coinfections that might alter management. The CDV Quant RealPCR Test is included in these panels.

Note: Quantification is available only for respiratory samples. When other clinical manifestations of disease are present and other specimen types are submitted (e.g., CSF for neurologic disease), the existing stand-alone Canine Distemper Virus (CDV) RealPCR Test (test code 2265) or an appropriate panel (Canine Comprehensive Diarrhea RealPCR™ Panel [test code 2625] or Comprehensive Canine Neurologic RealPCR™ Panel with Lab 4Dx® Plus Test [test code 3658]) should be ordered. Canine Distemper Virus (CDV) RealPCR Test is a qualitative test (positive or negative) that should be ordered only for clinical manifestations requiring specimen types other than respiratory swabs or if it is certain that the dog with respiratory signs has not been recently vaccinated.

Ordering information

Test code	Test name and contents
3265	**Distemper Virus (CDV) Quant RealPCR™ Test—Canine**
2524	**Respiratory Disease (CRD) RealPCR™ Panel (Comprehensive)—Canine** *Bordetella bronchiseptica*, canine adenovirus type 2, canine distemper virus (CDV) Quant, canine herpesvirus type 1 (CHV-1), canine parainfluenza virus, canine pneumovirus, canine respiratory coronavirus (CRCoV), H3N2 canine influenza virus, influenza A virus (includes H3N8, H1N1, H7N2), *Mycoplasma cynos*, and *Streptococcus equi* subsp. *zooepidemicus* RealPCR™ tests. Includes quantification of distemper viral particles if PCR positive. Includes influenza A strain identification if PCR positive.
3036	**Respiratory Disease (CRD) RealPCR™ Panel (Comprehensive) with Culture (if Indicated)—Canine** Respiratory Disease (CRD) RealPCR™ Panel (Comprehensive)—Canine (test code 2524). If the RealPCR™ test is positive for *Bordetella bronchiseptica* or *Streptococcus equi* subsp. *zooepidemicus*, a culture with susceptibilities on selective media will be automatically performed at no additional charge. Note: Culture will be performed only if an additional culture swab in transport media is submitted.

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. Please submit dry, plastic-stemmed swabs, without transport media, in an RTT or an empty, sterile tube; keep refrigerated. For respiratory panel with culture, if indicated, also submit an additional culture swab in transport media for aerobic culture. Collect specimens prior to antibiotic administration.

Turnaround time

The IDEXX nationwide network of reference laboratories provides daily courier service or IDEXX-Direct® service to pick up your specimens and forward them to our IDEXX Molecular Diagnostics Laboratory in California. IDEXX RealPCR tests are run daily, Monday–Friday. Specimens received on Saturday or Sunday are processed on Monday. You can expect results within 1–3 working days, depending on shipping time; allow additional time for culture or influenza A strain identification, if indicated.

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.

Expert feedback when you need it

Our medical specialty consulting service is available for expert and complimentary consultation. Please call 1-888-433-9987 if you have questions.

References

1. Leutenegger CM, Crawford C, Levy J, Estrada M. Canine distemper virus quantification by real-time PCR allows to differentiate vaccine virus interference and wildtype infection. In: Proceedings from the 2011 ACVIM Forum; June 15–18, 2011; Denver, CO.

The information contained herein is intended to provide general guidance only. As with any diagnosis or treatment, you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical presentation, and complete laboratory data. With respect to any drug therapy or monitoring program, you should refer to product inserts for a complete description of dosages, indications, interactions, and cautions.

PCR testing is a service performed pursuant to an agreement with Roche Molecular Systems, Inc.