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## Canine Distemper Protocol

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### Distemper Suspect

Often presents as a soft cough with oculonasal discharge that does not resolve after 7-10 days and may progress to pneumonia, or vomiting and diarrhea resembling parvovirus but repeatedly tests negative for parvo. Development of myoclonus or tremors of the head or forelimbs and generalized seizures occurs in about 10% of infected dogs and is usually associated with a worse prognosis. Animals with viral counts higher than 10 million (10,000 THOUS/SWAB) are at greater risk for developing neurologic signs, and a repeat PCR may be useful to help predict the length of shedding and overall prognosis.

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### Once distemper is suspected, stop all movement in and out of exposed areas and immediately act:

1. Designate quarantine and isolation area(s) with proper signage and email the Disease Management Group.
2. Isolate the suspect(s) exhibiting clinical signs. For non-specific respiratory signs- submit a comprehensive CRD PCR Panel (Code 2524) to IDEXX by collecting two swabs from the nasal cavity and oropharyngeal area near the tonsillar crypt. For classic distemper signs including any neuro signs or known distemper exposure, submit the **Quant PCR (code 3265)** to IDEXX. For high-suspicion cases without any respiratory signs, consider submitting blood along with urine or feces for PCR test code 2265.
3. Trace all potentially exposed animals and provide Animal IDs to the Disease Management Group. [Animal Movement Report SOP](#)
4. Assess the risk level of all exposed and visually examine all these dogs. Any exposed animals also showing symptoms should be isolated and tested for CDV (Canine Distemper Virus). All exposed, at-risk animals should be assigned a 2-week quarantine period starting from the last date of exposure to an infected animal.

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### Low-Risk Exposed

- Includes all adult dogs ( $\geq 6$  months of age) with no clinical signs and a history of at least 1 modified live virus (MLV) DHPP (Distemper Hepatitis Parvo Parainfluenza) vaccination, given at least 5 days prior to exposure
- Examine clinical signs and, if none observed, process as usual. No need to quarantine.

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### High-Risk Exposed

- Includes all puppies ( $< 6$  months of age), adult dogs with no vaccine history, and adults with a history of only one MLV DHPP vaccine given  $< 5$  days prior to exposure OR any exposed dog with clinical signs
- All high-risk dogs should receive **both** a titer test and PCR test.



- Depending on the number of dogs requiring testing, medical leadership will determine if titer testing will be done in-house, and PCRs submitted to IDEXX **or** if titers and PCR tests are submitted to University of Wisconsin – please consult medical leadership for guidance.
- Pathway planning based on test results (Ab = antibody titer test):
  - Ab + PCR +; isolate as patient is infected
  - Ab + PCR -; move to general population as patient is protected
  - Ab - PCR +; isolate and submit additional samples for PCR<sup>1</sup>
  - Ab - PCR -; inadequate protection but not yet infected, vaccinate & make every effort to exit the shelter while minimizing additional exposure to the general population. Consider retesting titers with PCR in 1-2 weeks. Depending on number of dogs in this category, consider creating a naïve group (see below for naïve group housing and biosecurity recommendations)
    - Set ACR for 2 weeks to assess clinical signs and release from naïve group +/- re-testing
- If it is difficult to collect diagnostic samples due to dog behavior, administer chill protocol and attempt a second time
- **If initial testing is not possible (i.e. due to behavior, etc.),** quarantine asymptomatic exposed dogs for 14 days, then release with 1 negative Quant PCR taken on day 14. Daily cage-side exams watching for any signs of illness are recommended to minimize spread and decrease extended lengths of stay. PCR testing is recommended at the earliest onset of clinical signs. Offsite quarantine and isolation is encouraged for appropriate cases of CDV exposure.
  - If the animal has an IP but is not ready for adoption, consider foster-to-adopt to facilitate a 14-day quarantine in the IP home.
  - If the animal has an IP and is ready for adoption, proceed with adoption and include an in-person medical waiver for possible CDV exposure. Repeat testing and supportive care can be offered based on our resources.
  - If still asymptomatic after 2 weeks of quarantine, submit individual Quant PCRs (code 3265) to IDEXX
    - Pooled samples may be considered for multiple exposed adult dogs with no symptoms. Include up to 4 swabs in one tube to save cost. Puppies should be confirmed with individual PCR tests. If housing multiple dogs together in quarantine and all have a negative PCR, release as long as there are no clinical signs.
  - If a dog in quarantine has a positive PCR, isolate the positive and either submit individual PCR + titers or restart a 2-week quarantine for any at-risk exposed to that dog. Follow protocol for confirmed positive distemper and email the disease management group.
- If knowledge of exposure is learned after adoption, medical supervisors to provide a courtesy call for wellness check and, if any concerns are reported, offer a recheck exam +/- PCR testing.
- If reclaim or RTO is possible for exposed animals, conduct an in-person consult to discuss home quarantine. Offer recheck exam and booster in 14 days.

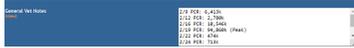
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## Confirmed Positive Distemper

- If the initial PCR is positive, email the Disease Management Group, update the animal status and condition to UU for Canine Distemper Virus, then submit a case review to the hospital director and campus director.
  - Add distemper as a diagnosis and condition in the vet consult section of ShelterBuddy
  - Add CDV Recovered PCR positive waiver
- If initial PCR is positive, but results are equivocal due to possible vaccine interference (low-intermediate viral load):
  - Always consider positive until additional testing is completed.



- If 2<sup>nd</sup> PCR negative with no clinical signs, booster and release
- If 2<sup>nd</sup> PCR positive, consider true infection
- Entering PCR test results in ShelterBuddy
  - Enter PCR results into the General Vet Notes Section in ShelterBuddy so peak value and trends can be easily tracked



- Criteria for Release:
  - 14 days since the onset of clinical signs
  - Resolving clinical signs
  - Decreasing viral load (increasing CT trend on UW testing OR decreasing viral load trend on PCR); at least two PCRs beyond the peak viral shedding, taken at least two days apart<sup>2</sup>.
  - Enter GAN with details for dog criteria for release (see screenshot below for example)



## Naïve Group Housing

- If there are several dogs in a distemper outbreak that do not have adequate CDV protection, consider creating a bubble or naïve group and housing them together.
- Housing recommendations:
  - Dogs should be housed next to one another as a group and apart from dogs with unknown CDV status
  - Staff should wear PPE (gloves, gowns, booties) when working with these dogs to protect them from other dogs in the population
  - These dogs can be walked outside and/or taken to play yards, ideally separate yards from dogs with unknown status
  - The goal is to exit these dogs from the shelter as quickly as possible, such as through adoption or foster

## Naïve dog common questions for AC staff:

- What type of signage for the kennels if any?
  - Recommend putting up quarantine signs to signify to staff the need for PPE, but these dogs are not on quarantine
- What type of PPE is needed?
  - Gloves, gowns and booties
- Can naïve dogs go out for walks?
  - Yes, walks are ok, but you should avoid direct contact with other dogs
- Can naïve dogs go in play yards or offsite events?
  - Dogs can go into play yards, ideally a separate yard from other dogs of unknown CDV status if possible
- Can adopters interact with naïve dogs (before/after) interacting with other available dogs, if so do they need to use



PPE?

- Yes adopters should ideally interact with naïve dogs first before other dogs. No PPE is needed.
- What if a naïve dog needs to go to the vet hospital for surgery or other procedure?
  - Medical teams will work through how to manage medical and surgery for these animals. It is important to exit these dogs from the shelter as quickly as possible, so this group should be prioritized for spay/neuter and other needed medical care to make them ready for adoption
- What if a naïve dog develops clinical signs suspicious for CDV?
  - We will isolate and run diagnostic testing, and then perform a risk assessment for dogs exposed to this dog

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## Additional Information:

### ***Treatment***

There is no specific treatment for CDV. Treat symptomatically with broad spectrum antibiotics, fluid therapy, anti-diarrheal meds, dewormers, antiemetics, and appetite stimulants as needed. Once outpatient care is possible, consider sending to foster.

### ***Vaccination***

Booster vaccination with DHPP should continue for puppies in distemper quarantine if the timing does not interfere with repeat testing. Vaccine interference is possible with PCR testing if it has been less than 7-10 days between vaccination and testing. Parvo only vaccines may be considered as an alternative during distemper quarantine to help eliminate the possibility of distemper vaccine interference with PCR testing. Distemper positive dogs are especially susceptible to parvo and other nosocomial infections due to the immunocompromising effect of CDV. A dog may be considered fully vaccinated if they are older than 6 months old and have received at least 1 MLV DHPP vaccination given at least 5 days prior to potential distemper exposure.

### ***Fostering***

Medically stable CDV-exposed and CDV-positive dogs should be routed to foster when possible, to reduce the risk of spread to the general shelter population. If neuro signs are present or viral counts are at/near 10 million, it may be prudent to refrain from sending to foster until a repeat PCR can be obtained to determine if the viral load is increasing or decreasing. CDV foster assignments may be weeks to months long depending on the length of viral shedding. CDV Fosters will need to review and sign the [CDV Foster Fact Sheet and Agreement Form](#) upon taking home a distemper dog. The infected or exposed foster dog is to remain isolated in the home with no dog-to-dog interaction other than resident adult dogs who are fully vaccinated. Foster parents should receive and read the [Canine Distemper Fact sheet for Foster Homes](#).





\*keep in mind testing within 7 day window of vaccination may increase chance of false positives

## Testing and Interpretation

For CDV recovering dogs, wait until the positive CDV dog is no longer symptomatic to begin serial recheck PCR testing (every three days).

Titer testing alone has limited value because a positive titer cannot be differentiated from a true infection even in an asymptomatic dog. Maternal antibodies may interfere with titer results, so this is not recommended for puppies under 6 months. Titer testing should be paired with a PCR for accurate interpretation, especially if an animal is exhibiting any signs of distemper.

IDEXX CDV Quant PCR results that are intermediate or low positive reported as “vaccine strain” should be considered a true positive until proven otherwise with repeat testing. Vaccination is unlikely to interfere with PCR results beyond one week after injection. Various test options are available through IDEXX. See below for a summary of when to use each test.

- **Distemper Virus (CDV) Quant RealPCR™ Test - Canine (3265)** This is the preferred test when distemper virus is highly suspected and/or there is known exposure to CDV. Obtain two swabs from the oropharyngeal area near the tonsillar crypt and the nasal cavity. Sampling from the conjunctiva is also acceptable, but the nasal cavity is preferred because it's better tolerated by the animal ensuring adequate sample collection and viral yield.
- **Respiratory Disease (CRD) RealPCR™ Panel (Comprehensive) - Canine (2524)** This is the most expensive of the recommended CDV tests and should be used when only respiratory signs are present to rule out other infectious respiratory diseases, particularly *Strep zooepidemicus* and Canine influenza virus.
- **Distemper Virus (CDV) RealPCR™ Test - Canine (2265)** This is a good test when there are no respiratory signs present, or when a dog tests negative on initial PCR but suspicion for CDV persists based on non-distinct signs (lethargy, poor appetite, etc). For GI or non-distinct signs only, submit 2 mL EDTA whole blood, feces, and deep pharyngeal + conjunctival/nasal swabs. For neuro signs only, submit 2 mL EDTA whole blood, urine, and deep pharyngeal + conjunctival/nasal swabs.
- **University of Wisconsin Instructions:** [Click here](#)

## Quarantine vs Isolation

Dogs showing symptoms of CDV or confirmed positive for CDV should be housed in an isolated room away from other dogs. Confirmed positive CDV dogs may co-isolate in the same room or kennel when housing options are limited. Asymptomatic exposed animals may share a room in quarantine but distance and biosecurity should be maintained to minimize potential spread. If designated quarantine space is unavailable, consider housing an exposed animal with well-vaccinated adults only (no play-yards, no movement in/out). Since CDV may be spread through aerosols, a dog in the same room at the same time as an infected dog may be considered exposed.



### ***The Recovered CDV Patient***

Fully recovered CDV dogs tend to have an excellent prognosis. Dated accounts of spontaneous old-dog-encephalitis have not been proven to be linked with recovered distemper virus. A mild myoclonus that develops during distemper infection may persist long-term or indefinitely, but rarely affects overall quality –of life and may not require any treatment. Dogs who fully recover from CDV may develop partial or lifelong immunity to CDV, but should still continue to receive routine vaccinations as recommended by their regular veterinarian.

### **End Notes**

1. Keep in mind testing within 7 day window of vaccination may increase chance of false positive
2. Viral counts may fluctuate quite a bit and we will need to assess on case by case basis

