GUIDELINE

Canine Distemper Virus- Population Level Treatment Recommendations

Along with treating the individual patient in a shelter, there must be management of the disease in the shelter population. When considering infectious disease in a shelter, there are steps to take to manage an outbreak and prevent disease from spreading. Shelters should have a distemper outbreak management protocol before a positive case occurs as this will facilitate efficient management of the disease.

1. Diagnosis or recognition of the disease

The first step in Canine Distemper Virus (CDV) outbreak management is to stop the spread of disease by preventing any new exposures. Ideally, intake should be stopped or diverted to another location to create a clean break between exposed and non-exposed dogs and to allow for identification of the pathogen and removal of the infected and/or symptomatic dogs. If intake must continue per contracts, attempts at limiting intake should be made including halting owner surrenders or asking the public to hold strays if possible. A separate holding area must be created for any dogs that require intake.

Prompt recognition of clinical signs is facilitated by daily monitoring of the canine population. Diagnostic testing, via a respiratory PCR panel, should occur immediately on animals exhibiting clinical signs. Utilizing a PCR panel that includes quantitative distemper results can show the viral load for an individual dog, how contagious the dog may be, or whether the positive result may be related to a recent vaccination.

2. Isolation of sick animals

Any dogs that are showing clinical signs consistent with CDV should be removed from the population and placed into isolation to avoid continued spread to other dogs. (See individual treatment recommendations)

3. Quarantine of exposed, asymptomatic animals

Next, evaluate which animals may have had meaningful exposure to the suspected and known positive CDV cases. For CDV, meaningful exposure is typically determined by evaluating which dogs were in close enough contact for respiratory spread; respiratory secretions can travel up to 20ft. Any exposed dogs that are not showing clinical signs consistent with CDV should be removed from the population and placed into quarantine to avoid potential spread of disease to other dogs.

Dogs in quarantine should be monitored at least once daily to detect early signs of infection; when noted, prompt removal from the quarantine population is necessary for diagnostic testing and to prevent continued exposure of the remaining population. If a new CDV case is confirmed, the quarantine period is reset; for CDV this is 30 days from the last potential exposure. Any dogs in quarantine or isolation also need to be regularly monitored for quality of life as dogs in isolation or quarantine are at higher risk for mental deterioration.

4. Risk assessment in exposed animals

For CDV, exposed (quarantined) animals can be categorized into low risk, moderate risk, and high risk.

Low Risk	Moderate Risk	High Risk
Over 5 months of age with adequate* vaccine history	Over 5 months of age with no or inadequate vaccine history	Puppies less than 5 months of age

*Received at least one modified live DA2PP vaccination at least one week prior to exposure.

The risk category helps guide decisions around further diagnostic testing and continued quarantine. Low risk dogs can be cleared from quarantine. When evaluating these risk categories, it should be noted that low risk does not indicate no risk for becoming infected and high risk is not a guarantee an animal will become infected, but these results can be used to make sound risk evaluation for the population.

Further serologic assessment, in the form of antibody titer testing, can help to determine which moderate- and high-risk dogs may have protective antibody titers and can be subsequently cleared from quarantine. The decision to utilize titer testing should consider shelter resources and the ability to care for the dogs during quarantine. During a CDV outbreak, only titer test those dogs with no current or recent history of clinical signs consistent with CDV.

Moderate risk dogs whose titer tests reveal protective antibody levels should have immunity to CDV. These animals can be re-categorized as low-risk and avoid a prolonged quarantine. Those with a negative or non-protective titer should be considered high-risk for infection and will need to be quarantined for at least 30 days.

When considering antibody titer testing in the high-risk group, one must consider the impact of maternally derived antibodies (MDA) and a puppy's changing immune status. If a puppy shows protective antibody titer, this could be due to either diminishing MDA or a vaccinal response that will continue to protect against disease. Ideally, positive antibody tests should be paired with a negative PCR test to show if the antibody level is protective and not due to early disease. The best accommodation for puppies is to send them out of the shelter to foster care or transfer to different organizations to reduce any on-going risk, even if shelter can provide titer and PCR testing as it is just a point in time measurement and not truly predictive of risk.

5. Creation of a clean break to prevent further exposure

Once the isolation and quarantine spaces are identified and populations are moved into the correct space, an additional designated space should be identified and separated for restarting new intakes. Shelters that are limited in space may need to create delineations in the same room for isolation or quarantine with space between kennels or by utilizing other areas of the shelter for housing. Other shelters may utilize off-site locations for quarantine if space is limited onsite, but this can be straining on staff resources. If no space is available for a clean break , new intakes should be diverted to other organizations.

During the outbreak, all incoming dogs should be vaccinated with a modified live DA2PP at or before arrival, if possible, to maximize the likelihood they will mount an adequate, protective immune response prior to any exposure that could inadvertently occur once they are housed in the shelter.

6. Environmental decontamination

Strong biosecurity is needed during any outbreak. Appropriate sanitation should be used during this time, with attention to the order of cleaning - start with the most naïve, healthy population, then move to the quarantined population, then clean the isolation population last. Personal protective equipment, such as gowns, booties and gloves, is highly recommended to reduce any possible pathogen spread.

7. Effective documentation and communication

Correct documentation of location, clinical signs, vaccination, diagnostics, and treatment are vital to outbreak management. Clear information should be accessible to all staff during an outbreak to ensure there is no misinformation

and staff can understand and implement the response practices. Outbreak response for CDV may need to include community communication with transfer shelters or adopters of dogs that may have been exposed, local veterinary clinics, and the public at large via media sources. When considering dogs for adoption after a CDV quarantine or isolation, adopter education and communication is critical.