



Newcastle Disease

Alternate Names: NDV, avian pneumoencephalitis, exotic Newcastle Disease.

Species Affected: Wild and domestic birds.

What causes Newcastle Disease? Avian Paramyxovirus Type 1 (APMV-1) which affects the respiratory, nervous, and digestive system of birds. Three different forms exist based on the severity of disease caused by the virus in chickens. Lentogenic NDV causes no clinical disease, mesogenic NDV causes moderate disease, and velogenic NDV causes severe disease. Both mesogenic and velogenic types are considered virulent NDV.

How is Newcastle Disease transmitted? NDV is a highly contagious virus. It is transmitted in the manure and respiratory air and fluids of infected birds. The virus survives for days in water, feed, bedding, footwear, tools, equipment, eggs, and feathers. Contact with contaminated environments can also transmit NDV.

What are the clinical signs of Newcastle Disease? Clinical signs appear soon after exposure to the virus. The first sign of NDV could be sudden death of many birds in the flock. Respiratory signs include sneezing, coughing, gasping and rales (gurgling sounds). Neurological signs include walking in circles, twisted neck, shaking, paralysis of the legs, wings, or entire body. Birds may also have diarrhea; they stop laying or lay abnormal eggs.

What are the consequences of Newcastle Disease? Mortality is variable depending on the NDV strain, vaccination, and susceptibility of the bird, with losses of up to 100% of chicken flocks. Canada is free of Newcastle Disease in domestic poultry, but the virus is found in diseased wild cormorants (a type of aquatic bird).

How is Newcastle Disease detected? Based on clinical signs, flock history and observation of lesions in dead birds. Laboratory tests are necessary to confirm NDV and include histology (observation of tissues under a microscope), serology

(blood tests to detect antibodies – reaction of the immune system), PCR (Polymerase Chain Reaction, a molecular test to confirm the presence of viral RNA), and virus isolation in throat or anal swabs or samples of organs such as trachea, lung, kidney, spleen, and brain.

How is Newcastle Disease prevented? Through biosecurity and vaccination. Good husbandry and biosecurity help prevent the introduction of NDV into poultry flocks. Examples of biosecurity include keeping poultry in designated areas restricted to visitors, using clean footwear before entering poultry areas, using clean tools and equipment for poultry chores, preventing contact with wild birds and contamination of feed and water sources with droppings from wild birds.

Vaccines exist in Canada for chickens, turkeys and pigeons and they help reduce the severity of disease but cannot prevent it entirely. Depending on the type of vaccine used, vaccinated birds may show no signs of NDV but still transmit the virus.

To prevent the spread of NDV in poultry flocks several countries (including Canada) have government programs to respond to NDV outbreaks.

How can Newcastle Disease be treated? There is no treatment for NDV in poultry flocks.

Is Newcastle Disease Reportable? Yes, because of its severity and consequences, the virulent form of Newcastle Disease must be reported within 24 hours to the [Office of the Chief Veterinarian](#) and to the [Canadian Food Inspection Agency](#).

Is NDV zoonotic (transmitted from animals to humans)? Human infection is rare with mild conjunctivitis (pink eye) usually occurring in laboratory and farm staff.

References:

- Dimitrov, K. (2023, May). *Newcastle Disease in Poultry*. Merck Veterinary Manual. <https://www.merckvetmanual.com/poultry/newcastle-disease-and-other-paramyxovirus-infections/newcastle-disease-in-poultry?query=newcastle%20disease>
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- Newcastle Disease - Fact Sheet - Canadian Food Inspection Agency. (n.d.). Government of Canada CFIA. Retrieved March 4, 2024, from <https://inspection.canada.ca/animal-health/terrestrial-animals/diseases/reportable/nd/fact-sheet/eng/1330202454619/1330202602677>

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