

Newcastle Disease



What is Newcastle Disease?

Newcastle disease (ND) is a highly contagious and often severe disease found worldwide that affects birds including domestic poultry. It is caused by a virus in the family of paramyxoviruses.

The disease appears in three forms: lentogenic or mild, mesogenic or moderate and velogenic or very virulent, also called exotic Newcastle disease. The lentogenic strains are very widespread, but cause few disease outbreaks.

It usually presents as a respiratory disease, but depression, nervous manifestations, or diarrhoea may be the predominant clinical form.

ND, in its highly pathogenic form, is a disease listed in the World Organisation for Animal Health (OIE) *Terrestrial Animal Health Code* and must be reported to the OIE (OIE *Terrestrial Animal Health Code*).



Where is the disease found?

Found throughout the world, the disease has been currently controlled in Canada, the United States and some western European countries. It continues in parts of Africa, Asia and South America. However, since wild birds can sometimes carry the virus without becoming ill, outbreaks can occur anywhere that poultry is raised.

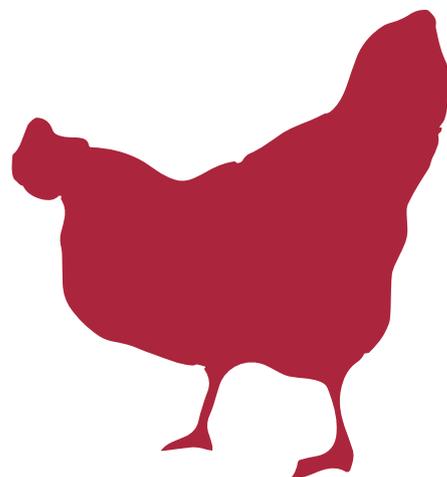
How is the disease transmitted and spread?

ND is transmitted most often by direct contact with diseased or carrier birds. Infected birds may shed the virus in their feces, contaminating the environment. Transmission can then occur by direct contact with feces and respiratory discharges or by contaminated food, water, equipment, and human clothing. Newcastle disease viruses can survive for several weeks in the environment, especially in cool weather.

Generally, virus is shed during the incubation period and for a short time during recovery. Birds in the pigeon family can shed the virus intermittently for a year or more. Other wild birds such as cormorants have also been shown to have caused outbreaks in domestic poultry.

The virus is present in all parts of the carcass of an infected bird.

The disease is very contagious. When the virus is introduced into a susceptible flock, virtually all the birds will be infected within two to six days.





What are the public health risks?

Newcastle disease is a minor zoonosis (disease of animals that can also infect humans) and can cause conjunctivitis in humans, but the condition is generally very mild and self limiting.

What are the clinical signs?

The clinical signs vary widely and are dependent on factors such as: the strain of the virus, the species of bird infected, the age of the host, (young birds are the most susceptible), concurrent infection with other organisms, environmental stress and immune status. In some circumstances infection with the extremely virulent virus strains can result in high numbers of birds found dead with comparatively few clinical signs. The disease has a rapid onset with symptoms appearing between two and twelve days after exposure, and spreads rapidly through the flock.

Some virus strains attack the nervous system, others the respiratory, or digestive systems. Clinical signs include:

- respiratory signs - gasping, coughing, sneezing and rales;
- nervous signs - tremors, paralyzed wings and legs, twisted necks, circling, spasms, and paralysis;
- digestive signs – diarrhoea;
- a partial or complete drop in egg production may occur. Eggs may be abnormal in color, shape, or surface, and have watery albumen;
- mortality is variable but can be as high as 100%.

How is the disease diagnosed?

ND can present a clinical picture very similar to avian influenza, so laboratory testing is important to confirm the diagnosis.

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The preferred method of diagnosis is virus isolation and subsequent characterisation. The OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* contains the guidelines for laboratory procedures to isolate the virus. Several methods are described, both by molecular and in vivo testing to determine if the virus is highly pathogenic and therefore reportable to the OIE.

What is being done to prevent or control this disease?

Prophylactic vaccination is practised in all but a few of the countries that produce poultry on a commercial scale. In order for a country to demonstrate that it is free of ND, surveillance is necessary following the guidelines the OIE *Terrestrial Animal Health Code*. Finally, poultry producers must implement effective biosecurity procedures to prevent incursion of the disease as described in the OIE *Terrestrial Animal Health Code*.

When the disease appears in a previously disease free area, a stamping out policy is practiced in most countries. This includes:

- strict isolation or quarantine of outbreaks;
- humane destruction of all infected and exposed birds (OIE Terrestrial Animal Health Code);
- thorough cleaning and disinfection of premises;
- proper carcass disposal (OIE *Terrestrial Animal Health Code*);
- pest control in flocks;
- depopulation followed by 21 days without poultry before restocking;
- avoidance of contact with birds of unknown health status;
- control of access to poultry farms.



More Information?

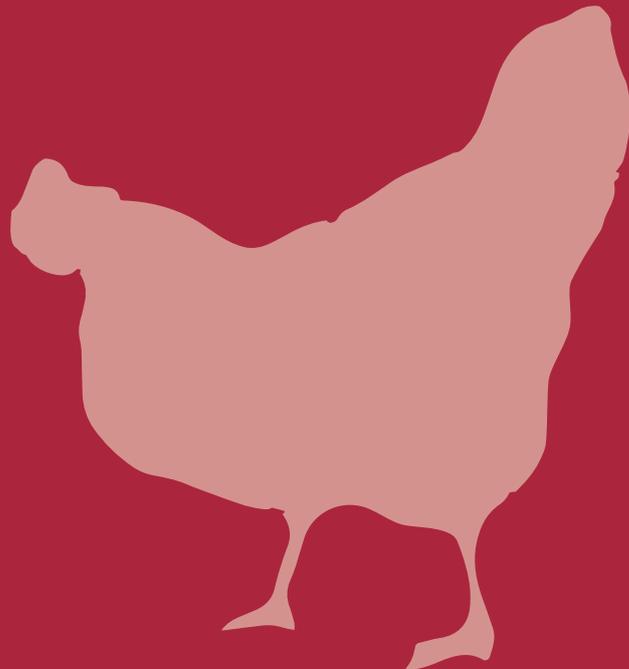
References:

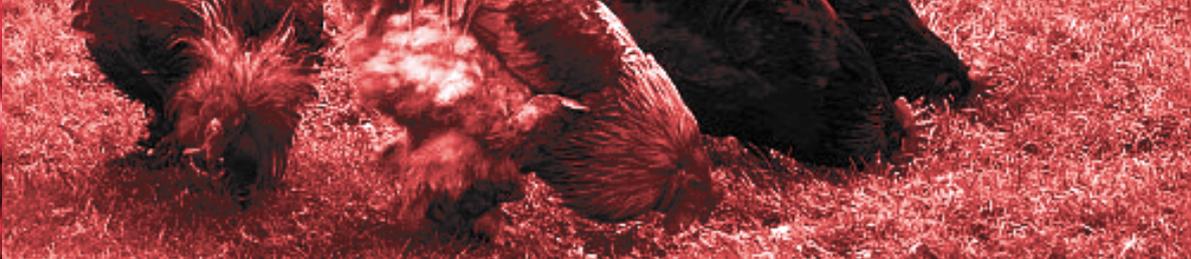
1. OIE *Terrestrial Animal Health Code*:
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2. OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animal*:
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List of Reference Laboratories:
www.oie.int/en/our-scientific-expertise/reference-laboratories/list-of-laboratories/

List of Collaborating Centres:
www.oie.int/en/our-scientific-expertise/collaborating-centres/list-of-centres/





Key Facts

- The disease was discovered in Indonesia in 1926, but is named after Newcastle-on-Tyne, England, where it occurred in 1927. It is also called ranikhet, pseudofowl pest, and avian pneumoencephalitis.
- Due to the constant threat of introduction of the virus from wild birds, biosecurity in poultry establishments is essential.
- Because the virus reproduces more quickly in human cancer cells than in most normal human cells, and because it can kill these host cells, ND virus has been experimentally used as a treatment for cancer.
- OIE guidelines for surveillance and disease eradication have been used to eliminate ND from many countries.

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