



Pigeon Paramyxovirus (PPMV-1)

Agent

PPMV-1 is a virulent variant of Newcastle disease virus of the avian paramyxovirus type 1 (APMV-1) serotype, from the genus *Avulavirus*, belonging to the family Paramyxoviridae. APMV-1 is one of twelve avian paramyxoviruses (AMPV) recognised to date. The virus is stable in the environment, with the ability to survive adverse conditions for several weeks.

Infection with PPMV-1 in racing pigeons and captive pigeons and doves (ie. pigeons/doves that are owned and kept) is a notifiable disease in the UK. Equally, infection of poultry including game birds with PPMV-1 is also a notifiable disease in the UK and is called Newcastle disease. Suspicion of PPMV-1 infection in racing pigeons, captive pigeons/doves or other captive birds, and any type of poultry must be reported immediately to APHA - see 'Risks to domestic animal health' below.

PPMV-1 infection in wild pigeons is not a notifiable disease.

Species affected

The natural host species for PPMV-1 are pigeons and doves (wild and domestic). However, Newcastle disease and other APMV-1 viruses have the ability to affect other wild and captive bird species including game birds, waterfowl, birds of prey, songbirds, parrots and most notably poultry.

Signs of disease

Pigeons & doves:

The incubation period can vary from 4-6 days up to 4 weeks. The clinical signs depend on factors including immune and vaccinal status, exposure route and dose and the particular strain of virus.

The most common clinical signs (symptoms) include depression, polyuria (increased urination), and watery/haemorrhagic (bloody) or green diarrhoea, torticollis (twisting of the head and neck), ataxia (loss of balance), limb/wing paralysis and death. If infected during moulting, feather development may also be affected leading to fragile or deformed feathers.

Mortality in pigeons and doves can vary depending on the strain of PPMV-1 and other factors, with rates of 10-100% recorded.

Birds that survive infection can shed the virus for a number of weeks, with one study showing that infectious faeces were shed by feral pigeons (*Columba livia domestica*) for over 6 months after initial infection.

Poultry and game birds:

The clinical signs of **Newcastle disease** include mortality, reduced appetite and difficulty eating, head and muscle tremors, incoordination/ataxia, torticollis, polyuria, polydipsia (increased water intake), respiratory signs, diarrhoea (which may be green), reduced egg production and abnormal (size, shape and/or colour) eggs.

Disease transmission

PPMV-1 is known to be shed by infected birds through the respiratory and gastrointestinal tract (bodily fluids, such as saliva, and droppings).

Direct contact: birds may become infected through direct contact with bodily fluids and droppings of infected birds. In the wild, the main route of disease transmission between birds is faecal-oral (consumption of food contaminated with bird droppings).

Indirect contact: birds may also become infected through the indirect spread of virus particles through the movement of fomites (objects or people contaminated by infectious material). These could include food and water, clothing and footwear, equipment and vehicles.

Distribution and origin

At present, PPMV-1 has a widespread distribution. The virus was first identified in pigeons in the Middle East in the late 1970s, and subsequently spread across the Middle East to Europe, Japan, North America and South Africa throughout the 1980s.

In Europe, outbreaks of PPMV-1 began in feral pigeons in the east of the continent before spreading westwards through both captive and feral pigeons, and Eurasian collared doves (*Streptopelia decaocto*). PPMV-1 was first detected in GB in 1983 as part of the spread of the panzootic in racing pigeons, and is still detected regularly in racing and feral pigeons and doves. Hence, PPMV-1 is now considered to be endemic (i.e. established) in wild/feral pigeons in Great Britain.

Risk to human health

Exposure of people to the virus can occasionally result in mild conjunctivitis, which most often resolves without the need for treatment.

Risk to domestic animal health

Virulent APMV-1 infection in poultry including game birds is called Newcastle disease, which is a notifiable disease in the UK. This includes infection of domestic poultry and captive birds by PPMV-1.

If you suspect PPMV-1 in racing pigeons, captive pigeons and doves or Newcastle disease in, poultry, game birds or other captive birds, you should report it to the Animal and Plant Health Agency (APHA) immediately using the contact details below:

- England: tel. 0300 020 0301
- Wales: tel. 0300 303 8268
- Scotland: contact local Field Services Office (<https://www.gov.uk/government/organisations/animal-and-plant-health-agency/about/access-and-opening#field-services-offices-scotland>)

For more information on Newcastle disease, please visit: <https://www.gov.uk/guidance/newcastle-disease>.

In addition to poultry and game birds, PPMV-1 may affect other species of captive birds. However, PPMV-1 poses no known risk to mammals (other than human beings – see above).

Diagnosis

Diagnosis of PPMV-1 in both pigeons and other bird species cannot be made based on clinical signs of ill health. Post-mortem examination and specialist laboratory testing are required to confirm the presence of the virus.

If you wish to report finding a dead **wild** bird, or signs of disease in **wild** birds, please visit www.gardenwildlifehealth.org. Alternatively, if you have further queries or have no internet access, please call the **Garden Wildlife Health** vets on **0207 449 6685**.

Treatment of wild pigeons/doves and control

Although with supportive care affected wild pigeons/doves may recover over a period of 3 to 8 weeks, treatment of affected wild birds is not recommended for several reasons:

- Birds infected with PPMV-1 continue to shed the virus throughout the treatment period, acting as a potential source of infection to other captive or wild birds, or poultry.
- Birds that recover may become carriers of PPMV-1 (i.e. they show no symptoms, but can transmit the virus to other captive or wild birds).

Because of the potential risks to poultry and game bird health, robust biosecurity measures are recommended between captive and wild birds as a routine. It is advisable to avoid keeping poultry or game birds in the same location as wild pigeon casualties.

Households with backyard poultry who feed wild birds, have dovecotes or racing pigeon lofts, should be particularly vigilant for signs of ill health in pigeons and doves and maintain good levels of biosecurity, for example separate food and water sources.

Prevention

Commercial vaccines for PPMV-1 are licensed for captive pigeons.

Biosecurity measures should involve avoiding direct contact between wild pigeons and captive birds, and contact between captive birds and any potentially infectious material, such as wild bird faeces.

Scientific publications

Alexander, D (2000) Newcastle disease and other avian paramyxoviruses. *Revue Scientifique et Technique Office International Des Epizooties* **19**, 443-455.

Leighton, FA, Heckert, RA, Thomas, N, Hunter, D, Atkinson, C (2007) Newcastle disease and related avian paramyxoviruses. In 'Infectious diseases of wild birds.' (Eds N Thomas, D Hunter, C Atkinson.) pp. 3-16. (Blackwell Publishing: Ames, Iowa).

Abolnik, C, Gerdes, GH, Kitching, J, Swanepoel, S, Romito, M, Bisschop, SP (2008) Characterization of pigeon paramyxoviruses (Newcastle disease virus) isolated in South Africa from 2001 to 2006. *Onderstepoort Journal of Veterinary Research* **75**, 147-52.

Schuler, K.L., Green, D.E., Justice-Allen, A.E., Jaffe, R., Cunningham, M., Thomas, N.J., Spalding, M.G. and Ip, H.S., (2012). Expansion of an exotic species and concomitant disease outbreaks: pigeon paramyxovirus in free-ranging Eurasian collared doves. *EcoHealth*, **9**(2), pp.163-170.

Pestka, D., Stenzel, T. and Koncicki, A., (2014). Occurrence, characteristics and control of pigeon paramyxovirus type 1 in pigeons. *Polish Journal of Veterinary Sciences*, **17**(2), pp.379-384.

Chitty, J., (2016). Pigeons and Doves. *BSAVA Manual of Wildlife Casualties*. Gloucester: British Small Animal Veterinary Association, pp.389-397.

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