

# Pigeon paramyxovirus (PPMV1)

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## Introduction

Paramyxoviridae is a family of viruses that cause a number of diseases in a wide range of animals and humans. The genus Avulavirus contains nine types of paramyxovirus that affect birds. Type 1 includes the pigeon paramyxovirus (PPMV1) and Newcastle disease (ND).

In August 2011, PPMV1 was first detected in pigeon lofts in the Melbourne area. In May 2012, PPMV1 was detected in a hobby pigeon flock in Western Sydney. Further outbreaks of PPMV1 in New South Wales (NSW) were reported during the period 2012-2014. In June 2013, PPMV1 was detected in domestic pigeons in Tasmania. PPMV1 has also been detected in the feral pigeon population in Victoria and NSW.

PPMV1 in pigeons is endemic in most countries. PPMV1 is highly pigeon-specific. Other avian species can become infected with PPMV1, but they do not usually show any clinical signs. Single cases of clinical disease have been identified in a collared sparrow hawk and a spotted turtle dove in Victoria.

Human infection with PPMV1 is rare and usually occurs only in people who have close, direct contact with infected pigeons. The virus causes only mild flu-like symptoms. There is a negligible risk to dogs and other non-avian species.

## What clinical signs are seen in pigeons?

Pigeons affected by PPMV1 are reluctant to leave the loft when released for exercise and appear a bit 'fluffed up' and 'off colour'. Mortality rates in NSW have generally been lower than in Victoria (50-100%) in the range 5-40%.

Clinical signs of PPMV1 include:

- High number of affected pigeons in a loft
- High number of deaths (up to 100% in some flocks)
- Loss of appetite
- Increased thirst
- Lethargy
- Respiratory signs e.g. laboured breathing
- Greenish, watery droppings
- Regurgitation
- Neurological signs (head shaking, head persistently turned to one side)

There is no specific treatment for PPMV1. Infected pigeons often die within 72 hours, but may survive with supportive therapy e.g. electrolytes, acidifying agents, probiotics. The addition of electrolytes to the drinking water is the most effective treatment. Control of intercurrent disease is also important.

A milder version of the disease is now being seen in domestic pigeons in NSW. This primarily occurs in younger pigeons that have not yet received two vaccinations, but also occasionally in older birds if annual booster vaccinations have been delayed. Similar clinical signs are seen (with minimal neurological signs), but less pigeons are affected and symptoms are less severe. Most pigeons will recover with supportive therapy.

## How does PPMV1 spread?

PPMV1 is highly infectious and transmitted easily between pigeons. PPMV1 is usually spread by the movement of pigeons, but it can also be carried in eggs. Infected pigeons may shed the virus in their faeces and other discharges contaminating the environment (including feed, water, equipment and human clothing), which allows transmission to other pigeons. PPMV1 can survive in the environment for several weeks.

Factors that can lead to spread of disease include:

- Contact with infected pigeons (including strays or feral pigeons)
- Contact with contaminated travelling boxes or transporters that have not been cleaned and disinfected adequately
- Shared drinking water or food in lofts and transporters
- Virus carried on clothes, hands and footwear of loft visitors

## Laboratory diagnosis

Laboratory investigation requires the submission of throat and/or cloacal swabs. Swabs should be placed in virus transport medium i.e. phosphate buffered gelatin saline (PBGS) and submitted chilled to the State Veterinary Diagnostic Laboratory (SVDL), Elizabeth Macarthur Agricultural Institute (EMAI), Woodbridge Road, Menangle NSW 2568. A specimen submission form must accompany specimens submitted to the laboratory. Forms are available at [NSW Department of Primary Industries](#).

PBGS is available free of charge from the virology laboratory at EMAI. Orders can be placed by sending requests to [virology.enquiries@dpi.nsw.gov.au](mailto:virology.enquiries@dpi.nsw.gov.au). PBGS can be stored in the freezer indefinitely. PBGS is also suitable as a transport medium for most other virus investigations.

In an emergency situation, and if no PBGS is available, swabs can be placed in sterile saline if they are delivered to the SVDL on the same day.

## What can I do to prevent PPMV1 in my pigeons?

Simple biosecurity measures that can be implemented to help prevent PPMV1 disease outbreaks include:

- Keep lofts and equipment clean
- Disinfect equipment used to house, transport, feed and water other birds
- Prevent wild birds (and their droppings) from having contact with your pigeons
- Prevent feed and water being contaminated by animal or bird waste
- Limit unnecessary visitors to your pigeons
- Disinfect boots/shoes and wash your hands and clothes after visiting other birds

Detergents e.g. washing-up liquid, laundry detergent and car/truck wash detergents can be used to loosen and remove dirt prior to disinfection. In order to be effective, detergents must have a contact time of at least 15 minutes before washing off.

## Can pigeons be vaccinated against PPMV1?

Yes. There is no vaccine in Australia currently registered for use against PPMV1 in pigeons. However, several ND vaccines are registered for use in chickens and are available in Australia. Research trials on the use of ND vaccines showed that they are safe to use in pigeons and if pigeons are vaccinated properly twice they are likely to produce antibody levels that should protect them against PPMV1.

Inactivated (killed) ND vaccines are used to vaccinate pigeons against PPMV1. An inactivated vaccine is a vaccine that contains a virus that has been killed. The vaccine also contains adjuvants to stimulate stronger and longer lasting immunity than is achieved by live vaccines. These adjuvants can also cause adverse reactions.

Intramuscular injections may not be suitable for pigeons. Preferred injection sites are subcutaneously (under the skin) at the base of the neck or in the loose skin between the leg and the body.

Inactivated vaccines **must not be frozen**. They should be kept at the manufacturer's recommended temperature, which is usually between 4-8°C.

Administration of ND vaccines to pigeons is an off-label use of a product registered for use in chickens. Off-label use is permitted only under written instructions from a registered veterinarian. Instructions should

include details about the pigeons to be vaccinated, the vaccine to be used, dosage, the route of administration, number of vaccinations, and the time interval between vaccines.

Note: the optimal dosage for use of ND vaccines in pigeons has not been determined. You should discuss vaccination with your private veterinarian and understand the issues before you vaccinate your pigeons.

ND vaccines can be purchased directly from the manufacturer or from their agents.

### What is the recommended vaccination protocol?

Research trials with the ND vaccines in pigeons showed an advantage when inactivated vaccines were given twice 4 weeks apart. Only healthy pigeons in healthy flocks should be vaccinated. It is important to vaccinate all the pigeons in a loft to optimise loft protection.

Anecdotal evidence suggests that an annual booster is likely to provide ongoing protection.

Young pigeons are often given the first vaccine dose around the time of weaning (approximately 4 weeks of age) when they are moved from the breeding loft to the race loft with the older pigeons. The older pigeons have raced and mixed with a lot of other pigeons from different lofts, some of which may be carrying PPMV1 even though they do not display clinical signs of infection. There is insufficient time to vaccinate these young pigeons twice before they may be exposed to the virus. These pigeons are susceptible to the milder form of the disease until they have developed full immunity.

### Can vaccinated pigeons spread infection?

Yes. Optimal protection may take 4-6 weeks to develop from the time the second vaccine dose is given to pigeons. During this time vaccinated pigeons may be only partially protected. Vaccines may protect against clinical signs, but they do not entirely prevent PPMV1 from entering the body, multiplying, being excreted and infecting other in-contact pigeons.

Since vaccines have the capacity to mask clinical signs of infection, vaccinated pigeons that may appear normal can still carry PPMV1 and infect other pigeons.

### Can I vaccinate if I want to export my pigeons?

Some countries will only accept pigeons that have not been vaccinated. If you are considering export, check import requirements carefully before you vaccinate your pigeons.

### Do I have to report cases of PPMV1?

Yes. PPMV1 is a notifiable disease under NSW legislation. There is a legal obligation to notify authorities if you know or suspect that pigeons have this disease.

You may notify suspect or confirmed PPMV1 in one of the following ways:

- Contact the NSW Department of Primary Industries Poultry Health Coordinator on (02) 4640 6308 or [amanda.lee@dpi.nsw.gov.au](mailto:amanda.lee@dpi.nsw.gov.au) ; or
- Use the NSW Department of Primary Industries (DPI) [online form](#); or
- Fill in the [NSW notifiable animal disease form](#) and fax it to NSW DPI Biosecurity on (02) 6361 9976.

### More information

- [Queensland Department of Agriculture, Fisheries and Forestry](#)
- [Australian National Pigeon Association](#)

Alternatively, please contact Amanda Lee on (02) 4640 6308.

For updates, go to [primefacts](#).

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