

# The PMV Outbreak – Part 2

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## The current situation

At the time of writing (the 2<sup>nd</sup> week in January 2012), Paramyxovirus has been diagnosed in 43 discreet feral populations of pigeons and 62 fanciers' lofts throughout Melbourne and Victoria. On average, 3 to 4 fresh locations are diagnosed as infected each week. Last week saw the single largest number of infections diagnosed in a single week – 11. The disease in Victoria does not appear to be 'dying down' but to some extent has developed its own momentum. In the last week I submitted samples from 4 of my clients' birds for PMV testing and 3 of these have returned a positive result. The possibility of eradicating the disease seems unlikely and I feel it is probably only a matter of time until the disease is declared endemic. Victorian fanciers can expect to inoculate their birds each year from now on and interstate fliers are holding their breath. The ban on pigeon movement in Victoria has been extended to the end of March. It is likely that an overseas proven pigeon PMV1 vaccine will be registered in Australia within the next few months. This will enable racing and showing to resume in Victoria but unless the disease is diagnosed interstate Victorian racing is likely to be confined to within its borders. And so what has been the sequence of events since my last article on Paramyxovirus?

## Testing the available vaccines

In the latter half of 2011 there were no PMV1 vaccines registered for use in pigeons available in Australia. There were, however, two vaccines (NDV4 and La Sota) available for use in chickens to protect them against Newcastle disease. Newcastle disease is also caused by a PMV1 virus. Although not the same, it is very similar to the PMV1 virus in pigeons. Because of the antigenic similarity it seemed reasonable that giving one of the chicken vaccines to pigeons may give the pigeons some immunity. I was contacted by the Victorian DPI to run vaccine trials to see if in fact this was the case. I did not race in 2011 but had had good returns in the 500 and 600 mile races in 2010. Many of these birds are still sitting in my racing loft. As they were young, healthy and had been confined to the loft for many months, they were ideal candidates for the trial. The vaccines and all laboratory testing were supplied by the DPI for no charge while I provided the use of my birds and my time (also for no charge). Initially I drew blood from all the birds to see if they had had any exposure to PMV. All returned a negative result. The birds were then divided into several groups and separated. One group was vaccinated with the NDV4 vaccine (a live modified chicken origin vaccine). This was done by mixing the vaccine to the manufacturer's recommendations and placing several drops directly into the throat of each bird. A second group was inoculated with the La Sota vaccine which is a killed oil based chicken origin vaccine. This was done by injecting a measured volume of vaccine under the skin at the back of the neck of each bird. Further groups were kept both as in-contact and separated controls. After three weeks I again took blood from all the birds. This blood was then checked against Newcastle disease virus, a PMV1 strain from pigeons in the UK, and the PMV1 strain from Australia to see if the birds had formed any immunity. No birds in the NDV4 group formed any immunity. Only a few birds in the La Sota group formed some immunity but not sufficient to protect them from disease.

## Where to next?

The vaccine trials had commenced in early October and were not completed until early November when the final (disappointing) blood test results came back. While the vaccine trials were proceeding, further cases of PMV1 continued to be diagnosed on a regular basis and it was becoming apparent that the disease was becoming more established. With the vaccines available in Australia being shown not to be able to protect Australia's pigeons, attention then focused on gaining access to the proven vaccines available in the UK and US.

For vaccines to be legally imported into Australia they need to pass through a registration process. This process involves the vaccine manufacturers submitting dossiers covering the vaccines manufacturing, activity, chemistry etc to the Australian Pesticides and Veterinary Medicine Authority (APVMA) and the Australian Quarantine Inspection Service (AQIS) for assessment. If these government bodies approve the use and importation of the vaccine then the vaccine becomes 'registered' for use in Australia and can be imported and supplied to fanciers. AQIS is principally concerned with assessing the quarantine risk of importing a vaccine to Australia. Among other concerns is the risk that a vaccine could be contaminated with another virus or pathogen. The APVMA, on the other hand, is principally concerned with the quality, effectiveness and the safety of a vaccine so that Australian users get a guaranteed product.

In mid-November I had a meeting with Pfizer's chief regulatory officer, Dr Phil Lehrbach, at the Pfizer offices in Melbourne and explained the situation to him. Pfizer makes 'Columbovac', a PMV1 vaccine that is registered for use in pigeons in the EU. It is safe, effective and has been widely used for many years. Dr Lehrbach explained that Pfizer held a sufficient volume of Columbovac in Europe to meet Australia's needs and also had their EU registration dossier complete and up to date. They would submit this to the Australian authorities with a view to registering Columbovac for use in Australia. Their aim was to have this done by the end of 2011.

With the aim of expediting the registration of an overseas vaccine for use in Australia, a series of phone calls were made between Stephen Kearsy (VHA president), John Shore (VHA Vice-President) and myself. It was decided that a meeting should be held at the VHA headquarters where representatives of the APVMA, AQIS, DPI and the various federations should meet to discuss making a vaccine available. To this end, on Thursday the 17<sup>th</sup> of November, Dr John Owusu of the APVMA (having flown down from Canberra), Dr Sam Hamilton (of AQIS and assistant to the Commonwealth Chief Veterinary Officer), two representatives from the DPI, the president and secretary of the four racing federations in Melbourne (VHA, WPF, VPU and GMPF), the secretary of the national fancy pigeon association (ANPA) and myself met at the VHA headquarters in Melbourne.

This was an extremely useful meeting. Not only did the government bodies develop an understanding of our need and the urgency of the situation but also the representatives of the federation learnt what was required to make the vaccine available. On the following Monday (21<sup>st</sup> November) an open meeting was held at the VHA rooms where all members were invited. About half of the federations' members attended. Stephen Kearsy, John Shore and myself summarised the situation to members and answered member's questions. On Tuesday (29<sup>th</sup> November) of the following week, Stephen Kearsy and myself met with the Victorian Chief Veterinary Officer, Dr Andrew Cameron at his offices just north of Melbourne. Dr Cameron explained that with several further locations being identified as infected each week, a huge vulnerable pigeon population, no effective vaccine available, the extremely high morbidity

and mortality rate associated with the disease and the disease being identified in feral pigeons that Victoria 'wants and needs' an effective vaccine. Dr Cameron explained that he would write to both the APVMA and AQIS explaining the situation and urge them to prioritise the vaccine registration process so that an effective vaccine could be made available as quickly as possible.

By the end of the year, Pfizer had submitted their registration application to both APVMA and AQIS, Dr Cameron had written to the APVMA asking that this and any other application received be prioritised, John Owusu had acknowledged receipt of the application and the request to give it priority and had agreed to do this. It was a good example of various government bodies, pigeon organisations and private business working together to achieve an aim. The normal time to register a vaccine in Australia is 15 to 18 months. Indications are that depending on AQIS, this registration approval will be completed in the comparatively short time of 4-5 months.

While these meetings and activities were proceeding, a second vaccine company MSD were also indicating their desire to submit a registration application for their pigeon PMV1 vaccine 'Nobivac'. This vaccine is also registered in the EU and is also widely used. At the time of writing (2<sup>nd</sup> week of January 2012) they have not as yet submitted their registration dossier application but I have spoken to their regulatory affairs officer who tells me that this will occur shortly.

### **Control measures**

Has the program to eradicate PMV1 in pigeons been successful? The short answer is no. Has the program been successful in containing the outbreak and preventing PMV becoming established and widespread? Probably the control measures have slowed the rate of spread but again the simple answer is no. One could argue that the millions of dollars and thousands of man hours spent on the programs aiming to control this disease have been wasted. The disease is now well and truly established with the virus being identified in over 100 different locations throughout Victoria as of mid-January 2012. Just why this has happened is open to debate. One could argue that although the DPI staff on the ground have done a great job, that the basic control plan was flawed from the start, or perhaps the whole process was doomed to failure from the beginning, having as its objective an almost impossible aim. After all, in all other countries where pigeon PMV1 has been diagnosed, it has failed to be eradicated. A university professor who is also an avian vet with experience of several PMV outbreaks overseas suggested right at the start that the control measures were far too conservative. He advocated that birds on infected properties should all be culled. One should remember that there have been several outbreaks of Newcastle disease virus (which is caused by a similar PMV1) in Australia in chickens. All of these have been successfully eradicated in this way. Others suggested that unsupervised quarantine was not really quarantine at all – simply relying on the quarantined fanciers' honesty to comply. Also, some have suggested that lofts were released from quarantine too early when the environment could still have been contaminated. To some observers watching the weekly DPI postings on their website and monitoring the slowly rising number of infected locations has been like watching a slow train wreck reaching an inevitable conclusion – the disease becoming endemic.

The DPI program has however achieved other aims. The progress of the disease has been well monitored, the pigeon community has been kept fully informed of the situation, affected fanciers have been well supported, vaccine advice has been given and trials have been conducted, the virus's affect on chickens has been investigated, pigeon fanciers have been educated about PMV and the DPI is now helping to register the vaccine. The DPI has been fully prepared and indeed willing to liaise with the

pigeon community from the start, taking advice on the potential ways the virus could be spread and suggestions on bans on pigeon movement. One can imagine the various responses from the pigeon community if the decision had been made to not only quarantine infected premises but also cull the birds on these premises. I think the majority of pigeon fanciers, given the circumstances, have been impressed by the job done by the DPI.

Although the programs to eradicate the disease have failed, one would hope that efforts to make available a proven vaccine proceed quickly. Every week further fancier's lofts are diagnosed with the disease and the disease is also identified in further feral populations. Birds continue to die. Some fanciers are getting frustrated. Fanciers whose lofts become infected have no way of protecting their birds. They have to sit and simply watch them die. One Belgian vet now living in Australia explained to me how he had literally vaccinated tens of thousands of birds with 'Columbovac' and had found it to be very safe and effective. The vaccine has been used for over 15 years throughout the EU. Many fanciers wonder how there can be any delay in registering a vaccine with such a proven track record. I have spoken to a number of fanciers who have unfortunately attempted to smuggle vaccine into Australia (some I suspect successfully) through sheer desperation.

Some stories of outbreaks are quite heart-wrenching and I think that some fanciers' still-balanced approach in the face of the ongoing deaths of their birds, if nothing else, shows their individual strength of character. It must be incredibly distressing going down to ones loft each morning and finding further dead birds on the floor. One well known Australian tumbler breeder in Melbourne whose birds were diagnosed with the disease had earlier received an ANPA Master Breeder award. His birds were regarded as world class with some being exported to other breeders around the world. Three weeks after the diagnosis of the disease in his loft, he had two hens left. His life's work was gone and an irreplaceable genetic pool was gone forever.

### **Vaccine availability**

When a pigeon PMV1 vaccine is registered in Australia it will be classified as an S4 product. This means that it will only be available with a prescription. This also means that it will only be available through veterinarians and should be used under veterinary supervision. This does however mean that it will be available through every veterinarian in the country, so fanciers will not have any trouble getting vaccine. Fanciers are encouraged to contact their usual veterinarian that they use to help with their pigeons health matters. Both 'Columbovac' and 'Nobivac' are killed oil based vaccines that have to be given subcutaneously (i.e. just under the skin) by injection. The preferred injection site is under the skin at the base of the neck. I have personally used these vaccines both in the UK and the US and they are not easy to use. Being oil based they are viscous and slow to inject. Also, the injection needs to be given correctly. If given incorrectly it is possible for the needle to damage the jugular vein, the windpipe, the spine, the crop, or inter-clavicular airsac, all of which sit in this area. Fanciers should get their veterinarian to demonstrate to them how to give the vaccine until the fancier is confident in his ability to give the vaccine properly. In some countries, eg Ireland, the vaccine can only be given by a veterinarian and is not allowed to be given by fanciers. The pigeon game being what it is, there are sure to be pigeon fanciers/dealers and regrettably veterinarians who see an opportunity and will endeavour to supply bulk or cheap vaccines inappropriately. Lets hope this does not occur.

### **To vaccinate or not?**

As to whether or not use of the vaccine should be encouraged in states other than Victoria is debatable. Sure, no one wants to be the first case diagnosed interstate through not vaccinating his birds, but is it really worthwhile having hundreds of fanciers spending hundreds of dollars vaccinating thousands of pigeons against a disease that doesn't occur there? Depending on the registration requirements, the vaccine may only be registered for use in Victoria, but at least being registered here it can immediately be made available in other states if the disease is diagnosed there. One important thing to remember is that the vaccine confers sufficient immunity to stop vaccinated pigeons from getting sick but it doesn't stop them catching the virus if they are exposed to it. Vaccinated pigeons can carry the virus for several weeks before clearing it from their systems if they are exposed to it. In this way, inoculated pigeons can mask the spread of the virus. This is the reason why it is likely that vaccinated Victorian pigeons will still not be allowed to race out of the state unless the disease is diagnosed in other states. This is also the reason why if South Australian, New South Wales and Tasmanian pigeons are vaccinated they are still unlikely to be allowed to race into Victoria. Such birds could be exposed to the virus in Victoria and carry the virus home without showing any symptoms.

My advice at the time of writing (January 2012), and this may change depending on how the disease behaves over the next few months, is that Victorian fanciers should definitely vaccinate as soon as the vaccine is available but interstate fliers should not necessarily unless the disease is diagnosed in their state. Racing federations and fancy clubs, of course, may make recommendations or indeed rulings to their members but remember many people that keep pigeons in Australia don't formally race or exhibit their birds and as such don't belong to any organisation. This means that in many circumstances the decision to vaccinate or not will be an individual one. Fanciers should consult with their veterinarian, take their clubs advice and consider what risk they are prepared to take.

### **The situation with chickens**

Chickens have been deliberately exposed to the virus in Victoria by the DPI. This testing showed that chickens could become infected with the virus but did not show symptoms. The interesting thing is that one of these infected chickens was subsequently mixed with further chickens at a second location. It was able to pass the virus onto some of these birds in the second group. After several weeks all chickens cleared the virus and at no time did any show symptoms. From a pigeon fanciers point of view this means that as chickens that have been exposed to the virus have the potential to carry and shed the virus they can therefore be a source of infection to other birds including pigeons for a period of time.

### **Doves**

In several lofts where the disease has appeared, the source of the virus has been hard to identify. In two lofts in particular, the pigeons had not been allowed out for over four weeks, no other fancier had visited, the owners had not visited other lofts and no new pigeons had been introduced. In one loft in particular a separate set of shoes was kept specifically for use in the loft and a disinfectant foot bath had been installed. In these two lofts however there were a significant number of introduced lace neck (*Streptopelia* sp.) doves living around the lofts. The finger of suspicion was pointed at these birds. In Canada, when pigeon PMV1 broke out, a number of native pigeons and doves were trapped and checked for the virus. The virus was able to be identified in all species checked and in fact two birds from one species showed mild symptoms of infection. All species of PMV1 have their own set of

characteristics which includes which species of animal they can infect. The virus in Australia is very similar to that in Canada. As the viruses are similar, it is reasonable to consider that the PMV1 strain in Australia is likely to behave similarly to that in Canada. Until proven otherwise, any free-flying introduced or native dove or pigeon should be viewed as a potential source of infection.

## **The future**

In no country where pigeon PMV1 has been diagnosed has it been successfully eradicated. In other countries spread of the virus into feral pigeons has not been a good indicator of the spread of the disease generally. For example in Canada the virus was detected in feral pigeon's years after it was first detected in fanciers' lofts and only after the virus had spread into literally hundreds of these lofts. With so many (greater than 40) discreet feral populations of pigeons known to be infected with the virus throughout Melbourne it is likely that the disease is now firmly entrenched. This and the facts that the virus can persist for many months in a contaminated environment (which in theory is wherever a feral pigeon happens to defecate), that other species of birds (eg doves, chickens, ducks) and even vaccinated pigeons can act as asymptomatic spreaders of the virus, that recovered birds continue to shed the virus for up to 8 weeks even though they may look normal and the high degree of movement of pigeons not only between fanciers but also to races and shows mean that this virus is likely here to stay. It is hard to imagine that given the passage of time it will not spread out of Victoria. With the virus now being identified in approximately 100 locations in Melbourne it is not possible, no matter where you live, to be more than about 7km from an infected site.

There's also a concern that although the disease is being diagnosed in several fresh locations each week that this is artificially low. The opportunity for the disease to spread is reduced at the moment because greater than 50% of racing fanciers are not letting their birds out. As racing approaches fliers in greater and greater numbers can reasonably be expected to start running the risk of letting their birds out in order to get them race fit. If these birds remain unvaccinated through a delay in vaccine availability they will represent a huge vulnerable population. It is reasonable that many of these birds will come in contact with the virus leading to an increase in the number of diagnosed cases.

This is all disappointing, but in the same way that the continued spread of the virus seems inevitable, similarly it should only be a matter of time until an effective vaccine becomes available. This waiting time is a nervous time for fanciers, particularly given the devastating nature of the infection, but once the vaccine is available and fanciers have a way of protecting their birds it will simply be a matter of inoculating the birds each year as indeed all other pigeon fanciers around the world already do. Perhaps we should consider ourselves as being lucky to have escaped the disease for as long as we have.