

To vaccinate or not – That is the Question!

By Dr Wim Peters

Silly question you might say. But then, on the other hand, there are others who would argue that the pigeons must build up their own ‘natural immunity’. There’s so much confusion and dissent about vaccination amongst the fanciers that it might be productive to have a re-look at the pros and cons. So here goes.

To begin, we must first consider for which diseases vaccines for use in pigeons, are available. That’s easy really, as there are only three official ones i.e. paratyphoid, paramyxo and pox. Then there is some evidence that the poultry vaccine for EDS helps to combat the adenovirus fraction of YBS in pigeons. And there is some speculation that chicken vaccine against herpes virus might be of benefit when used in pigeons. But let us discuss them individually.

Before that though, to understand our subject better, we should talk a little about the challenges that face a laboratory when they wish to produce a vaccine. In general a live vaccine is better and more effective than a dead vaccine. This is because a dead vaccine can only rely for its immunogenic properties on the vaccine that is actually injected and the more one injects the stronger the immune system responds. A live vaccine on the other hand, contains live immunogenic micro-organisms that multiply and acting as stimulant, carries on stimulating the immunity until the system’s response is strong enough to remove the stimulant. This is therefore also the reason why a dead vaccine very often requires a booster vaccination(s) whereas when we use a live vaccine, one shot is usually sufficient.

The requirements of a good vaccine

1. Whether live or dead – the vaccine must be able to produce the required immunity. Not all dead organisms in low numbers will stimulate the immune system sufficiently. Enough organisms must be introduced to do this, but on the other hand, there must not be so many that they cause a shock reaction in the patient. Special chemicals may be included in the vaccine to increase the immune response.

2. At the same time a live vaccine must not be able to produce the disease. This refers to live vaccines that have to be weakened (attenuated is the scientific word). When making most vaccines attenuation is achieved by repeatedly injecting the organisms into almost full-term embryonated eggs. This process is repeated 40 or 50 times and by this time the virus is so weakened that it can now be injected into chickens without producing the disease.
3. The vaccine must not spread. In other words the vaccine virus must not be shed by the host. The danger is that the shed virus reverts back to its original pathologic state and causes disease. This would possibly not happen in the first shedding but with repeated passages from one host to the next, it is a strong possibility.
4. Negative publicity occasionally stems from suspected cases of diseases that arise following vaccinations. These can be of viral origin, caused by foreign viruses hidden in the vaccine or through auto-immune reactions arising in the body. Fortunately these problems have not yet surfaced in pigeon vaccinations and are restricted (so far!) to human vaccinations.

Let us look now at the different pigeon vaccines in use.

Paratyphoid.

This disease, caused by the bacterium *Salmonella typhimurium* var. Copenhagen, is surely the scourge of pigeon fanciers. Because the disease acts like a thief in the night – entering silently and unseen. Once the signs of infection become obvious it will already have spread to many birds in the loft. And unless immediate and drastic steps are taken, with dire consequences. The very real danger lies in the fact that new birds introduced into the loft – particularly those imported from foreign countries – appear healthy but could be carriers of paratyphoid. And they will - unbeknown to the new owner - silently and intermittently spread their germs. A further complication is that quarantining the pigeons to observe any disease processes that could be in the incubation stage, is to no avail where paratyphoid is concerned. The carriers can remain undetected for months. Treatment with Baytril for all new introductions and subsequent vaccination during quarantine would appear to be the safest route – if there is any doubt.



This bird has paratyphoid with small abscesses in the brain.

There are certain problems associated with paratyphoid vaccinations.

- The first is that vaccines are not cheap.
- As we saw above, vaccine manufacture against Salmonella has been a challenging exercise. There is still a lingering doubt that the vaccines are not as good as they should be.
- Dead vaccines require a booster injection. This is most important and must be done at the specified time recommended by the manufacturer. It usually is 4 weeks. Failure to repeat the vaccination or vaccinating it an incorrect time, renders the whole vaccination process markedly less effective.
- According to the manufacturer's instruction, the live vaccine - from Germany - requires only a single injection but for safety's sake a repeat shot 4 weeks later, is advocated by this author.

- Vaccination is really protective for 6 months only although 9 to 12 months is sometimes claimed. Note this carefully with respect to the start of the racing season.
- Vaccination is not a treatment!! Vaccinating young birds will not be effective if the youngsters are already infected. They must first be treated with an adequate antibiotic.
- It well to remember that vaccinations – regardless of how good the vaccine is – are never 100% effective. At times the fault lies with the bird being vaccinated when it fails to respond to the vaccine. But it might also occur through an incorrect vaccination technique or if the vaccine has lost potency through incorrect storing or handling. It's recommended that, in case of doubt, vaccinations are repeated with fresh vaccine. One can never do it too often.

What are the circumstances under which one ought to vaccinate? This question comes up repeatedly in the minds of fanciers. Two scenarios exist, one where the birds are already infected and another where they are not.

In an infected breeding loft all stock birds should first be dealt with by treatment with Baytril for ten days before vaccination is done. Any birds that react negatively are probably carriers and should be removed. It is imperative that the disease must be eradicated before breeding begins. Once everything appears quiet, breeding can begin. Young birds must be vaccinated at weaning or soon thereafter. A booster injection follows at the correct time and it would be prudent to repeat the vaccination again immediately before the start of the racing season.

Warning; Baytril has been reported to cause transient infertility so it should not be used for 3-4 weeks preceding egg-laying and fertilization.

Where the breeding stock is not infected, the racers should also be healthy. The question remains whether one should, in this case, vaccinate or not and I would think that if your breeding loft is a closed unit - i.o.w. fresh introductions are not made into it on a regular basis - it would probably not be necessary to vaccinate. But if constant introductions are made into the loft, particularly if they emanate from Europe, vaccination would be advisable. The racing team need only be vaccinated to protect them from possible exposure to the germs in the race panniers and again the same rule of thumb applies i.e. if the chances are good that your competitors are basketing infected carriers, rather vaccinate.

The wisdom of paratyphoid vaccination is often questioned and the question is debatable. Some top fanciers insist that vaccination should be done whilst other champion racers do equally well without vaccinating. There's no hard and fast rule. Should one opt not to vaccinate it would be advisable to acidify the drinking water with lemon juice or vinegar at least three times per week. It would also be prudent to make liberal use of a good probiotic. Saying that though; even if your racers were vaccinated, it would still be a good idea to follow the acidification/probiotic route because Salmonellas are not the only 'nasty' germs around.

A last thought: Natural immunity against Salmonella infection only forms when the germs have already attacked the body. The immunity is however not strong enough to rid the pigeon of the disease. So there is no gain in thinking that one should go the 'natural way'. Protect the birds by vaccination or acidifying the bowel and ensure – as far as possible - that no contact with infected pigeons take place.

Paramyxo

Here there is no question about what should be done. Vaccinate, vaccinate, vaccinate!

To protect the chicken and ostrich industries, the laws of South Africa have made vaccination of pigeons compulsory and most organizations do not allow unvaccinated birds into the racing panniers. Unfortunately the authorities have not made a good job of listing the vaccines to be used. All the dead vaccines against Newcastle Disease (ND) used in poultry, are effective. There are a few on the market but those of the Talovac or Cevac ranges are currently the most used. The live virus La Sota vaccine is banned in some countries and controversy exists about its effectiveness in protecting against paramyxo. Our experience is that it is effective but it has two major drawbacks. One being the very short time that the localized immunity (not humoral immunity) exists. To be effective, after the initial two vaccinations a month apart, one has to vaccinate the birds every 3 months. The other problem with La Sota is that if it is given to a bird already harbouring the disease, it exacerbates the symptoms seen. So it should never be used on any pigeon or in a loft where the disease is already present.

As with paratyphoid, unprotected birds only form an immunity after exposure but are often left with permanent nervous traits. Like stargazing,

trembling, lameness etc. The kidney phase seems to pass and the heart phase with congestion as recently reported, occurred too recently and not enough experience has built up in order to give a reliable prognosis. The truth is however that one cannot rely on 'natural resistance'. It comes too late and comes at too great a cost!

All the injectable vaccines are made with **dead** virus. Is essential therefore, to give two injections, the second one 4 to 6 weeks after the first. A third shot, given a week or two before the start of the racing season, is a good idea and will properly protect the birds during the course of the racing period.



This bird suffers from cerebral infection caused by paramyxo which is indistinguishable in the live bird from that caused by paratyphoid.

As paramyxo is such a big problem in SA, it is wise to begin vaccination early. As soon as squabs are feathered, they can be vaccinated. The vaccine, being oil-based, remains in the injection site for weeks and stimulates the immune system over an extended period, ensuring that the baby has some protection when leaving the nest. The follow-up injection then boosts immunity to greater levels.

Vaccination is not a treatment. Fanciers are, however, very fortunate in that it appears as if vaccination with a dead virus shortens the period of illness experienced in a sick pigeon showing kidney disease. It takes 2-4 weeks for changes to occur but it is very gratifying to see a loft where the watery droppings (typically caused by paramyxovirus (pmv)) improve after this period. These pigeons can be raced again with success.

Pigeon pox

Vaccinating for pigeon pox with an effective product can save you lots of heartbreak and possibly a few pigeons. But the operative word here is 'effective'.

About 10 years ago or so, South African fanciers found that the vaccines they had been using till then, did not work any more. The vaccination sites 'grew' but the pigeons that had been vaccinated, were still getting pox. Up until then a vaccind made by Onderstepoort had been effective as had the combined pmv/pox vaccine, imported from Europe. It was postulated then that the disease virus had mutated as it could be shown that the vaccines used at the time, were not able to protect the pigeons. Contact was made with a vaccine-producing laboratory and plans made to manufacture a new vaccine. This was duly done and proved to be very successful. Till 2009. The same scenario played itself out and vaccinated pigeons were again getting pox. It appeared as if the virus had again changed! Or maybe a different strain was causing the problems – the 'old' strain perhaps?

As it stands, there is therefore no effective vaccine in this country. Plans were made to manufacture a new vaccine and I believe that it has recently come onto the market. It would seem to me that the causative virus from all three different outbreaks in this country should have been included in this vaccine vaccine.

Both birds have bad pox and will not fully recover.

Besides vaccination what could be done?

There are a few options, not one of which is perfect.

- In the off-season obtain an infected pigeon and allow it to spread the pox to the other pigeons by natural means. The immunity obtained in such a case is good but the method has two disadvantages. One being that spread is relatively slow and one cannot be certain that all birds

- are infected. The other is that some pigeons may get a severe disfiguring lesion or a lesion in a sensitive area that will prevent their functional recovery. This is especially true for very young birds.
- Taking scabs from an infected bird one can make your own vaccine. Further use is the same as with a commercial vaccine. Alternatively, if there are few birds only to be inoculated, inserting a needle into the pox scab and scratching the young pigeons with it, will accomplish vaccination.
 - Do nothing and hope that pox does not occur in the season or if it should strike in the racing season that it will be mild and not interfere with racing.

Adenovirus

Vaccines are available against Egg Drop Syndrome (EDS) in poultry. The disease is caused by an adenovirus and it has been suggested that the vaccine could be effective in controlling the symptoms of an adenovirus infection that sometimes occur with Young Bird Sickness – YBS – in pigeons. These vaccines are now regularly used in pigeons and it seems that they do have a lessening effect on the symptoms of YBS but until proper immune responses in the pigeons and blood antibody levels are measured, one will not know whether they are, in fact, effective. However, being dead vaccines they do not cause disease or spread virus amongst the pigeons and they can be used without reservations.

Herpes virus

Herpes virus can cause severe disease in young pigeons with near 100% mortality. It can also be responsible for poor racing results in adult pigeons. There is a vaccine for use against Marek's Disease in chickens – caused by herpes virus. Controlled trials to test the safety of the vaccine's use in pigeons would first have to be done though, as the vaccine contains live attenuated herpes virus.

Gumboro disease virus

There is some speculation that Gumboro Disease virus also causes disease in young pigeons. So far no confirmation has been found but the Gumboro disease vaccine (killed vaccine) could be used in pigeons and would probably provide protection.

wpeters@iafrica.com