Layers and breeders

Nobilis® Rhino CV can be used as an effective primer for the following Intervet vaccines
Nobilis® TRT inac
Nobilis® RT + IBmulti + ND + EDS
Nobilis® RT + IBmulti + G + ND

When administered to maternal antibody positive day old chicks Nobilis® Rhino CV provides solid immunity against APV infection for at least 16 weeks. Administration is by coarse spray or eye-drop.

Suggested vaccination schedule

	Age	Vaccine
Broilers	From day one onwards	Nobilis® Rhino CV
Breeders/layers	1-2 weeks	Nobilis® Rhino CV
	16-20 weeks	Nobilis® RT inac (or Nobilis® RT + combination vaccines)

Layers and breeders

APV infection is associated with:	
	Decreased egg production
	Decreased hatchability
	Changes in egg shell and internal egg quality
	Respiratory signs

Broilers

Swollen head syndrome (SHS) is associated with APV infections of the respiratory tract, combined with secondary bacterial infections such as E coli.

The consequences of SHS are:	
	Increased mortality rates
	Increased use of antibiotics
	Poor feed conversion rates
	Increased condemnation rates

Useful to know...

An Intervet-sponsored web site has been be launched in September aimed at providing easy-to-access information specifically related to diseases caused by avian pneumoviruses.

www.avian-pneumovirus.com (which can be accessed via www.intervet.co.uk) will be updated regularly with the latest information on the diseases, such as turkey rhinotracheitis (TRT) and swollen head syndrome (SHS). It will include advice on control measures, sources of reference and published scientific material – all of which can be accessed quickly by anyone within the poultry industry.

Intervet UK Limited, Walton Manor, Walton, Milton Keynes MK7 7AJ
Telephone: 01908 685249
Email: poultry.uk@intervet.com

Item code: 035375
035375-OCT2006/MP/2K

Nobilis® Rhino CV

Solid immunity against Avian Pneumovirus infections

Nobilis Rhino CV is a live Avian Pneumovirus vaccine specifically developed for the immunization of broilers, layers and breeders. Nobilis Rhino CV is compatible with live Newcastle Disease and Infectious Bronchitis vaccines and suitable for administration from day old.

Administered as a coarse spray or eye drop Nobilis Rhino CV induces:
- life long immunity in broilers, and
- excellent priming for inactivated Nobilis TRT combination vaccines in layers and breeders

Nobilis Rhino CV – For tough APV protection in chickens.

Intervet UK Ltd • Walton Manor • Walton • Milton Keynes • Bucks • MK7 7AJ
Phone: +44 (0) 1908 685249 • Fax: +44 (0) 1908 685609 • E-mail: poultry.uk@intervet.com • www.intervet.co.uk

OCTOBER 2006 ISSUE 12

poultry focus
business news for the poultry industry

Steve Lister is a partner in a three-vet specialist poultry practice, Crowshall Veterinary Services, in Attleborough, Norfolk. The practice deals with a wide range of poultry clients throughout the region. These include turkey, broiler and duck integrations, layer breeders, commercial layers (caged and free range), and many independent turkey, broiler, duck, geese and game bird operations. Steve's special interests include practical approaches to animal welfare and medicines issues.

What's in a name? (TRT, SHS, ART or APV!)

by Steve Lister

Avian pneumovirus (APV) infection *appeared in the UK over 20 years ago and had probably been present in chickens and turkeys in Europe for 10 or more years before that. It is seen as a precursor for a range of other poultry diseases, some of which can be very costly in terms of production losses. Here, Steve Lister gives an account of the virus and the approach producers can adopt to minimise its effect.*

Picture 1 - Chicken affected by APV Infection

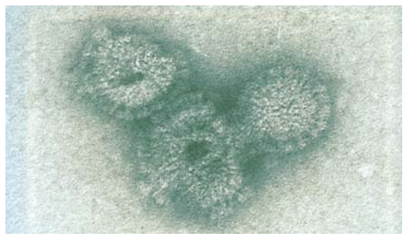
APV infection was first described in detail as **turkey rhinotracheitis (TRT)** – a potentially devastating respiratory disease of growing and breeding turkeys. In the late 1980s, alongside the turkey infection, a nervous and respiratory disease affecting broilers and broiler breeders also appeared to be associated with the same infection. This was loosely termed **swollen head syndrome (SHS) (Picture 1).**
It was later established that this infection also affected chickens of various types, in particular commercial layers. The more general term, **avian rhinotracheitis (ART)**, then emerged.

As more scientific investigations took place the virus became better characterised, and this led to the less confusing and more scientifically correct term, **avian pneumovirus (APV)**. This is now used to describe the infection in all avian species.

The virus has subsequently been found to infect a wide range of other bird species, including pheasants, Muscovy ducks and guinea fowl.

The virus

In the UK and mainland Europe, two subtypes of APVs (A & B) coexist in poultry populations. Although these can be distinguished in the laboratory, no significant difference in disease caused by either or both infections in the field has been established. Indeed, practical experience supports the laboratory work that suggests broad protection is offered by vaccines derived from either A or B subtypes, for challenges from either field subtype.



Picture 2 - electron-microscopic image of APV virus

The damage

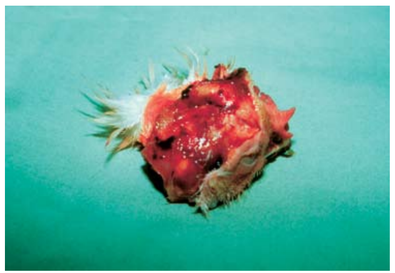
APV infections primarily affect the respiratory tract. The virus attacks the small hair like structures (cilia) lining the respiratory cells of the nose and trachea (windpipe). These cilia beat, expelling any pathogens or dust particles that may have gained access to the respiratory tract. Infection with APV stops these cilia beating (ciliostasis) allowing bugs, including the APV virus to penetrate the lining and cause respiratory disease. This process provides a helping hand for other viruses, bacteria and mycoplasma, which is why APV infection is frequently seen as part of a disease complex involving mycoplasmas, infectious bronchitis, ornithobacterium rhinotracheale (ORT) and *E coli.*

The disease

Disease manifestation is variable depending on the age and type of bird and any other infections that may be present.

Broilers:

The effects of APV infection can vary from severe respiratory tract infection through to milder, less defined reductions in growth rate and performance. The latter often only being identified by a "lift" in performance when live APV vaccines are used. Respiratory disease can be significant, with subsequent secondary colisepticaemia requiring antibiotic treatment. Infection is more frequently seen late in broiler production and can lead to significant and expensive downgrading at processing due to widespread air sacculitis.



Picture 3 - Purulent exudate under the skin of the head

Broiler breeders:

Classical infection of broiler breeders with APV has been associated with swollen head syndrome (SHS). Here, intense infection of the upper respiratory tract allows secondary bacterial infection of the spongy bones of the head (Picture 3), often involving the middle ear - an organ associated with balance. As a result, in addition to swollen puffy heads, affected breeders can show head rolling, stargazing (Picture 4) and twisted necks. In fully susceptible flocks, drops in egg production can be dramatic (greater than 20%) and production may be slower to recover than following other viral challenges. Egg quality can be adversely affected, with loss of shell strength and corresponding drops in hatchability. Secondary losses through peritonitis are not uncommon.

Picture 4 - Stargazer

Commercial layers:

Clinical signs of respiratory disease are usually mild or absent. Some nervous signs or twisted necks can be seen in fully susceptible flocks. The most significant effect is on egg quality. Frequently, egg numbers and shell strength are only mildly affected, but shell colour can deteriorate or even be totally lost leading to "white egg" syndrome (Picture 5) . Seconds (poor quality rejected eggs) can be a problem for several weeks, and some flocks never seem to fully recover.

Picture 5 - Poor egg quality

The diagnosis

The clinical signs in commercial layers and broiler breeders can be strongly suggestive of APV infection, but the respiratory signs, especially in broilers, are not specific enough to exclude at least the role of other infectious agents. As with many other avian diseases, the easiest solution has been to seek a more specific diagnosis through blood sampling. However, not all available blood tests are foolproof at confirming infection in the respiratory tract. Furthermore, with broilers affected close to processing, there may be insufficient time before slaughter for birds to produce an antibody response detectable in blood samples.

Another complication of diagnosis can be the fact that APV infection allows other pathogens (especially mycoplasmas and E coli) to form a disease complex. Determining the relative significance of each infectious agent may be complicated.

Virus isolation to demonstrate the presence of virus in affected birds can be difficult, since the virus persists in tissues for a relatively short period, although its effects on the respiratory tract can be more prolonged.

All the various diagnosis techniques are intricate, often expensive and usually very time consuming. PCR techniques designed to pick up very low levels of infection in the bird have been developed and offer a more rapid, cost effective and more meaningful technique.

Control

Maintaining optimal ventilation and good environmental conditions will reduce the impact of any viral challenge. However, the nature of the damage caused to the respiratory tract by an APV infection and the widespread presence in poultry populations means that exposure to infection at some time in a bird's life is almost inevitable.

Good hygiene and general biosecurity should help to reduce the impact of mycoplasmal and bacterial infection. However, prevention through vaccination is a more preferable policy for most.

The vaccines

A number of live vaccines are available for chickens and turkeys, based on either the A or B APV subtypes. **Nobilis® Rhino CV** is the latest live vaccine available for use in broilers, future layers and breeders from one day of age. Live vaccines such as Rhino CV are well suited to protecting broilers or birds in rear, and as primers for inactivated APV vaccines.

In broilers the decision to vaccinate depends on the local risk and a demonstration of APV involvement in respiratory disease. There is also anecdotal evidence of performance "lifts" in broilers even in the absence of respiratory disease. Vaccination can be done from one day of age and the exact timing is usually determined by other live vaccines (eg infectious bronchitis and Gumboro disease) in the programme.

In layers and broiler breeders mild respiratory disease can be seen in rear, but the need for vaccination is more usually related to egg drops and quality problems in lay. A combination of live vaccination in rear followed by an inactivated vaccine containing an APV component gives the best protection through lay against production effects.

The solution

Maternal antibodies from parent birds do not appear to be protective, nor do they interfere with vaccination. This means vaccination with an appropriate live vaccine can be administered in chicks from day old.

In day old birds, the vaccine can be given by a precise eye-drop or nosedrop to individual birds. However, for mass administration this is more usually done by coarse spray over the birds in delivery boxes at chick take off in the hatchery, or it can be done on arrival at the farm. Live vaccination of older birds must take into account the likely timing of exposure to field virus and other live vaccinations in the programme.

The method of administration is crucial to the success of any vaccination programme, and specialist advice should be followed to get the most out of the chosen programme. Attention to detail is essential.

Inactivated vaccines are given by injection prior to move to laying accommodation.

The conclusion

Avian pneumovirus infection of a variety of poultry species has been associated with significant respiratory disease, downgrading and mortality in broilers and turkeys, as well as costly losses in egg numbers and quality in laying birds.

The introduction of high quality vaccines such as Rhino CV and the RT inactivated range has given producers the tools to help reduce the commercial impact of such infections. Properly applied, they can help control APV infection and secondary diseases commonly associated with this virus.

Long term protection of layers, breeders and broilers against APV with Nobilis® Rhino CV

by Jonathan Perkins

Intervet's recent launch of **Nobilis® Rhino CV** provides producers with the option of a single-vaccination approach to long lasting immunity against APV infection. This is the only licensed vaccine in the UK for use in breeders, broilers and layers.

Nobilis® Rhino CV also acts as an effective primer for subsequent inactivated RT vaccines, such as Intervet's RT inac range (described overleaf). The vaccine can be given simultaneously with infectious bronchitis (IB) and Newcastle Disease (ND) vaccines with no adverse effect on any of the vaccines.