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Avian influenza XXVIII

The use of avian influenza vaccines

Avian influenza vaccination in the field needs to meet four criteria:

- Induce a complete resistance in birds exposed to the disease in the field.
- Prevent virus replication and excretion in exposed birds.
- Prevent clinical disease and deaths.
- Allow the identification of vaccinated birds in accordance with the DIVA principles.

Today few, if any, vaccines fulfil all four of these requirements. Most avian influenza viruses provide consistent protection against death and clinical disease but they do not always give absolute protection against mucosal infection or shedding of virus from the oropharynx and cloaca.

The risk of infection of vaccinated birds and the excretion of challenge or field virus is greatly reduced and thus transmission and spread of disease are reduced. However, the absolute prevention of infection is not feasible under most field conditions.

Effective reduction of virus excretion is linked to a shortened period of viral shedding.

If birds receive poor vaccines (low quantities of HA antigen, poor adjuvant system or poorly matched antigen seed) deaths and clinical disease may not be seen, but significant amounts of field or vaccine virus may be shed into the environment.

At the very minimum, avian influenza vaccines should meet the following criteria:

- They must be pure and contain only the desired immunogen(s) and adjuvant. They must not be adulterated.
- They must be safe to the bird and show no side effects, as well as being safe to the environment.
- They must be able to protect and that protection must be demonstrable against a specific avian influenza virus.
- They must have a potency that indicates that there is sufficient HA antigen in inactivated vaccines or dose in live and live vector vaccines to ensure protection under commercial conditions.

Protection of vaccinated birds against avian influenza depends upon the antigenic relatedness of field and vaccinal viruses, vaccine dose, its route of administration, management conditions of the recipient flock and method of application and its percentage coverage of the flock. Of these, potency and application are the most important.