
**VACCINATION PROGRAMME FOR SUSCEPTIBLE
WILD BIRDS KEPT IN ITALIAN ZOOS**

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1. Epidemiological situation and reason for the Plan

Wild birds, and the ones dwelling in humid areas in particular, are considered nature's main reservoir for influenza viruses.

Chances that wild birds are actually responsible for the introduction of influenza viruses in domestic flocks or other birds kept in captivity are confirmed by the high rate of outbreaks along water birds migratory flyways.

Transmission of influenza viruses by migratory birds, even at a long range, may increase the possibility that new HPAI virus epidemics may appear in breeding flocks.

Recently Italy has also been affected by an anomalous migration of swans coming from the Black Sea and moving towards the south of the peninsula (Sicily, Apulia and Calabria). Furthermore, in the territory of Umbria, a dead wild duck was found, which gave positive results to HPAI H5N1 testing.

Looking back and beyond the present situation, we must point out that the 2002 epidemic in Italy started with the introduction of a viral strain coming from wild birds; the same subtype was the origin of the more recent 2004 epidemic, probably connected to the persistence of the virus in domestic species which acted as reservoir for the infection.

From 1997 up to date, seven strains of the AI virus belonging to the H5 and H7 subtypes were introduced or returned to surface in Italy, and in particular in the areas with the highest bird density, such as Veneto, Lombardy and Emilia Romagna:

1997	H5N2	HPAI
1998	H5N9	LPAI
1999	H7N1	LPAI and HPAI
2000	H7N1	LPAI
2002	H7N3	LPAI
2004	H5N3	LPAI
2004	H7N3	LPAI
2004	H7N7	LPAI
2005	H5N2	LPAI

These influenza strains were introduced by contacts between wild birds and domestic flocks or they persisted during the period between epidemics within domestic flock reservoirs.

Besides subtypes H5 and H7, the monitoring programmes in force have pointed out the dramatically high circulation of influenza viruses belonging to different subtypes, both in wild birds and in domestic

flocks in many areas in northern Italy, sure sign of a constant risk that new viral strains may be introduced into domestic birds.

The preliminary study of the data referring to the monitoring programme carried out between June 2005 and January 2006, has further outlined the presence of LPAI viruses (subtypes H5, H4 and H10) in wild bird populations. All animals positive to the diagnostic tests had been captured and/or hunted in the same risk zones pointed out by previous programmes. The affected areas are the regions involved in the recent AI epidemics (1999-2000 HPAI subtype H7N1; 2002-2004 LPAI subtype H7N3).

The possible reintroduction of the virus from wild flocks into domestic flocks is connected to specific risk factors such as the impossibility of rearing some species of birds indoors. The same is true for animals kept in zoos and national parks, often belonging to rare species, which in order to insure their wellbeing, cannot be included in premises separating them from wild birds.

More effective control systems, in order to contain the risk of spreading the disease, become therefore of essence.

In order to guarantee respect for the different habits of the species present in the structures, in observance of biodiversity, and according to article 5 of Commission Decision 2005/774/EC, Italy submits to the Committee the following programme on the vaccination of susceptible birds kept in zoos.

2. Implementation Protocol

As stated in Decision 2005/774/EC, the vaccination programme contains information on the following:

- a) location and exact address of the zoos where the vaccinations will take place;
- b) specific identification of the number of susceptible birds present;
- c) individual identification of the birds that need to receive vaccination;
- d) kind of vaccination to use and vaccination plan;
- e) motivations of the decision to resort to vaccination;
- f) vaccination schedule.

3. Location

Vaccination against avian influenza virus, subtype H5N1, will be carried out in the facilities listed in annex I considered at risk, including zoos and other structures and/or centres accredited at a national level, keeping rare bird species.

4. Specific identification, amount and individual identification of the birds that need to receive vaccination

Annex I shows the number of birds present that need to be submitted to the vaccination plan, divided according to the structure they belong to, and each one individually identified. The animals present in the facilities, which are still not identified, will be branded with proper identification systems (rings or microchips) upon vaccination.

In addition, sentinel animals will be identified and submitted to periodical monitoring, in order to assess the epidemiologic situation, as described below, in point 5.

5. Vaccination method, plan and schedule

The use of an heterologous vaccination strain, characterised by a neuraminidases subtype (H5N9) different from the one present in the wild population (H5N1), may enable, where applicable, the monitoring of the epidemiologic situation in the vaccinated population through the use of a proper discriminatory test. The enactment of a DIVA (Differentiating Infected from Vaccinated Agents) strategy, capable of differentiating vaccinated/infected animals from vaccinated/healthy animals, represents the starting point to implement and run rational surveillance programmes in the structures under the vaccination plan, for a quick check in case of infection.

In combination, or alternatively, other valid methods, such as the system of non-vaccinated sentinels, are used in order to discover the presence of the infection among vaccinated populations. The sentinels must all undergo serological testing before being introduced in the zoos, in order to prevent seropositivity to AI viruses.

The vaccination plan will be immediately implemented upon transmission to the Committee and after being officially presented to the Standing Committee on the Food Chain and Animal Health.

6. Kind of Vaccination

In the facilities listed in annex I an H5N9 monovalent vaccine will be used

A WATER-IN-OIL EMULSION INACTIVATED MONOVALENT VACCINE AGAINST AI SUBTYPE H5N1 strain A/ck/Italy/22A/98

Due to the fact that the vaccine is not validated for exotic species, the doses and administration schedule are established according to the previous European experience in Holland. The vaccination will be administrated subcutaneous and intramuscular.

All species included in the present vaccination plan require a minimum three weeks break between vaccination shots. Administration of the anti-influenza vaccine must insure the vaccine itself is not mixed with other immunity treatments and it is given to animals in good health conditions, which have not recently undergone immunodepressive drug treatment.

7. Monitoring plans to assess the development of the epidemiologic situation

At least every 45 days, official or accredited veterinaries must collect 10 blood specimens from each group of unvaccinated sentinels in all the structures affected by the Vaccination plan (95% chance of identifying at least one positive subject if the seropositivity prevalence is $\geq 30\%$). The animals must adequately represent the groups present in the different points selected for the monitoring. The serum specimens will undergo antibody research through haemagglutination inhibition tests, or other serologic tests to search for the A group antigen of the influenza viruses (AGID or ELISA). If necessary, and when applicable, also the discriminatory test (iIFA-test) will be used.

While collecting specimens for the serologic monitoring, veterinaries must also make accurate clinical examinations of the sentinel birds, in order to point out any reportable symptoms of the disease.

Any positive serological result in the vaccinated holdings must be followed by the implementation of adequate serologic and/or virologic controls.

All the laboratory examinations included in the present vaccination plan must be performed at the competent local Zooprophyllactic Institute laboratories.

8. Guidelines for the execution of the vaccination campaign

The concerned authority organises and coordinates the vaccination campaign, involving the following activities:

- a) drafting and updating the list of the facilities that need to undergo vaccination and the ones that already have, the list of the acquired doses of vaccine, the number of vaccinal doses and the material disseminated;
- b) to draft and update a record of the animals that need inspection and testing (both vaccinated and not), showing the results of the diagnostic examinations;
- c) vaccine distribution – the vaccine must be distributed by a purposefully established centre. The local competent health unit veterinary services shall take care, if necessary, of the supply and distribution of syringes, needles, disinfectant, overalls, disposable caps and footwear;
- d) identifying and training the vaccinators – vaccination may be performed by the bird holders, or by a team of vaccinators accurately trained and operating under the responsibility of an official or accredited veterinary. Every single facility must be provided with devoted equipment. Special

attention must be put in observing strict hygienic and biosecurity rules, in order to prevent the spreading of the virus by the vaccinators.

9. Actions to implement in case of positive serologic results

In case of positive serologic results, the laboratory performing the tests must send the specimens to the National Reference Centre to confirm any positive result.

The competent local health units (ASL) must readily perform an official inspection of the structure where the positive serologic result was found. At the same time it must perform a clinical examination of all birds present, in order to detect any symptom related to avian influenza, and it must take faeces samples for the research of the influenza virus, in agreement with the Regional Veterinary Service and the Experimental Zooprophyllactic Institute. In addition, in order to clarify the significance of sporadic and low-titre positive serologic results, the National Reference Centre for Avian Influenza will provide operational indications for further controls in the structures concerned.

The competent local health units must also draft up a detailed report of all the activities implemented following the seropositivity. The report must be sent to the National Reference Centre, in order to enable the drafting up of the reports to be submitted to the European Community.

10. Movement of vaccinated animals and their products

All structures involved in the vaccination will be included in the implementation of restrictive measures with regard to movements of birds and their products, which may vary according to the epidemiologic situation and on the grounds of a correct study of the true threat of contagion through commercialization of vaccinated animals and their products.

Any movement between structures on the national territory must be authorised by the competent local health authority.