立法會
Legislative Council

LC Paper No. CB(2)768/16-17(04)

Ref : CB2/PL/FE

Panel on Food Safety and Environmental Hygiene

Background brief prepared by the Legislative Council Secretariat for the meeting on 14 February 2017

Bio-security measures implemented in local chicken farms

Purpose

This paper summarizes the views and concerns of members of the Panel on Food Safety and Environmental Hygiene ("the Panel") on the bio-security measures implemented in local chicken farms.

Background

2. Avian influenza ("AI") is caused by influenza viruses that mainly affect birds and poultry. Among the different groups of AI viruses, H5N1 is of particular concern because it has a recognized ability to pass directly from birds to humans and is highly pathogenic. H5N1 virus has been circulating in Southeast Asia and detected in Hong Kong in poultry and/or wild birds almost every year from 1997. Since the first AI outbreak hit Hong Kong in 1997, the Administration has put in place a series of preventive and control measures at all levels of the live poultry supply chain including farms, the wholesale poultry market, retail outlets and the import level, with a view to containing the spread of AI viruses.

Mandatory vaccination programme for chickens

3. In 2003, the Administration introduced the mandatory AI vaccination programme, under which all chickens reared in local farms must be vaccinated against H5 AI virus using the Intervet Nobilis H5N2 vaccine ("Intervet vaccine"). No AI outbreaks occurred in local chicken farms until December 2008 when AI infection was detected in both vaccinated and unvaccinated sentinel

chickens[1] in a farm in Yuen Long.

4. Following the AI outbreak in December 2008, the Administration set up the Investigation Group on Vaccine Study ("IGVS")[2] to conduct research and tests on the efficacy of the Intervet vaccine and to explore alternative vaccines. With IGVS' endorsement, the Agriculture, Fisheries and Conservation Department ("AFCD") engaged three research institutions to conduct vaccine challenge studies to examine and compare the efficacy of three AI vaccines against representative clades of H5N1 viruses detected in Hong Kong, including the one found in the local chicken farm in December 2008. The three vaccines studied were (a) the Intervet vaccine used on all chickens in local farms since 2003, (b) the Re-5 H5N1 vaccine ("Re-5 vaccine") developed by the National Avian Influenza Reference Laboratory of Harbin Veterinary Research Institute ("HVRI") and used on chickens reared in the Mainland for export to Hong Kong since 2008, and (c) an H5N3 vaccine used by the European Union since 2006. The results of the studies indicated that while the Intervet vaccine was still largely effective in protecting local chickens from H5N1 AI virus, the Re-5 vaccine could provide similar or even better protection than the Intervet vaccine against challenge viruses tested. Based on the test results, IGVS endorsed in April 2012 the use of the Re-5 vaccine in local chicken farms as an alternative to the Intervet vaccine.

5. HVRI has subsequently developed the new Re-6 vaccine based on the Re-6 antigen to match the prevailing clade 2.3.2.1 of AI virus commonly found in the region and decided to cease the commercial production of the Re-5 vaccine. In August 2012, the New Territories Chicken Breeders Association, with technical assistance from AFCD, successfully registered both Re-5 and Re-6 vaccines with the Department of Health for use in Hong Kong. In view of these developments, IGVS has also endorsed the recommendation to introduce the Re-6 vaccine as an alternative to the Intervet vaccine for use in local chicken farms.

6. Since then, AFCD has been in liaison and consultation with local chicken farmers and the New Territories Chicken Breeders Association, and provided them with necessary assistance to facilitate the introduction of Re-6 vaccine in Hong Kong. Starting from November 2012, a few local chicken farms have begun to use the Re-6 vaccine to vaccinate the chickens while some chicken farmers continue to use the Intervet vaccine in stock. The migration proceeds

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1 All farmers are required to keep 60 chickens without any AI vaccination, known as sentinel chickens, with each batch of chickens to enable early detection of any highly pathogenic AI virus introduced into the farm.

2 The convener of IGVS is the Director of Agriculture, Fisheries and Conservation, and members include experts from the University of Hong Kong, the Ministry of Agriculture of the Mainland, representatives of AFCD and the Department of Health.

on the understanding that once they have switched to use the Re-6 vaccine, all subsequent batches of chickens would be vaccinated with the same type of vaccine. As of 28 February 2013, 27 out of the 30 local chicken farms have switched to the Re-6 vaccine. In a related development, registered farms in the Mainland that supply chickens to Hong Kong have also started to use the Re-6 vaccine beginning from October 2012.

Other bio-security measures

7. Vaccination is one of the measures being taken to reduce the risk of infection with H5N1 viruses by the chickens. In view of possible transmission of H5N1 viruses from wild birds and migratory birds to local poultry, all local farms are required to install bird-proof facilities. Local farms are also required to place sentinel chickens in each batch of vaccinated chickens for the purpose of detecting infection. Through monitoring the health conditions of the sentinels together with testing on both antibody level and any shedding of AI virus of vaccinated and sentinel chickens, the Administration keeps the effectiveness of the vaccine in protecting the chickens under regular review.

Members' concerns

8. Members major views and concerns on the AI vaccination programme implemented in local chicken farms are summarized below.

Use of the new Re-6 vaccine

9. Concern was raised as to whether AI would evolve and become stronger after the introduction of the Re-6 vaccine. According to the Administration, the genetic drift of AI viruses occurred naturally under different environments. Vaccination would not necessarily be the cause of any sort of antigenic drift. In fact, vaccination would slow down the spread of viruses, allow time to stamp out infected farms and avoid the further spreading of viruses to neighbouring farms. The Administration would regularly monitor the genetic drift of AI viruses in different regions, keep track of its circulating strain and choose the appropriate vaccine that best matched the prevailing clade.

10. Some members pointed out that while local chicken farmers were supportive of the introduction of the new Re-6 vaccine, many of them found the required procedures unduly cumbersome. For example, local farmers had to attach a special label to each chicken vaccinated with the new Re-6 vaccine and all the phials of vaccine used had to be submitted to AFCD for proof of vaccination. The Administration was urged to consider simplifying the procedures.

11. The Administration explained that each chicken had to be administered with two doses of the new Re-6 vaccine in order to achieve satisfactory antibody level. The requirement of labelling chickens vaccinated with the new Re-6 vaccine was considered necessary as some chicken farmers were still using the Intervet vaccine in stock. The labels could facilitate the identification of the types of vaccines administered to the flock. Regarding the requirement of returning the phials of used vaccine to AFCD, the Administration advised that the measure had been in place since the introduction of the mandatory AI vaccination programme for chickens in local farms in 2003. No complaint had ever been received from local chicken farmers.

12. In response to members' enquiry about the migration to the Re-6 vaccine in registered farms in the Mainland, the Administration advised that by early 2013, around 70% of the Mainland registered farms supplying chickens to Hong Kong used the new Re-6 vaccine. Since the chicken rearing period was around 90 days and each chicken had to be vaccinated twice with the same vaccine, it took some time before all the chickens reared in the Mainland registered farms were administered with the new Re-6 vaccine. It was the plan of the Mainland authorities to have all Hong Kong-bound chickens to be vaccinated with the new Re-6 vaccine by May 2013.

Selection of the AI vaccine

13. Some members enquired about the rationale for adopting the Intervet vaccine and the Re-5/Re-6 H5N1 vaccine, and the reason for not using the H5N3 vaccine which had been used by the European Union since 2006.

14. According to the Administration, different regions might have different predominant strains of AI viruses. The appropriate vaccine needed to match the clade of AI viruses prevalent in the region. The Intervet vaccine, the Re-5 vaccine and the H5N3 vaccine contained respectively inactivated H5N2 virus circulating in America, H5N1 virus circulating in Asia and H5N3 virus circulating in Europe. According to the vaccine challenge studies, both the Intervet vaccine and the Re-5 vaccine provided better protection than the H5N3 vaccine against challenge viruses tested. The Re-5 vaccine was found even more effective in protecting local chickens from the H5N1 AI virus as compared with the Intervet vaccine. Taking into account the results of the studies, the Administration introduced the Re-5 vaccine in local chicken farms as an alternative to the Intervet vaccine. That said, with the development of the new Re-6 vaccine to match the prevailing clade of AI viruses commonly found in the region and to replace the Re-5 vaccine, IGVS had endorsed the recommendation to introduce the new Re-6 vaccine to local chicken farms.

Surveillance of imported live chickens and pet birds

15. Expressing concern about the safety of live chickens imported from the Mainland, members enquired about the measures taken to ensure that chickens reared in the Mainland for export to Hong Kong were not infected with AI. The Administration advised that all live chickens supplied to Hong Kong from the Mainland must come from registered farms. Before the live chickens were exported to Hong Kong, they must be quarantined for five days and tested free of AI viruses. Upon arrival at Hong Kong, chicken samples would also be collected at Man Kam To boundary point for retest. While awaiting the test results, the chickens would be kept at the wholesale market. Only chickens with satisfactory testing result would be released for sale. These apart, the Centre for Food Safety made regular inspection visits to the registered chicken farms in the Mainland to monitor their compliance with the bio-security requirements.

16. In response to members' concern over the measures implemented to prevent the infection of AI among pet birds in Hong Kong, the Administration advised that AFCD regularly inspected pet bird shops and collected samples of bird droppings for testing of AI viruses. Pet birds should only be imported from countries or places that had no AI outbreaks in the past six months, and the birds had to be accompanied by health certificates testifying that they were free of AI virus.

Recent development

17. The Administration will brief members on the latest developments on bio-security measures implemented in local chicken farms, including the use of the bivalent avian influenza vaccine, at the Panel meeting on 14 February 2017.

Relevant papers

18. A list of the relevant papers on the Legislative Council website is in the **Appendix**.

Council Business Division 2
Legislative Council Secretariat
8 February 2017

Appendix

Relevant papers on bio-security measures implemented in local chicken farms

Committee	Date of meeting	Paper
Panel on Food Safety and Environmental Hygiene	12.6.2012 (Item IV)	Agenda Minutes
Panel on Food Safety and Environmental Hygiene	12.3.2013 (Item VII)	Agenda Minutes

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