For discussion
on 12 March 2013

Legislative Council
Panel on Food Safety and Environmental Hygiene

Update on the Avian Influenza Vaccination Programme in Local Chicken Farms

INTRODUCTION

This paper briefs Members on the latest developments on the avian influenza (AI) vaccination programme adopted in local chicken farms.

DETAILS

The AI Vaccination Programme

2. H5N1 highly pathogenic AI (HPAI) viruses have been circulating in Southeast Asia and detected in Hong Kong in poultry and/or wild birds every year from 1997. Since the first AI outbreak hit Hong Kong in 1997, a series of preventive and control measures had been implemented to reduce the risk of AI outbreaks at the import, wholesale and retails levels of the live poultry supply chain, including local poultry farms. In 2003, the Administration further introduced the mandatory AI vaccination programme for chickens in local farms, using the Intervet Nobilis H5N2 vaccine ("Intervet vaccine"). No AI outbreaks occurred on 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.

3. Following the AI outbreak in December 2008, the Administration set up the Investigation Group on Vaccine Study (IGVS)[2] to

---

[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 HPAI virus introduced into the farm.

[2] The convener of the 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 the Agriculture, Fisheries and Conservation Department and the Department of Health.

examine the efficacy of the Intervet vaccine and to explore alternatives. With the endorsement of the IGVS, 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 virus found in the local chicken farm in December 2008. The three vaccines studied were (a) the Intervet vaccine that was 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 in chickens reared in the Mainland for export to Hong Kong since 2008, and (c) a H5N3 vaccine used in the European Union since 2006. The studies showed that the Intervet vaccine was still largely effective in protecting local chickens from H5N1 HPAI virus, and that the Re-5 vaccine provided similar or even better protection as compared with the Intervet vaccine.

Field Trial Programme Using Re-5 Vaccine

4. To comprehensively evaluate the efficacy of the Re-5 vaccine and to observe whether it would have any adverse effect on chickens under local conditions, AFCD, with the endorsement of the IGVS, launched a one-year field trial for the Re-5 vaccine in November 2010. Two local chicken farms with different rearing capacities participated in the trial on a voluntary basis. Individual batches of chickens from the farms were vaccinated with either the Intervet vaccine or the Re-5 vaccine by random allocation. Results were evaluated through clinical, virological, serological and environmental monitoring.

5. The trial results showed that there were no adverse effects found in chickens associated with the use of the Re-5 vaccine. These chickens had been found to produce an adequate and similar immune response to those given the Intervet vaccine under the field conditions in Hong Kong. In addition, according to the challenge studies conducted separately by the University of Hong Kong, the Veterinary Laboratories Agency of the United Kingdom and HVRI of the Mainland in 2009 to 2010, the Re-5 vaccine was found to confer better protection than the Intervet vaccine against challenge viruses tested (including the H5N1 clade 2.3.2.1 virus, which is the predominant strain circulating in wild birds in Hong Kong at the time of conducting the studies).

6. Based on the field trial results, the IGVS endorsed in April 2012 the use of the Re-5 vaccine in local chicken farms as an alternative to the Intervet vaccine. The results of the field trial programme were reported in the paper submitted to this Panel for its meeting on 12 June 2012 (LC Paper No. CB(2)2285/11-12(03)).

Development of the New Re-6 Vaccine

7. Meanwhile, researchers at HVRI have developed a new vaccine based on the Re-6 antigen to match the prevailing clade 2.3.2.1 of AI virus commonly found in the region. Indeed, since the second half of 2011, all the H5N1 isolates collected locally are found to belong to clade 2.3.2.1. This new Re-6 vaccine is produced by the same production facility as the Re-5 vaccine with the same quality control in place by HVRI. With the Re-6 vaccine in place, HVRI has decided to cease the commercial production of Re-5 vaccine. The Mainland authorities also develop plans for all Hong Kong-bound chickens to be vaccinated with Re-6 vaccines in due course.

8. In August 2012, the New Territories Chicken Breeders Association, with technical assistance from AFCD, has successfully registered both Re-5 and Re-6 vaccines with the Department of Health for use in Hong Kong. In view of such developments, the IGVS has also endorsed the recommendation to introduce the Re-6 vaccine, instead of the Re-5 vaccine, as an alternative to the Intervet vaccine being used in local chicken farms.

Migration to the Re-6 Vaccine in Local Chicken Farms

9. 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 began to use the Re-6 vaccine to vaccinate the chickens while some chicken farmers have continued to use the Intervet vaccine in stock. The migration proceeds 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.

10. As of 28 February 2013, 27 out of the 30 local chicken farms have switched to the Re-6 vaccine. Of the remaining three chicken farms, two have no chickens on farm at present. It would be up to the remaining farm to decide whether to continue using the Intervet vaccine or switching to the Re-6 vaccine. Nonetheless, the farm operator has been notified that AFCD would in due course adopt across the board an antigen corresponding to the latest circulating strain of virus to test the antibody level of local chickens. By then only chickens with the required level of antibody would be permitted for release to the market.

11. AFCD has been closely monitoring the efficacy of the new vaccine. So far, all chickens vaccinated with the Re-6 vaccine demonstrate satisfactory levels of antibody against H5 AI virus. No adverse effect on the chickens has been noted post-vaccination. Besides, all sentinel chickens which have not been vaccinated with the Re-6 vaccine have been tested negative for infection with H5N1 AI virus.

12. 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. It is expected that all chickens reared in the Mainland for export to Hong Kong would have been vaccinated with Re-6 vaccine by April 2013.

Other AI Prevention Measures

13. Vaccination is one of the measures being taken to reduce the risk of infection with H5N1 viruses by the chickens. Other measures that are in place such as enhanced farm biosecurity and improvements to market management and practices are of equal importance. The multi-pronged strategy that we have adopted to minimise the risk of local AI outbreaks includes keeping the scale of the poultry trade at a manageable level, a comprehensive preventive and surveillance programme at the farm, wholesale, retail and import levels, and the prohibition of overnight stocking of live poultry at the retail level, etc. The isolated AI incidents in Hong Kong in the past few years showed that our stringent preventive and control measures were effective in preventing and controlling AI outbreaks.

14. Whilst it is our assessment that the overall AI risk in Hong Kong is staying at a stable and reasonably low level, there is no room for complacency. H5N1 viruses continue to circulate in the region, as reflected by the detection of H5N1 virus in a dead black headed gull collected in Tuen Mun on 25 January 2013. The need to remain vigilant against AI could not be over emphasised.

15. AFCD will closely monitor the migration to Re-6 vaccine currently in train. At the same time, AFCD will continue with its surveillance programme to keep track of the circulating strains on AI virus in the region and conduct virus sequencing where appropriate so as to identify antigenic drift early. It will also keep in view the development of other vaccines which may become available for meeting challenges ahead.

ADVICE SOUGHT

16. Members are invited to note the latest position of the AI Vaccination Programme in local chicken farms.

Food and Health Bureau
Agriculture, Fisheries and Conservation Department
March 2013