

**Advisory Council on Food and Environmental Hygiene**

**Bio-security Measures Implemented in Local Chicken Farms**

**PURPOSE**

This paper briefs Members on the preventive and control measures of avian influenza (AI) adopted in local chicken farms.

**BACKGROUND**

2. Highly pathogenic AI (HPAI) viruses have been circulating in Southeast Asia and detected in Hong Kong in poultry and/or wild birds on numerous occasions. Since the first AI outbreak hit Hong Kong in 1997, the Government has implemented a series of preventive and control measures, with a view to reducing the risk of AI at all levels of the live poultry supply chain. In tandem, the Government has tried to contain the size of the live poultry trade. The licence surrender and buyout schemes, launched respectively in 2004 and 2008, helped reduce the number of chicken farms from close to 200 in early 2000s to 29 at present. The total rearing capacity in these 29 farms as licensed by the Agriculture, Fisheries and Conservation Department (AFCD) is about 1.3 million chickens. The total footprint of chicken farms has been capped at this level, thereby containing the local chicken population while providing a steady supply to meet the market demand for live chickens. Such efforts bear fruits. The risk of AI outbreaks in Hong Kong has since been kept under control, as there has been no locally acquired case of human infection with H5 or H7 virus in Hong Kong since 1997.

**AI VACCINATION PROGRAMME**

**Re-5 and Re-6 vaccine**

3. In 2003, the Government introduced the mandatory AI vaccination programme for chickens in local farms, using the Intervet Nobilis H5N2 vaccine (Intervet vaccine). No AI outbreaks in local chicken farms occurred between 2003 and 2008.

4. Following the detection of AI in a local farm in Yuen Long in 2008, the Government reviewed the efficacy of the Intervet vaccine and considered that there was a need of a replacement. Based on studies of research institutions engaged by the Government, Re-5 vaccine, developed by the National Avian Influenza Reference Laboratory of Harbin Veterinary Research Institute (“HVRI”), was endorsed in April 2012 for use in local chicken farms to replace the Intervet vaccine. Re-5 vaccine was subsequently replaced by Re-6 vaccine, also developed by HVRI, in the second half of 2012. The above vaccine migration was reported to this Council on 20 February 2013 (ACFEH Paper 3/2013).

5. Since November 2012, all local chicken farms have been applying Re-6 vaccine to the chickens against H5N1 AI virus (e.g. clade 2.3.2.1). So far, no adverse effect has been observed in Re-6 vaccinated chickens, and no H5 AI virus has been detected in the cloacal and environmental samples taken from local farms.

#### **Bivalent Re-6 + Re-8 vaccine**

6. A new clade 2.3.4.4 of H5 AI viruses, such as H5N6, has emerged since late 2013. Researchers at HVRI have found that Re-6 vaccine might not be able to provide chickens with adequate protection against this new clade. A new vaccine, designated as Re-8, has since been developed by HVRI.

7. In view of the co-existence of both clades 2.3.2.1 and 2.3.4.4 of H5 AI viruses on the Mainland, and that neither Re-6 nor Re-8 vaccine alone can provide adequate protection against these two clades at the same time, HVRI has developed a bivalent vaccine containing both strains of Re-6 and Re-8. The bivalent vaccine has proven by studies conducted by HVRI to be effective against multi-clades of H5 AI viruses, and is now being used in Mainland’s registered poultry farms, which are eligible for supplying live poultry to Hong Kong.

#### **Migration to the bivalent vaccine in local chicken farms**

8. To minimise the threat of AI risk, it would be of great importance to ensure the AI vaccine applied in local farms can provide sufficient protection against prevailing clades of H5 AI viruses. As such, it is necessary to migrate from the existing monovalent Re-6 vaccine to the new bivalent Re-6 + Re-8 vaccine to give better protection against multi-clades of H5 AI viruses. The bivalent vaccine has been registered with the Department of Health for use in Hong Kong since May 2016, and

introduced to all local chicken farms on new batches of chickens since November 2016. AFCD is closely monitoring the efficacy of the new vaccine.

### **Latest developments**

9. Aside from H5, H7 is another AI virus that poses serious public health threat. According to the World Organisation for Animal Health (OIE), both H5 and H7 AI viruses need to be put under close surveillance, and OIE should be notified of incidents caused by H5- or H7-infection of poultry due to their serious socio-economic or public health consequence. Since the first occurrence of H7N9 AI on the Mainland in 2013, the total number of cases reported globally had reached 927 (as at 9 January 2017). According to the World Health Organisation, most such human infection cases had involved contact with infected poultry or exposure to contaminated environments, including live poultry markets.

10. In view of the increasing threat of H7 AI virus, the Government has stepped up the surveillance and preventive measures, by conducting polymerase chain reaction (PCR) and serology testing for H7 AI virus in chickens in local farms. AFCD will closely monitor the developments including the prevailing AI risk in the region, the occurrence of H7N9 cases in Hong Kong and the neighboring places, and explore the feasibility of introducing an additional vaccination in local chicken farms against the emergence of new challenge posed by H7N9 AI virus.

### **OTHER PREVENTIVE MEASURES AGAINST AI**

11. As part of the licence conditions, all poultry farms must implement the biosecurity plan and measures tailored for each farm in accordance with AFCD's requirements that aim at minimising the risk of dissemination of infectious agents, including AI virus. For instance, in view of the possible transmission of AI virus from wild birds and migratory birds to local chickens, all local farms are required to install bird proof facilities. Other measures to reduce the risk of spreading of infectious agents through human activities include disinfection pool, hand washing facilities, separation of production area and maintenance of entry and exit records, etc. AFCD staffs inspect poultry farms at least once a week to check on farm hygiene and bird/flock health conditions and to ensure strict compliance with the licence conditions.

12. The poultry farms are also required to place sentinel chickens (i.e. unvaccinated chickens) among vaccinated chickens for the purpose of early detection of infection<sup>1</sup>. 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, we keep the effectiveness of the vaccine in protecting the chickens constantly under review. Blood and swab samples from chickens and environmental swabs are collected and tested regularly for surveillance against AI. Live chickens are allowed to be dispatched for sale only upon passing the AI test required by AFCD.

13. Moreover, AFCD has been calling on all poultry workers in local chicken farms to observe personal hygiene and receive the free seasonal influenza vaccination. AFCD also advises farmers on the setting-up of sheds and structures, and ensures the farms comply with the biosecurity requirements along the guidelines of the Food and Agriculture Organisation of the United Nations and OIE.

14. The measures set out in the above paragraphs can serve the purpose of containing the risk of AI at large. In view of the prevailing AI risk in Hong Kong and the neighboring places, we will stay vigilant and endeavor to enhance the work on AI prevention and monitoring to guard against the risk of AI outbreaks in Hong Kong. AFCD will closely monitor the development of AI situation and will take additional preventive and surveillance measures in local chicken farms as and when necessary.

## **ADVICE SOUGHT**

15. Members are invited to note the preventive and control measures implemented in local chicken farms against AI.

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<sup>1</sup> 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 AI virus introduced into the farm.