Member's update on Avian Influenza (AI)

Hong Kong Special Administrative Region, China

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World Organisation for Animal Health

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Ministry of Agriculture, Food and Rural Affairs

Background & Disease Status

- Currently, there are **29 licensed chicken farms** in Hong Kong
  - Holding capacity varying from 10,000 to 162,300 broiler chickens for each farm
  - Total maximum holding capacity: about **1,300,000 chickens**
- Sporadic H5 HPAI outbreaks have occurred at the farm level since 1997 till 2008
  - **Culling of the live chickens** on farm had been conducted as the major control measure for these outbreaks

HPAI Outbreak at Farm Level (Month/Year)	Estimated No. of Chickens Culled
12/1997	1,300,000
5/2001	1,200,000
2/2002	900,000
12/2002	16,000
1/2003	10,000
12/2008	90,000

- ***Latest Disease Status***
  - *Farm level: Last outbreak in 2008 (H5)*
  - *Wild bird: H5N1 clade 2.3.4.4b (last case in Jan 2024)*

Prevention and Control Measures

On Poultry Farms

- **Regular inspection** of local chicken farms at least once a week to check on hygiene and bird/herd health conditions
- Farm capacity strictly monitored by **monthly bird count**
- Requirements to implement **individual biosecurity measures** as part of the licence conditions
- **Compulsory preventive HPAI vaccination campaign** fully implemented since 2003
  - First dose - 8 to 10 days
  - Second dose - at the age of 36 to 40 days
  - Booster dose - >120 days old and once every 6 months
- Collect samples (e.g. oropharyngeal swab, cloacal swab, blood, environmental, etc.) on farm for routine HPAI surveillance
  - Established **pre-sale chicken testing** and approval requirements

Prevention and Control Measures

HPAI Surveillance On Poultry Farms

- Random sampling of **oropharyngeal and cloacal swabs** from vaccinated chickens (n = 30) of pre-sale chicken batch for **H5 & H7 AI PCR test**
- Random sampling of **blood samples** from vaccinated chickens (n = 30) for **AI vaccination efficacy evaluation** (by H5 & H7 serological HI test) on each chicken batch 4 weeks after second AI vaccination
- Random sampling of **blood samples** from vaccinated breeders (n = 30) batch for **H5 & H7 serological HI test** on a regular basis
- **Environmental sampling** on a regular basis for **AI virological testing**
- Routine **AI surveillance on dead chickens** found on farm during regular inspections

Market sale of the chickens will only be approved if –

- ***≥ 70%** of blood samples from vaccinated chickens show **H5 and H7 HI titers ≥ 1:16** (revaccination would be required for the concerned batch of chickens if failed); and*
- ***Negative PCR results** for subtypes H5 and H7 AI viruses*

Prevention and Control Measures

In Wholesale Market

- All live poultry must be sent to the only **one wholesale market** for better **traceability**
  - Cheung Sha Wan Temporary Poultry Wholesale Market
- **Cleansed and disinfected** every day after the morning trade
- Dead chicken(s) are collected from every day to test for HPAI as appropriate






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Prevention and Control Measures

In Retail Market

- All retail markets must be **licensed**
- **No overnight keeping** of poultry
  - Prohibit keeping of live poultry overnight in retail premises **since 2008**
  - All poultry should be slaughtered **by 8 pm every day**
- Routine **AI surveillance** on fecal and environmental samples

Prevention and Control Measures

Banning Backyard Poultry

- Since 2006, the **ban on keeping of backyard poultry** has been in force , including chickens, ducks, geese, pigeons and quails
  - Penalty of HK$50,000 to HK$100,000 for non-compliance
- AFCD conduct **patrol and blitz operations** to rural areas and villages for the detection of any potential illegal keeping of backyard poultry

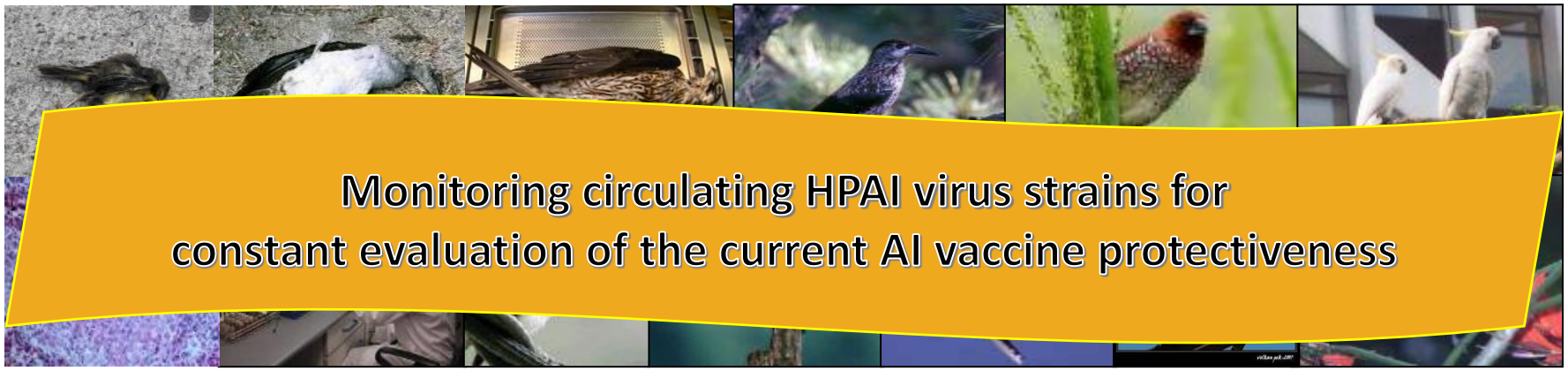
Prevention and Control Measures

In Wild Bird

- Territory-wide HPAI surveillance on **wild bird carcasses**
  - Any dead bird carcass found would be sent to the governmental veterinary laboratory for **AI testing** to confirm whether the cause of death or illness is related to AI
  - Collect **oropharyngeal and cloacal swabs** for AI PCR testing

Dead Bird AI Surveillance in Hong Kong

Year	2018	2019	2020	2021	2022	2023	2024
No. of dead wild birds collected	10777	9142	9311	8818	8153	7748	7042
No. of dead wild birds tested	4472	4012	3893	3624	4071	3627	3483
No. of dead wild birds found with H5 or H7 virus	2	0	3	2	3	3	1 Latest case: (Jan 2024)



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Laboratory Capacity

- Tai Lung Veterinary Laboratory of AFCD
  - NATA and HOKLAS accredited laboratory
  - **BSL-3 laboratory** for handling HPAI-positive samples
- In-house **PCR test**, **serology test**, **virus isolation**, **genetic sequencing** and analysis

	2020		2021		2022		2023		2024	
	Number of samples	Percentage	Number of samples	Percentage	Number of samples	Percentage	Number of samples	Percentage	Number of samples	Percentage
Local Poultry Farms	15521	43.12%	15166	40.63%	14006	39.83%	15166	40.06%	12023	34.01%
Import Poultry	0	0%	0	0%	0	0.00%	0	0.00%	0	0.00%
Poultry Markets	4485	12.46%	5074	13.59%	5211	14.82%	5074	14.43%	4197	11.87%
Other locations	601	1.67%	577	1.55%	520	1.48%	577	1.64%	411	1.16%
Pet birds	3060	8.50%	3216	8.62%	3267	9.29%	3144	8.94%	3393	9.60%
Park birds	2553	7.09%	2467	6.61%	1718	4.89%	2467	7.01%	2658	7.52%
Wild birds	9778	27.16%	10828	29.00%	10828	29.00%	11431	32.50%	12674	35.85%
Total	35998	100.00%	33601	100.00%	35168	100.00%	37859	100.00%	35356	100%

Challenges and Possible Solutions

- AI viruses are **ever-mutating**, continuous monitoring is necessary for successful prevention and control
  - Keep monitoring the **latest circulation strain** (e.g. by dead wild bird AI surveillance)
  - Collaborate with other members to **enhance information sharing**
- Timely **update of the HPAI vaccine** being used in local poultry farms as and when necessary

Year of introduction	Vaccine introduced	Strains of seed viruses (clades)
2003	H5 Intervet Nobilis; monovalent	A/duck/Potsdam/1402-6/1986 (H5N2, European LPAIV)
2012	*H5 Re-5 / H5 Re-6; monovalent	H5 Re-5: A/duck/Anhui/1/2006 (H5N1, clade 2.3.4) H5 Re-6: A/duck/Guangdong/S1322/10 (H5N1, clade 2.3.2.1)
2016	*H5 Re-6 + Re-8; bivalent	H5 Re-6: A/duck/Guangdong/S1322/10 (H5N1, clade 2.3.2.1) H5 Re-8: A/chicken/Guizhou/4/2013 (H5N1, clade 2.3.4.4g)
2018	*H5 Re-8 + H7 Re-1; bivalent	H5 Re-8: A/chicken/Guizhou/4/2013 (H5N1, clade 2.3.4.4g) H7 Re-1: A/pigeon/Shanghai/S1069/2013 (H7N9)
2019	*H5 Re-11 + H7 Re-2; bivalent	H5 Re-11: A/duck/Guizhou/S4184/2017 (H5N6, clade 2.3.4.4h) H7 Re-2: A/chicken/Guangxi/SD098/2017 (H7N9)
2022	*H5 Re-13 + H5 Re-14 + H7 Re-4; trivalent	H5 Re-13: A/duck/Fujian/S1424/2020 (H5N6, clade 2.3.4.4h) H5 Re-14: A/whooper swan/Shanxi/4-1/2020 (H5N8, clade 2.3.4.4b) H7 Re-4: A/chicken/Yunnan/SD024/2021 (H7N9)

2003

2012

2022

*Developed by the National Avian Influenza Reference Laboratory of Harbin Veterinary Research Institute

Challenges and Possible Solutions

HPAI in mammals?

- **Mammals can be infected with AI viruses** if they are exposed to contaminated environments
  - Spread of H5N1 bird flu viruses from mammal to mammal is thought to be rare, but possible
- An outbreak of **HPAI in dairy cows** was first reported on March 25, 2024 in the U.S.
  - Cow-to-cow transmission may have occurred
  - CDC reported additional sporadic cases in **people exposed to infected dairy cows**
- From Hong Kong's perspective, there is little relevance given the very limited dairy production
  - Development of **testing capacity for HPAI in mammals** (esp. dairies) may be considered to enhance preparedness
  - Timely **information sharing** in the region is preferable

Proposal for Future Activities

- Establish **information sharing platform and mechanism** to facilitate timely communication and alert in relation to AI matters
  - Information sharing on the latest **circulating strains of HPAI viruses** East Asia
  - Alerting any **HPAI cases detected in mammals**
  - Updates on other AI-related information as and when necessary

- Collaborate with relevant experts and research institutes to **review and update** the **AI vaccine** as well as the **AI surveillance approaches**

Thank you

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