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Vaccination and Surveillance for High Pathogenicity Avian Influenza in poultry: Current Situation and Perspectives

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Biosecurity and Biosurveillance: the Singapore Perspective

Avian influenza A(H5N1) is a subtype of influenza A virus (IAV) that infects birds and is highly pathogenic to many species of wild and domestic birds. Sporadic infections of humans with A(H5N1) have been reported and most cases had prior occupational or domestic exposure to infected poultry. To date, no sustained human-to-human transmission has been reported. While wild waterfowl are the natural reservoir of avian influenza viruses, an A(H5N1) global epizootic is ongoing with widespread infections among wild birds, resulting in a high number of confirmed or suspected spillover transmissions to domestic poultry, urban resident birds, and a range of mammal species (e.g., cats, cattle, mink, marine mammals).

In Singapore, no animal or human cases of A(H5N1) infection have been detected. To minimise the importation risk of the virus in both humans and poultry, Singapore has implemented a multi-sectoral approach, with various agencies working together under the One Health framework. The Animal & Veterinary Service (AVS) of the National Parks Board works with other agencies on a multi-pronged approach to safeguard Singapore against the risk of disease incursion. This includes requiring overseas countries or territories exporting poultry, ornamental birds, poultry products and eggs to Singapore to be free from avian influenza and meeting veterinary conditions for import. AVS has an ongoing bio-surveillance programme that monitors bird flu outbreaks worldwide and will take measures to temporarily restrict import sources where necessary. These biosurveillance programmes also monitor for the virus which could potentially be present in Singapore in populations e.g., local bird establishments or migratory bird roosting sites.

With the ongoing global HPAI outbreaks, due to the costly nature of culling policies and its negative impact on livelihoods, food security and prices; countries that have previously not permitted HPAI vaccination in poultry, have started looking at pre-emptive vaccination as an additional strategy to prevent and control HPAI outbreaks. Similarly, Singapore is looking at a need to develop a policy towards allowing vaccination - both when used in local bird populations and accepting trade in poultry and poultry products derived from vaccinated flocks, while addressing concerns associated with vaccine use. Vaccination of poultry flocks would help reduce viral shedding even should they be actively infected with HPAI. This would reduce the viral load in the environment, decrease house to house transmission within the same farm, and also reduce farm-to-farm transmission of the avian influenza virus. However, vaccination alone would not keep HPAI out of a premises, but robust biosecurity and good husbandry practices are also needed.