

# Reflections on avian influenza in Asia: experiences and memories

Continuous outbreaks of more avian influenza (AI) subtypes in Asia poses a serious threat to poultry production and as a zoonosis to human beings. The H5 subtype lineages appear to be more present where the poultry production is extensively housed in non-biosecure farms and crowded flocks. Furthermore, the reassortment of H5 and other subtypes are more promising.

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These emerging H5 subtypes are present in several areas and include H5N2, H5N6, H5N8 subtypes and more non-identified neuraminidase types of H5 subtypes. It appears that genotype Z is more mutated and widespread.

Sublineages of H5N1 AI need to be more frequently monitored and critically analysed to clarify zoonotic candidates and probable pandemic influenza.

Extensively continuous outbreak of H9N2 subtype now is critical since this subtype has been reassorted with H7 and N9 subtypes of low pathogenic AI viruses, resulting in an emerging H7N9 subtype that has caused human illness and more fatalities in Eastern Asia, whereas the infected poultry exhibits less clinical signs and mortality.

Although the human cases of zoonotic HPAI H5N1 seem to have declined, the human population is now at high risk from these newly emerging H5 subtypes. The possible reassortment of zoonotic H5 subtypes and other AI subtypes, especially H9N2 subtype that was naturally adapted to a mammalian subtype, may lead to widespread occurrence of new emerging and pandemic AI in the future.

Reassortment vessels of HPAI and LPAI are commonly present in many areas where potential commercial avian species are crowded. Asian countries have experienced AI with different severities of economic loss and public health impact. In

general, we have learned many aspects from the last decade of HPAI H5N1 outbreaks.

From our best field experience, the greatest risk factor for AI distribution is the movement of infected birds or carcasses from one place to another, particularly in the areas where the movement of poultry is not strictly controlled. It is important to note that animal movement across country borders plays a crucial role in disease distribution in this region. Commercial and local live bird markets are a real disease source. When compared to migratory birds, local live bird markets have a much greater potential for disease distribution.

## Disposal and disinfection

Failure to destroy carcasses and inadequate disinfection leads to wide distribution of the virus in the environment. Villagers can be infected easily during slaughtering of infected/sick birds. Young children, pre-school age, who are curious and in direct contact with sick birds, are at high risk of the infection. Most human cases have experienced direct contact with infected poultry, especially during slaughter.

## Vaccination

Although vaccination is a tool for controlling/eradicating HPAI, it needs to be augmented with additional activities that are simultaneously implemented during the vaccination campaign. These activities include farm biosecurity, active surveillance, serologic monitoring, strict movement control and educational campaigns. Improperly applied vaccination does, however, directly lead to genetic evolution of AI viruses. Non-uniformity of vaccination and the use of poor quality vaccines leads to unsuccessful control.

Inappropriate use of vaccines to control AI induces suppression of the virus, resulting in acceleration of viral mutation. Ideally, the vaccines used must be able to stimulate specific immunity and prevent viral

shedding after field challenge. Understanding and good practice of AI vaccination is essential.

It is known that vaccine stimulates specific immunity against AI but cannot prevent the infection.

Continuous vaccination campaigns without limitation of the use period leads to ongoing outbreaks; particularly if biosecurity is not properly performed in the vaccinated areas. Because stamping out often cannot be done in all infected areas, farmers prefer to use AI vaccines to control the mortality in their flocks.

Smuggling of the AI vaccines and wrong application can adversely affect disease surveillance and result in failure to minimise the problem. Vaccination campaigns in any country must be analysed and evaluated before the policy is announced and the campaign is implemented.

## Wild birds

Habitat sharing by migratory, terrestrial and local birds, even free-range, backyard poultry is rather difficult to control. To avoid outbreaks of AI in domestic poultry, such domestic birds must be kept in biosecure farms. Covering the poultry houses with netting can be done to prevent wild birds from entering poultry houses. This minimises the chance of direct contact between poultry and local birds.

## Socio-economic impact

The socio-economic aspect of AI is still an issue to be resolved in this region. Free-range or grazing poultry is directly related with local food security and sustainable agricultural community. Although free-range poultry, for example ducks, are commonly reared in many countries in Southeast Asia, active surveillance of AI must be periodically undertaken in this sector. This free-range poultry production is continuous and biosecurity is rarely practised. Unlike other free-range birds, fighting cocks, in particular the mature ones that are profes-

sional fighters, appear safer and better kept because their owners take care of them. The younger ones, however, are still at high risk of infection.

## International networking

Although the AI problem is approached differently, particularly with reference to its control, among Asian countries, the importance of international networking and disease control in this region needs to be emphasised widely. These activities include setting strategic controls, sharing informative data, strengthening field and laboratory diagnosis, emergency preparedness for a pandemic, and the exchange of technical implementation and expertise. Many international organisations, like the OIE and FAO, have continuously helped all countries where the AI problem persists.

## Education

Education campaigns must be implemented at all levels. This must be done appropriately, based on the attitude and education level of the people. Using common words and simple sentences, but still keeping the core knowledge of the issue, is important for villagers to understand and adapt their daily life.

This activity should be done periodically but should not lead to public panic. The activity can be started at school. In many Asian countries where religions are promoted or supported, the priests or monks are influential persons for the understanding of villagers. Without education and public understanding, successful control and prevention of AI is limited.

Since a 'one health' issue is now increasingly the focus in all Asian countries, integration of a multi-disciplinary approach to human and animal health needs to be clarified, including the risks of the problem, communication, and collaboration of all health and agricultural sectors.

This approach must be performed by government, private and international sectors. ■