ON AVIAN INFLUENZA (HIGHLY PATHOGENIC STRAIN) CAUSING MASSIVE ECONOMIC LOSSES TO THE POULTRY INDUSTRY AND WITH SIGNIFICANT POTENTIAL AS A HUMAN PUBLIC HEALTH CONCERN

Addressed to:

Department of Agriculture (DA), DA Bureau of Animal Industry (BAI), Department of Health (DOH), DOH Food and Drug Administration (FDA), National Avian Influenza Task Force (NAITF), Department of Science and Technology (DOST), Department of Environment and Natural Resources (DENR), Local Government Units (LGUs) of Pampanga, Bulacan, Rizal and other affected provinces, universities and research institutions, poultry growers and industry stakeholders, consumer groups, and the general public

INTRODUCTION AND BACKGROUND

Avian Influenza (Influenza A virus subtype H5N1), commonly known as Bird Flu, is a highly contagious transboundary and zoonotic viral disease that affects several species of wild and domestic birds. The mortality rate ranges from 90% to 100%. The transmission and spread of Avian Influenza is from wild migratory birds to domestic birds. It is an RNA virus, which means it is more unstable compared to DNA viruses and therefore could potentially mutate more readily to other strains through genetic recombination and re-assortment mechanisms in its host animals which include pigs and humans aside from birds (Figure 1, Pascua and Young 2014). The Influenza A(H5N1) virus was first isolated in geese in China in 1996. The virus caused massive poultry outbreaks in 1997. Although the outbreaks have been reportedly controlled, the virus resurfaced in 2003. Since then, H5N1 has spread to Asia, Europe, Africa, USA, and South America. Information on Avian Influenza in the USA and the rest of the world, including cases, guidelines, and protective actions for people, is updated weekly by the US Center for Disease and Prevention (CDC 2023).

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In the Philippines, the first outbreak of Avian Influenza (AI) in 2017 caused thousands of deaths among quails, chickens, and ducks in Bulacan and Nueva Ecija. Suspected carriers of the virus were migratory birds from other parts of Asia that regularly visit the Candaba Swamps in Pampanga. In 2005, the virus was reported in a duck farm in Bulacan where live birds were subjected to standard AI tests as a requirement for export. In 2021, the occurrence of highly pathogenic avian influenza (HPAI) sub type A(H5N1) outbreaks in Pampanga and Nueva Ecija was first reported (Bureau of Agricultural and Fisheries Standard, Technical Bulletin No. 07, Issue: Avian Influenza, June 30, 2021). The first H5N1 HPAI outbreak in the Philippines was confirmed in 2022 (BAI 2022). Possible sources of infection were wild birds especially egrets, feed delivery trucks, and fresh duck eggs from Nueva Ecija.

Since then, there have been 254 laboratory-confirmed cases of H5N1 HPAI nationwide affecting 265 poultry farms from 8 regions, 20 provinces, 72 municipalities, and 142 *barangay* (Figure 2, BAI 2022). The poultry industry, valued at PHP 9 billion (PSA 2021), is at high risk because of HPAI outbreaks. Great economic loss is mainly due to the culling of sick chicken layers. The greatest impact of HPAI is on backyard poultry growers who raise only a few hundred layers for extra income. Approximately 10 million chicken layers have already been disposed of since the outbreak of HPAI Avian Influenza result in a 20% drop in egg production. A shortage of egg supply of this magnitude has pushed egg prices to an all-time high (Monzon 2023), thus impacting not only food security but public health as well since eggs are a major source of nutrition.

Avian Influenza is potentially a public health concern. According to the World Health Organization (WHO), more than 850 people were infected with the virus from 2003 to 2016 and about 50% of the individuals died (WHO 2014). Although there are no recorded cases yet of Avian Influenza in humans in the Philippines, it is highly recommended that the relevant government regulatory agencies, the poultry industry and the general public remain on high alert and government institute strict preventive measures to minimize human exposures to the virus. Humans get the virus from improper handling and disposal of infected and dead birds and their excreta.

<u>To the R&D community:</u>

1. comprehensive longitudinal surveillance to establish seasonality, and the contribution of migratory and wild birds to the spread of the AI virus,
2. complete genotyping and pathotyping of the circulating strains,
3. establishment of repository of samples from AI cases,
4. development of AI diagnostics kits based on circulating strain,
5. creation of AI vaccine candidate review committee composed of BAI personnel, poultry practitioners, academics, scientists, and industry stakeholders to evaluate the current technologies and progress in the field.

<u>To relevant national agencies and local government units:</u>

1. strict implementation of biosecurity measures for control of wildlife population in poultry farms and for transport of poultry across provinces and regions,
2. issuance of strict guidelines and training of farm personnel to follow proper procedures in handling, transporting, and disposing dead and live infected birds and excreta,
3. compensation of backyard poultry growers for their culls and granting of interest-free loan for repopulation subject to compliance with strict biosecurity measures,
4. establishment of the One Health Approach involving NAITF, DA, DOH, DOST, DENR, and LGUs for effective

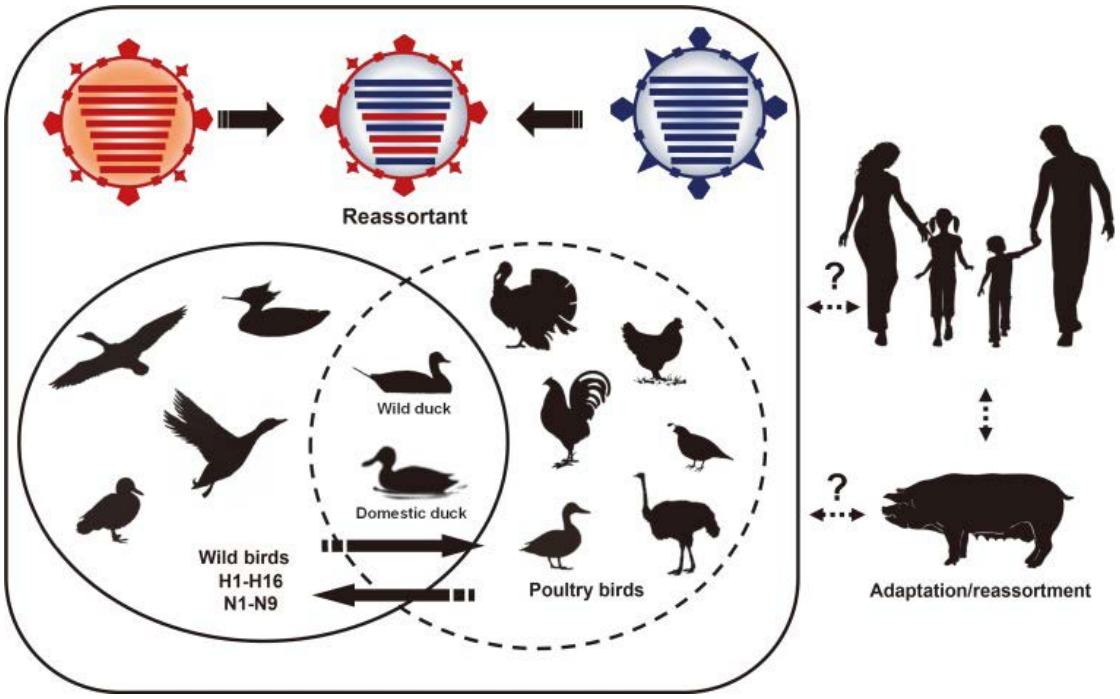

Figure 1. Transmission and Spread of Avian Influenza Virus from Wild to Domestic Birds and Potential S pill to Humans (Pascua and Young 2014).

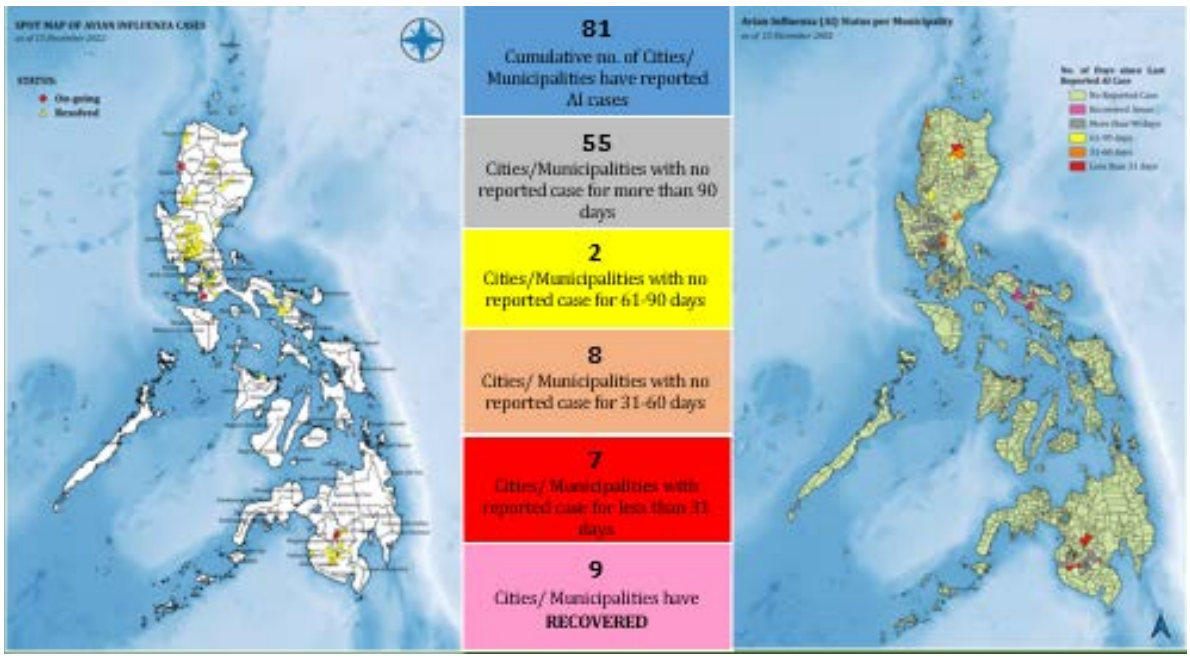

Figure 2. Distribution of Avian Influenza Cases in the Philippines as of December 15, 2022 (BAI 2022).

prevention and control of Avian Influenza and risk reduction of infection of the human population,

5. public information and dissemination campaign on Avian Influenza.

To prevent further spread of the virus and damage to the poultry layer and egg industry, NAST PHL recommends the adoption of World Organization for Animal Health (WOAH) and Guidelines (WHO/FAO 2004; WHO/WOAH/FAO 2014; WOAH 2021) for the eradication of Avian Influenza in the Philippines which incorporates the following:

a. strict implementation of biosecurity measures that are easy to follow but hard to break,
b. early detection of disease outbreaks by intensive surveillance system within 1 km quarantine zone from infected farms vital for immediate determination of the cause of the disease and initiation of control measures,
c. swift and humane depopulation of Avian Influenza positive flocks and proper disposal of dead birds within the premises of the farm,
d. use of prescribed vehicles in transporting and disposing of dead birds and their excreta,
e. enhancement of diagnostic capabilities of the National and Regional Animal Disease Diagnostic Laboratories (NRADDL), and
f. implementation of intensified public educational campaign around Avian Influenza in a language easily understood by farmers. Avian Influenza is a reportable disease (DA 2018), and as such farmers should be able to recognize the symptoms of the virus for accurate reporting to local veterinarians, public health officers or any LGUs offices.

NAST PHL also promotes the development of local technologies for effective eradication of avian influenza in the country through: (a) fast, reliable, and cost-effective diagnostic kits for field use, (b) molecular surveillance mechanisms to identify prevalent HPAI strains affecting domestic and wild birds' population, (c) early detection of emerging HPAI genotypes and variant strains, and (c) innovative strategies to control wild bird populations in the farm.

Inasmuch as Avian Influenza has now rapidly spread in many regions in the country, NAST PHL supports a declaration of a six-month Nationwide State of Calamity. During this period, local government units (LGUs) are authorized to use part of their Risk Reduction and Management Funds for the control, rehabilitation, and recovery from the virus. Furthermore, NAST PHL advocates for the reactivation of the NAITF. Established in 2005, NAITF was composed of representatives from various sectors of the poultry industry, tasked chiefly to formulate measures for the prevention and control of avian influenza outbreaks.

Vaccination is the LAST RESORT to stop the spread of the virus (Swayne *et al*. 2011). However, before adopting a nationwide AI vaccination, NAST PHL strongly supports adequate government and private funding for researches on the development of an effective and safe vaccine using local isolates. Moreover, in the absence of strict and appropriate monitoring systems, vaccination might only lead to a HPAI endemic in a vaccinated population due to the emergence of mutated strains. An effective vaccine should match the genetic profile of the circulating virus strain. A vaccine candidate must undergo rigorous testing for safety, nontoxicity, and immunological response, i.e., antibody and T cell response, first in an uninfected animal model, and this should be followed by testing for immunological efficacy in an infected animal model, i.e., neutralizing antibody and T cell response, conducted in a strict biosafety level 3 facility.

Unfortunately, there are still no vaccine laboratory and field-testing facilities and vaccine manufacturing facilities in the country capable of producing an autogenous vaccine from local isolates. To prevent further negative impact of the virus to the layer and egg industry, NAST PHL recommends acceleration of vaccine development by granting financial incentives to vaccine companies. NAST PHL also supports the concept of archiving of HPAI local isolates which are essential for the development of an autogenous vaccine. However, storage should conform to the OIE and FAO protocols for safety. Since vaccination seems to be the LAST RESORT in controlling the virus, NAST PHL fully supports a nationwide vaccination against the virus provided the vaccine is safe and duly licensed by the Food and Drug Administration (FDA). NAST PHL cautions the poultry sector from using smuggled vaccines.

NAST PHL supports the government's ban from importing hatching eggs and day-old chicks from countries with reported Avian Influenza outbreaks. This is vital in controlling the spread of the infection because the layer industry imports several millions of hatching eggs and day-old chicks annually. NAST PHL supports BAI indemnification initiatives through its Quick Response Funds for affected poultry growers especially the backyard raisers. Hopefully, this will be tied to services providing technical know-how on the eradication of avian influenza as well as an oversight mechanism to ensure accountability on the use of public funds. Furthermore, NAST PHL proposes the setting up of a government program to provide interest-free loans to backyard poultry raisers and low-interest loans to commercial poultry growers for repopulation.

Cognizant of the changing epidemiological profile of the Avian Influenza virus, NAST PHL sees the need for the NAITF to update its Avian Influenza Protection Program (AIPP): Manual of Procedure for the Control of Bird Flu Outbreaks. However, any recommendations made should complement those of WOAH, FAO and WHO protocols (WHO/FAO 2004; WHO/WOAH/FAO 2014; WOAH 2021). To reiterate, NAST PHL recognizes the importance of strengthening biosecurity and veterinary public health awareness because Avian Influenza is recognized as a potential public health concern (FAO 2022). As such, there is a need to understand its wider context using a One Health approach (WHO 2017) which links human, veterinary, and environmental health.

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