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HPAI transmission dynamics in endemic settings

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with limited biosecurity. Developing farm-specific biosecurity plans that focus on preventing virus introduction and considering the potential use of vaccination can enhance the effectiveness of biosecurity measures.

Transmission dynamics of HPAI epidemics in mixed poultry production systems

Sébastien Lambert, Ecole nationale vétérinaire de Toulouse (ENVT)

The diversity of poultry production systems in France includes chicken layers and broilers, duck broilers and for foie gras, and various indoor/outdoor, intensive/extensive, integrated/independent systems. Poultry density and species distribution exhibit significant geographic heterogeneity. The epidemic in France in 2006 began with the introduction of H5N1 HPAI by migratory birds and affected wild birds and a single turkey flock. In contrast, the 2015-2016 epidemic was due to a mutation LPAI into HPAI, primarily impacting duck farms. Recurrent epidemics of HPAI H5Nx clade 2.3.4.4b occurred after 2016, although the 2016-2017 epidemic has been studied extensively. Phylogenetic analyses indicated a single primary introduction from wild birds into domestic poultry, followed by between-farm spread with limited long-distance transmission. The role of live bird transportation, wind, and vehicles in transmission remains unclear. While backyard farms had a limited role in transmission, densely populated areas and duck farms played a significant role. Despite biosecurity improvements, breaks in measures were observed in commercial farms.

HPAI transmission dynamics in endemic settings

Guillaume Fournié, INRAE

Transaction dynamics in poultry value chains are influenced by factors such as limited access to financial capital, leading to potential adoption of risky practices (e.g. in Bangladesh). The degree to which HPAI transmission and endemicity is influenced by multiple practices across farming and trading systems, including density, connectivity, stakeholder movements, batch and species mixing, hygiene practices, clinical severity, reporting, vaccination coverage and matching, and poultry turnover is unclear, undermining our understanding of transmission dynamics. These gaps can be partly addressed by collecting reliable data on outbreaks, system configurations and contact patterns, population dynamics (including wild birds), and detailed genetic sequences and associated metadata. Structural constraints can lead to practices such as mixing along trading networks that facilitate viral amplification. While the impact of viral endemicity in wild birds and vaccine use on transmission dynamics is uncertain, the possibility of repeated viral incursion into poultry leading to viral endemicity in previously unaffected farming systems is acknowledged.

Overview of updates from FAO regional experts

Africa

Abebe Wolde, FAO Regional Office for Africa

HPAI outbreaks have occurred in multiple West and Central African (WCA) countries, with at least ten of fifteen countries of the Economic Community of West African States (ECOWAS) affected. Active outbreaks are currently ongoing in five countries: Senegal, Gambia, Guinea, Nigeria, and Niger. Nigeria is a regional HPAI



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