

Avian influenza H5N1 in Africa: an epidemiological twist

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There is little information about highly pathogenic avian influenza (HPAI) H5N1 virus in Africa, where health infrastructure is inadequate and human–animal contact is common.^{[1] and [2]} The global status of HPAI H5N1 in human beings was recently reported,³ but region and continent-specific information remains deficient. Here we describe how urbanisation and altered farming have increased the risk of HPAI H5N1 in Africa.

Sub-Saharan Africa has undergone rapid urbanisation. About 40% of the population is now urban (table).⁴ An estimated 60% of urban residents inhabit slums,⁵ and urban/peri-urban agriculture has proliferated.

Table.
Urban population as a percent of total, sub-Saharan Africa, 1960–2025

Year	Urban (%)
1960	11.8
1965	13.7
1970	15.9
1975	18.8
1980	22.0
1985	25.4
1990	29.0
2000	36.6

Year	Urban (%)
2010	43.5
2025	54.2

Source: United Nations, 1985.⁴

Urban and peri-urban poultry production is increasing rapidly⁶ because of the unavailability of both land and economic options.⁷ The crowded proximity of peri-urban poultry farms, inadequate biosecurity, and burgeoning live poultry markets promote the rapid spread of disease.

The control of avian influenza H5N1 in Africa remains problematic. Human and animal disease surveillance is weak, cross-border movement is not effectively managed, and health-care systems are overtaxed by AIDS, tuberculosis, and malaria. When avian influenza H5N1 hit the African continent in early 2006,^{[1] and [2]} it was not contained for several reasons, including delayed official decisions, inexperience, lack of prompt intervention planning, poor preparedness, corruption, and hesitation by farmers to report outbreaks. Similar factors have been associated with the continued spread in Asia.⁸ The true situation in most African countries is unknown. Each affected country, apart from Egypt, took approximately 4 weeks to officially confirm the initial outbreak, and reporting of outbreaks

is still delayed in most countries.⁹ Most cases of HPAI H5N1 infection occurred in urban and peri-urban poultry populations.⁹ Free-range (rural) poultry have been less affected; these birds mix freely with domestic and wild fowl and often cohabit with human beings, but their low population density appears to offset their risk of infection.

Farming conditions in Africa are similar to those in affected Asian countries, and therefore the epidemiology of H5N1 influenza is expected to be similar. To date, 40 Africans are known to have been infected, with a 40% fatality rate. Most infected individuals (80%) were women, which may reflect the female role in food preparation.

Seasonal human influenza is grossly under-reported in Africa, and therefore less-than-severe HPAI H5N1 influenza is also unlikely to be detected. However, even the small number of reported cases portends grave danger for Africa, with its limited capacity to cope with a pandemic and its high-risk conditions and practices (including home slaughter of sick birds).¹⁰ Our assessment of the perceptions of farmers and the public showed evident knowledge gaps and the gross downplaying of avian influenza (Fasina et al, unpublished data). The general public is sometimes clearly misinformed by the government as to the true nature of avian influenza outbreaks.¹¹ These findings have serious public-health implications, because farmers prepare poultry and poultry products sold to the public, usually without inspection.

The prolonged continuous circulation of HPAI H5N1 virus in domestic poultry in Asia is unprecedented. The virus has evolved into multiple genetic lineages that differ antigenically.¹² The Qinghai strain, the predominant variant in Africa, has acquired several troubling properties, including respiratory rather than faecal transmission in poultry, increased thermal stability, and a PB2

gene mutation associated with pathogenicity in mammals, including human beings.¹³ Because there are fewer domestic waterfowl in Africa than in Asia, it is unknown whether they can perpetuate the virus through the warm season. It is also not known whether HPAI H5N1 is being maintained in African birds or periodically reintroduced.


WHO identified five priorities in the fight against avian influenza: reduced human exposure, strengthened surveillance, intensified rapid containment, enhanced response capacity, and coordinated global research.¹⁴ However, Africa's ability to accomplish all of these goals is doubtful. The risk of human infection in Africa is increased by reluctant, delayed, or deficient reporting, poor surveillance, inefficient diagnosis, denial of outbreaks, crisis-driven disease management, poor communication of risks, inter-ethnic crises, sociocultural issues, and the politicisation of avian influenza H5N1. The Asian strain of highly pathogenic H5N1 continues to ravage the African continent and reports of new outbreaks persist, although some countries claim to be free of the virus. Each African nation must realistically assess its status (especially its borders, wet markets, and displaced/peri-urban populations), conduct regular active surveillance, and be more forthcoming with data. International agencies and donor nations should be ready to assist African nations that are developing or in transition. An uncontrolled epizootic of avian influenza in any nation is a threat to all nations.

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