

Can One Health fight H5N1 avian influenza?



Most infectious disease outbreaks in humans begin with zoonotic transmission. However, the mandate on how to address animal health epidemics is not robust, unless it involves livestock or there is crossover to humans. We are currently facing the largest outbreak of H5N1 avian influenza virus, which is concerning because, although it is not easily transmitted to and between people, of 868 cases of H5N1 in the past 26 years, 457 (53%) people died.¹ The concept of One Health calls for a collaborative and unified approach to integrate animal, planetary, and human health. But is the current strategy to the avian influenza epidemic following this approach, or are we waiting for a zoonotic big leap before action is judged worthwhile?

The H5N1 avian influenza epidemic started in 2021, causing more than 53 million avian deaths²—notably, the first mass death was of cranes in northern Israel. Birds migrating from Europe to the Middle East might have contracted the virus from domestic poultry kept in unsanitary conditions or vice-versa.³ The scale of this epidemic is unprecedented as many mammals are dying from the disease. For example, hundreds of dead or dying sea lions washed up on the shores of Peru,⁴ suggesting that the virus might have adapted for mammal-to-mammal transmission. The UK Department for Environment Food and Rural Affairs uses a surveillance system that relies on notifications, isolating farms or other places of captivity, and culling infected birds and birds in close contact with infected birds. These methods are reactionary when the primary objective is to protect humans, particularly those working with birds and livestock.⁵ However, the spread of H5N1 avian influenza among animals with no real policy for prevention, other than culling, is not sustainable for people or the planet.

This present strategy does not address how climate change is driving outbreaks of zoonotic disease. Avian influenza has always been associated with migratory birds that might cross paths with domestic poultry. However, rising sea levels and temperature changes are also affecting the migration patterns of many migratory birds, potentially causing them to integrate with other species.⁶ Moreover, the world's largest outbreak of the Ebola virus disease might have been triggered by increased aridity and length in dry season in southeastern Guinea.^{7,8}

During my fieldwork in Sierra Leone, environmental health improved from my first visit in 2017 to my most recent visit in November, 2022. Health-care workers and community and traditional leaders were using social mobilisation strategies to educate households on sanitation and hygiene practices, such as maintaining outdoor latrines and controlling the population of stray dogs. Many traditional leaders had allotted land for waste disposal and the government provided garbage trucks to help, although more resources are still needed. In interviews, 50 health-care workers, community stakeholders, and government officials from five districts (urban and rural) said that these changes were implemented after the Ebola epidemic for outbreak prevention. The interviewees understood that the Ebola virus did not normally transmit by stray dogs or through waste, but they felt that keeping the environment clean and pets healthy and indoors were means to protect human health. Hand washing and vaccines only takes humans (as a species) so far, given the unequal access to such resources.

Policy makers should be concerned about a scenario in which a disease outbreak endangers or eradicates multiple species, even if it does not affect humans directly. Even without considering animal-sourced foods, the plants we eat co-evolved with animals and insects that are needed for seed spreading, pollination, and fertilisation. Waiting for a big leap before commencing biomedical intervention (eg, finding a vaccine or treatment) might not be in our best interests.

One Health has the potential to be applied using a proactive intergovernmental approach that mitigates urbanisation to prevent deforestation, which would displace animals or restructure trade and the economy. For instance, in 2020, nearly a quarter of the eggs on the global market came from one country.⁹ Why? Globalising food exports has not solved world hunger, nor does every nation follow the strictest biosafety levels as evidenced by the H5N1 outbreak in poultry farms in northern Israel.³ This scenario is perhaps unlikely to change since governments currently prioritise economic growth and multinational companies lobby for favourable policies.

In the Sierra Leone interviews, participants stated that local engagement helped stop the Ebola epidemic and prevented the spread of COVID-19. The government supported local strategies, not via top-down interventions, but through bilateral engagement relying on community feedback. One Health might be able to reduce the risk of deadly and costly pandemics, and I believe it will do that best if we can find a way to bring animal disease risks to the forefront of people's attention so that every aspect of community and municipal standards can be leveraged to improve planetary and animal health.

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