



Strengthening One Health can keep diseases from poultry in check

One in three chickens in Vietnam's markets tests positive for avian influenza. This brief offers new evidence of the public health and development challenges from farmed poultry and offers ways to minimise risk.



Collecting swab samples at the markets. *Photographer Dao Duy Tung*

Background

Vietnam's poultry industry is crucial for the country's food security and economic development. However, this sector is threatened at all levels by pathogens which can spread from animals to humans (known as zoonoses), posing risks to the health of both birds and people. Common zoonotic diseases associated with birds include those which cause food poisoning from the bacteria *Salmonella*, *Campylobacter* and *E. coli*. These can result in illness ranging from mild tummy upset to severe systemic infection. Avian influenza from the avian influenza virus (AIV)¹ can cause severe illness and even death. Moreover, the spread via poultry of strains of pathogens which are resistant to antibiotics further complicates disease control efforts and treatment options.

Understanding disease transmission among poultry and between poultry and people is essential if policymakers and authorities are to implement effective public health strategies. We sought to shed light on the risks of disease transmission from poultry by collecting and testing thousands of biological samples from small-scale poultry farms, traditional markets and slaughterhouses. Reduced disease transmission will benefit animal and human health and contribute to the successful development of the poultry sector in Vietnam.

Recommendations

- Implement **biosecurity** measures on farms and in slaughterhouse, including strict control of access to, and proper waste management and regular health monitoring of, flocks.
- Strengthen **quarantine** management at markets, including regular biological sampling and analysis to control disease spread.
- Implement the **One Health** approach, including the guidelines for a multisectoral coordinated investigation and response to zoonoses.
- Raise awareness about **antibiotic management**
- Continue **researching** zoonoses and undertaking **surveillance** of pathogens in wild birds, poultry, animals and people.

Key findings

Avian influenza

Up to one in three live chickens sold in traditional markets tested positive for AIV. The rate ranged from 20.8% to 35.7%.

The AIV rate in slaughterhouses never fell below one in five. Nearly half (48.5%) of the samples from the slaughterhouse in Quang Ninh were positive, and the figures from the three other provinces ranged from 22.9% to 40%.

Bacteria causing food poisoning

All our samples tested positive for *E. coli*.

Up to half (21.7% to 50%) of our samples tested positive for *Salmonella*. The majority of these were obtained from market sites. Specifically, the samples collected from the slaughterhouse in Quang Ninh were 70% positive, while those from Hanoi were 63% positive.

A third (33.7%) of our samples tested positive for *Campylobacter*. The rate was significantly higher for samples collected from farms, with more than half (55.6%) of samples from farms testing positive.

Antibiotic resistance

The level of antibiotic residues exceeding the allowable limit in chicken meat ranged from 7% to 19%. Antibiotic residues are the small amounts of antibiotic, or what remains of an antibiotic after it has been through a bird's system, following its administration to the bird. Nine types of antibiotics were detected.

Policy implications

Zoonotic diseases present a complex challenge for Vietnam policymakers, with implications for public health, food safety and agricultural sustainability. Factors ranging from the lack of biosecurity on most small farms to the illegal animal trade across the long border with China make the challenge an especially difficult one to overcome. The high positive rate of AIV and *Salmonella* at slaughterhouses in particular poses a significant risk to human health given the ease with which these pathogens can be transmitted from birds to people through direct contact, consumption of contaminated products or environmental exposure. Additionally, the misuse and overuse of antibiotics in poultry farming has led to the emergence of antibiotic-resistant bacteria, threatening the effectiveness of antibiotic treatment for animals and humans. *Our results call for a thorough evaluation of preventive measures.*

The Vietnamese government has already adopted a One Health approach to zoonotic disease³ and has issued regulations to encourage the monitoring and reporting of prioritised zoonoses and to improve communication, coordination and cooperation between the animal and human health sectors. There is a need now to take One Health measures a step further. To mitigate the risk of avian influenza and bacterial disease transmission, and to protect the health of workers and the wider community, more stringent biosecurity measures and hygiene practices are essential for slaughterhouses. This should include the use of personal protective equipment, regular cleaning and disinfection of facilities, and proper handling and disposal of poultry carcasses and waste.

Surveillance programmes for early detection of avian influenza outbreaks in poultry can also help to prevent transmission to humans and enable timely intervention measures.

Promoting sustainable poultry farming practices is essential for mitigating the impact of zoonotic diseases. Implementing integrated pest management, improving animal welfare standards and enhancing biosecurity protocols can help to reduce the prevalence of diseases in poultry populations.

Collaboration between government agencies, research institutions and industry remains key to developing effective strategies for disease prevention and control.



Further information

The GCRF One Health Poultry Hub is an impact-driven research and development programme working to help meet Asia's growing demand for chicken meat and eggs while minimising risk to local and global public health.

This research was carried out in four provinces in Vietnam: Bac Giang, Hanoi, Hai Duong, and Quang Ninh. The slaughterhouses including both large-scale and smaller premises. All the samples were analysed at the laboratory of the National Institute of Veterinary Research.

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Disclaimer: The findings, interpretations and conclusions are those of the authors only.

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Footnotes

1. <https://link.springer.com/article/10.1007/s10096-019-03505-2>

2. [cdc.gov/flu/avianflu/spotlights/2022-2023/h5n1-technical-report_october.htm](https://www.cdc.gov/flu/avianflu/spotlights/2022-2023/h5n1-technical-report_october.htm)

3. Ref. No. 16/2013/TTLT-BYT-BNN&PTNT. Hanoi, Vietnam