Spot It in Animals, Stop It in Humans: Cambodia's Avian Flu Defense

A. Brioudes[1] (aurelie.brioudes@fao.org), M. Hak[1], F. Claes[2], M. Somony[3], T. Sothyra[4]

[1] *FAO Cambodia, Phnom Penh, Cambodia*
[2] *FAO RAP, Bangkok, Thailand*
[3] *DAHVPH - GDAHP, MAFF, Phnom Penh, Cambodia*
[4] *NAHPRI - GDAHP, MAFF, Phnom Penh, Cambodia*

Context

Highly Pathogenic Avian Influenza (HPAI) A/H5N1 (Gs/GD/96-lineage) has been circulating in Cambodia since its first introduction in 2004 [1], with 84 officially reported poultry outbreaks and 93 human cases recorded as of early 2026 [2, 3]. The cumulative case fatality rate stands at approximately 55.9% [2]. After eight years without human detections between 2014 and 2022, viral activity surged significantly between 2023 and 2025, resulting in 34 human cases and 10 deaths [2, 4]. This upward trend continued into early 2026, with two notable human cases confirmed in Banteay Meanchey on 15 March and Oddar Meanchey on 29 March, both linked to backyard poultry exposures [3, 5].

To address complex zoonotic threats such as avian influenza, the Royal Government of Cambodia established the One Health Inter-Ministerial Coordinating Committee(OH-IMCC) in 2016 [6]. This body provides a robust institutional framework and high-level leadership, unifying the Ministry of Health (MOH), the Ministry of Agriculture, Forestry and Fisheries (MAFF), and the Ministry of Environment (MOE) under a single strategic mandate [7]. By streamlining multisectoral communication and resource sharing, this framework has successfully operationalized One Health in Cambodia. This is evidenced by the deployment of joint investigation teams capable of launching synchronized, rapid responses on the ground within 24 hours of notification, fundamentally shifting the national approach from reactive to proactive disease management [3, 5].

By streamlining multisectoral communication and resource sharing, this framework has successfully operationalized One Health in Cambodia. A key milestone in this operationalization was the formal joint endorsement of the One Health Rapid Response Team (OH-RRT) Standard Operating Procedures by the three ministries, providing a unified technical protocol for field interventions [8]. This is evidenced by the deployment of joint investigation teams capable of launching synchronized, rapid responses on the ground within 24 hours of notification, fundamentally shifting the national approach from reactive to proactive disease management [3, 5].

Case study

When first signals were received in March 2026 from Banteay Meanchey province first and later on from Oddor Meanchey province, coordinated outbreak response teams were established and deployed to the field for epidemiological investigation and outbreak containment.

Banteay Meanchey province – Preah Netr Preah district

Following reports of domestic poultry mortality in Rumpeak village, Chnuor Mean Chey commune, in early March 2026, a multisectoral investigation was launched. On March 11, the National Animal Health and Production Research Institute (NAHPRI), in collaboration with the Provincial Office of Animal Health and Production (OAHP), conducted field surveillance and collected six diagnostic samples from symptomatic chickens. Simultaneously, environmental assessments were performed at the nearby Rohal Kes bird sanctuary to monitor wild bird health. On March 13, RT-PCR testing at NAHPRI confirmed that 100% of the collected poultry samples were positive for A/H5N1.

In response to the animal outbreak, the Ministry of Health (MOH) initiated human clinical surveillance, identifying a 45-year-old female resident with respiratory symptoms and a history of direct contact with infected birds. A human sample was collected and confirmed positive for A/H5N1 by the National Institute of Public Health (NIPH) on March 14. Integrated intervention results between March 13–18 included the culling of 32 infected poultry and the implementation of rigorous biosecurity measures across two high-risk households. Public health teams conducted contact tracing, distributed Oseltamivir (Tamiflu) to exposed individuals, and provided the primary case with hospital-based isolation and specialized medical care. No further human case was detected within the community following these synchronized containment efforts.

Oddar Meanchey province – Banteay Ampil district

Following reports of high mortality in domestic poultry (65 chickens and 45 ducks) in Tumnup Thmey village starting March 22, 2026, joint investigation teams comprising animal and human health sectors were deployed. The National Animal Health and Production Research Institute (NAHPRI) and the Provincial Office of Animal Health and Production (OAHP) conducted diagnostic sampling on March 25, with five samples testing positive for A/H5N1 via RT-PCR on March 26. Expanded active surveillance on April 1 identified a second affected household with 61 sick and dead birds, which also yielded H5N1-positive results.

In a coordinated effort, the Ministry of Health (MOH) and agricultural officials identified a 3-year-old male with a history of direct exposure to the infected backyard flocks. The case was confirmed positive for A/H5N1 by the National Institute of Public Health (NIPH) on March 29 and the Institut Pasteur du Cambodge (IPC) on March 30. Genetic sequencing using Oxford Nanopore GridION technology identified the virus as a reassortant Clade 2.3.2.1e, consistent with genotypes circulating in Cambodian live bird markets since 2023 [9] .

Integrated response measures executed between March 30 and April 3 included the culling of 107 poultry and the disinfection of 34 households and 2.2 km of village thoroughfares. Public health interventions included hospital-based isolation and Oseltamivir treatment for the pediatric case, contact tracing with prophylactic antiviral distribution, and multisectoral risk communication reaching over 340 community members, including students and teachers. No secondary human cases were identified, confirming the success of the synchronized One Health containment strategy.

Discussion

Historically, in many regions with endemic viral circulation, human H5N1 cases have acted as "sentinels" for the presence of viruses in animals and in the environment. In these scenarios, the detection of the virus in poultry often follows or coincides with the identification of a human infection rather than preceding it [10 -12].

While One Health is globally recognized as the pragmatic approach to adopt, its application at the local or community level is yet rarely demonstrated. It is essential to transform the concept of One Health into concrete actions with field-based examples and models that actively apply the One Health principles. Implementing initiatives at the local or community level is critical for achieving genuine, long-term benefits for individuals and populations.

The 2026 H5N1 responses in Banteay Meanchey and Oddar Meanchey underscore the effective operationalization of Cambodia’s One Health strategy. Prompt sharing of information across animal and human health sectors was instrumental for establishing joint investigation teams immediately upon poultry alerts, leading to Cambodia successfully shifting from reactive to proactive surveillance. This systematic One Health approach enabled the detection of H5N1 in two individuals who were asymptomatic at the time of screening. Early confirmation allowed for the immediate administration of adequate treatment, significantly increasing the probability of clinical success compared to traditional detection triggered only after severe symptom onset.

The operationalization of field-level One Health strategies has proven life-saving by linking animal outbreak investigations directly to pre-emptive human case-finding. Had these cases not been identified through active community-level surveillance, medical intervention would likely have been delayed until the onset of debilitating symptoms—a stage where treatment efficacy can be significantly compromised. By deploying this coordinated multisectoral response, the Royal Government of Cambodia has moved beyond passive reporting toward a model of early intervention that prevents fatalities and halts community transmission at the source.

The next challenge for Cambodia may lie in the nationwide scaling of this model to ensure a consistent response to every signal across all provinces. Nevertheless, this success provides a blueprint for effective disease control and demonstrates that optimized One Health operationalization is achievable and sustainable within low- and middle-income country (LMIC) contexts.

Ultimately, these efforts serve as a critical defense not only for the Cambodian people but for global health security. As a nation on the frontline of zoonotic spillover, Cambodia’s ability to identify and contain subclinical infections at the animal-human interface is essential for preventing the emergence of viruses with pandemic potential. This integrated framework demonstrates how a national commitment to One Health can proactively mitigate the global risk of a human-to-human transmissible avian influenza outbreak, acting as a vital shield against the next pandemic.

Conclusion

The 2026 H5N1 outbreaks responses in Cambodia successfully implemented a proactive One Health model, shifting from reactive, sentinel-based detection to proactive, community-level surveillance that identified subclinical cases early. This operationalization of localized, multisectoral surveillance proved to be a life-saving, sustainable approach to managing zoonotic threats and enhancing global health security in low- and middle-income country contexts.

Keywords: Community - One Health – Joint outbreak investigation – Early detection – Cambodia



Figure 1 - Maps of Preah Netr Preah district, Banteay Meanchey province and Bantay Ampil district, Oddar Meanchey province in Cambodia where 2026 poultry outbreaks and human cases were detected

Keywords: Community, One Health, Joint outbreak investigation, Early detection, Cambodia.

References:

1. Royal Government of Cambodia. National Comprehensive Avian and Human Influenza Plan (2009). 2009.
2. World Health Organization. Avian Influenza A(H5N1) – Cambodia: Disease Outbreak News (July 2025). 2025.
3. Khmer Times. Ministry confirms H5N1 Bird Flu case in 3-year-old boy in Oddar Meanchey. March 31, 2026.
4. Cambodianess (Thmey Thmey Media). Cambodia Detects Second Human H5N1 Case of 2026 After Woman Handles Dead Poultry. March 15, 2026.
5. Royal Government of Cambodia. Sub-Decree No. 64 ANKr.BK on the Establishment of the One Health Inter-Ministerial Coordinating Committee (MOH Archive). 2016.
6. Khmer Times. Govt launches One Health initiative to boost pandemic preparedness. 2024.
7. Ministry of Health & Partners. Standard Operating Procedures for One Health Rapid Response Teams (OH-RRT) in Cambodia (Referenced via FAO Cambodia). 2024.
8. Institut Pasteur du Cambodge. IPC Update: Avian Influenza A(H5N1) Infection Analysis (Official site for latest testing reports). 2026.
9. Chen H, et al. Indications that live poultry markets are a major source of human H5N1 influenza virus infection in China. Journal of Virology. 2011.
10. Iuliano AD, et al. Human infections with HP avian influenza A(H5N1) virus: sentinel for environmental circulation. The Lancet Infectious Diseases. 2015.