Health officials assess the threat of H5N1

January 2 2025

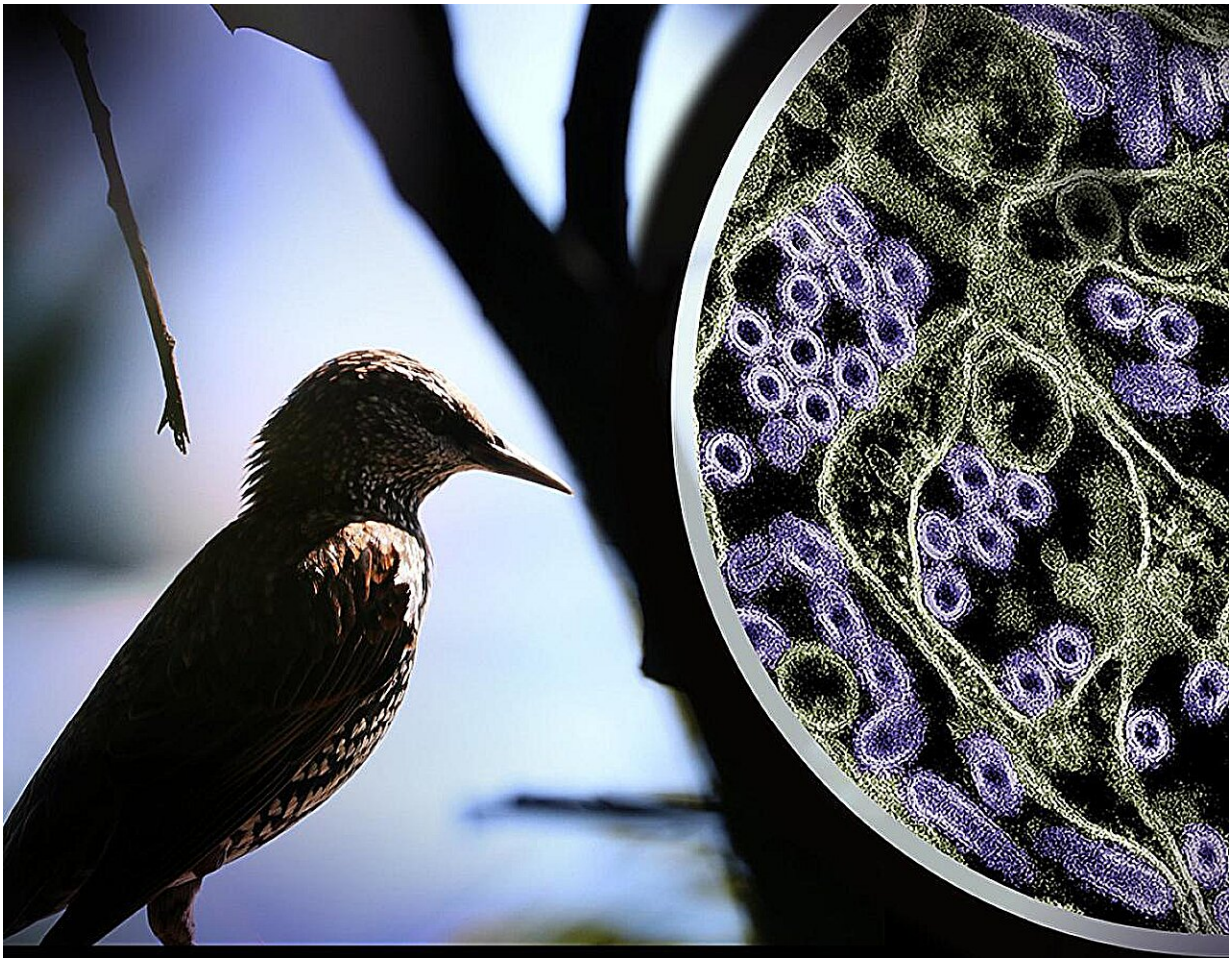

Photo of a wild bird. To the right is a colorized transmission electron micrograph of H5N1 virus particles (purple). H5N1 bird flu is widespread in wild birds worldwide, and in 2024 is causing a multistate outbreak in poultry and U.S. dairy cows. Credit: NIAID and CDC

Highly pathogenic H5N1 avian influenza A virus (HPAI H5N1) remains a low risk to the general public, and public health experts in the United States believe that available treatments and vaccines, as well as those in development, are sufficient to prevent severe disease. However, the National Institutes of Health (NIH) and its federal partners remain focused on monitoring the virus and evaluating changes, according to leading officials at the National Institute of Allergy and Infectious Diseases (NIAID), part of the NIH.

In a commentary published in the *New England Journal of Medicine*, NIAID Director Jeanne M. Marrazzo, M.D., M.P.H., and Michael G. Ison, M.D., M.S., chief of the Respiratory Diseases Branch in NIAID's Division of Microbiology and Infectious Diseases, say people should find a balance between enhanced vigilance and "business as usual" with respect to HPAI H5N1.

Since 1996, HPAI H5N1 influenza viruses have circulated in at least 23 countries. In late 2021, HPAI H5N1 spread from Europe to North America, causing sporadic infections among wild birds and poultry farms. In 2022, the virus spread to South America, where it devastated birds and marine mammals. In March 2024, USDA scientists identified HPAI H5N1 in U.S. dairy cows, and it subsequently reached herds in 16 states.

The virus has been detected in dairy herds in three states over the past 30 days, according to USDA/APHIS. In 2024, the virus has caused 66 confirmed and 7 probable cases of influenza in people in the U.S. and one case in Canada. These human cases have been caused by either the H5N1 type circulating in birds (D1.1) or the type circulating in dairy cows (B3.13).

Against this backdrop, Drs. Marrazzo and Ison say there are four keys to controlling the current outbreak. The first imperative is timely, effective

collaborations among investigators in human and veterinary medicine, public health, health care, and occupational workers, such as dairy and poultry workers.

This involves cultivating trust not only between numerous entities, but with people seeking care for symptoms of concern, including conjunctivitis, the authors write. Fortunately, so far most U.S. cases of HPAI H5N1 have been mild and resolved on their own without the need for treatment.

The second key is a focus on the Canadian HPAI H5N1 patient, who developed respiratory failure and required life-saving medical intervention and treatment before recovering. The authors write that mutations found in the virus in this patient highlight an urgent need for vigilant disease surveillance to identify and assess viral changes to evaluate the risk for person-to-person transmission.

Effective surveillance, they say, requires that complete genomic sequencing data from animals and people are made rapidly and readily available.

Without information pertaining to where and when isolates were collected, the data cannot be linked phylogenetically to other reported sequences, limiting insight into how the virus is spreading, they write. These data would also provide an opportunity for early detection of mutations that might portend avidity for human respiratory epithelium, which may require as little as one mutation in the virus.

Third, researchers must continue to develop and test medical countermeasures—such as vaccines and therapies that eliminate or alleviate disease—against H5N1 and other influenza viruses. Fortunately, current vaccine candidates neutralize the circulating strains, which so far are susceptible to antivirals that could mitigate transmission

and severity of illness, they write.

Lastly, Drs. Marrazzo and Ison encourage people to take precautions to prevent exposure to the virus and minimize the risk of infection. For example, people who work with poultry and cows should use personal protective equipment and educate themselves about occupational risks when working with birds and mammals, as CDC and USDA have repeatedly recommended.

Ideally, following these four steps will help scientists and public health officials investigating HPAI H5N1 to answer the many remaining questions more quickly about how the virus is spreading, evolving, and affecting people, other mammals, and birds.

More information: Michael G. Ison et al, The Emerging Threat of H5N1 to Human Health, *New England Journal of Medicine* (2024). DOI: 10.1056/NEJMe2416323

Provided by National Institutes of Health