Highly pathogenic avian influenza A (H5N1) virus

Robert Kozak PhD, Isaac I. Bogoch MD, Samira Mubareka MD

■ Cite as: *CMAJ* 2024 July 15;196:E878. doi: 10.1503/cmaj.240697; early-released June 12, 2024

1 Highly pathogenic avian influenza (HPAI) H5N1 virus is spread globally by wild birds

The circulating H5N1 clade (2.3.4.4b) has caused outbreaks on poultry farms and among backyard flocks, and die-offs among wild birds. Infections in mammals, including cattle and humans, triggered by viral spillover from birds highlights the potential for a pandemic, but the mechanisms of transmission are not fully known.[1,2] Evidence exists of viral reassortment and mammalian adaptation,[3] resulting in increased risk of transmission and disease among mammals.

2 As of June 12, 2024, no reported human cases of H5N1 have been acquired in Canada

Nearly 900 human cases of H5N1 have been reported globally since 2003, with a case fatality rate of 52%.[4] The clinical presentation may vary from mild to severe influenza. Dairy workers in the United States who recently became infected presented with hemorrhagic conjunctivitis.[2]

3 Clinicians should ask about animal exposures in people presenting with influenza-like illness, conjunctivitis or, less commonly, meningoencephalitis

People with substantial exposure to livestock or wildlife may be at risk for infection. Currently, the risk to the general population is low, with no evidence of sustained person-to-person transmission.[3]

4 Conventional laboratory-based testing may identify H5N1 HPAI as influenza A virus

Confirmatory testing is conducted at a provincial or national reference laboratory for suspected infections, which underscores the need to identify patients with exposure histories as soon as possible.[4] Nasopharyngeal and conjunctival swabs, if the patient has eye symptoms, should be collected, and public health should be informed of cases under investigation.

5 No vaccine currently exists for human use in Canada

Oseltamivir is the recommended antiviral for treatment and prophylaxis of HPAI infection. Oseltamivir should be administered as soon as possible to a person with a suspected infection, or after close contact with a confirmed case of HPAI.[5]

References

1. Burrough ER, Magstadt DR, Petersen B, et al. Highly pathogenic avian influenza A(H5N1) clade 2.3.4.4b virus infection in domestic dairy cattle and cats, United States, 2024. *Emerg Infect Dis* 2024 Apr 29;30. doi: 10.3201/eid3007.240508. [Epub ahead of print].
2. Uyeki TM, Milton S, Abdul Hamid C, et al. Highly pathogenic avian influenza A (H5N1) virus infection in a dairy farm worker. *N Engl J Med* 2024;390:2028-9.
3. Rapid risk assessment update: avian influenza A (H5N1) clade 2.3.4.4b in livestock, public health implications for Canada. Ottawa: Public Health Agency of Canada; 2024. Available: https://www.canada.ca/en/public-health/services/emergency-preparedness-response/rapid-risk-assessments-public-health-professionals/avian-influenza-a-h5n1-clade-2-3-4-4b-update-livestock.html (accessed 2024 May 29).
4. Cumulative number of confirmed human cases for avian influenza A (H5N1) reported to WHO, 2003-2024, 28 March 2024. Geneva: World Health Organization; 2024. Available: https://www.who.int/publications/m/item/cumulative-number-of-confirmed-human-cases-for-avian-influenza-a(h5n1)-reported-to-who--2003-2024-28-march-2024 (accessed 2024 May 29).
5. Harrison R, Mubareka S, Papenburg J, et al. AMMI Canada 2023 update on influenza: management and emerging issues. *J Assoc Med Microbiol Infect Dis Can* 2023;8:176-85.

Competing interests: Robert Kozak reports receiving government or academic grants from the Canadian Institutes of Health Research (CIHR) and the University of Toronto. Dr. Kozak also reports serving as a member of the executive board of the Canadian College of Microbiology from 2019 to the present, and as scientific planning chair of the Canadian Association of Clinical Microbiology and Infectious Diseases. Samira Mubareka reports receiving support from the CIHR — Public Health Agency of Canada Applied Public Health Chair in Pandemic and Health Emergency Prevention, Preparedness, Response and Recovery. Isaac Bogoch reports receiving grants from CIHR for HIV prevention and screening for neglected tropical diseases, and consulting fees from the Weapons Threat Reduction Program at Global Affairs Canada.

This article has been peer reviewed.

Affiliations: Department of Laboratory Medicine & Molecular Diagnostics (Kozak), Sunnybrook Health Sciences Centre; Shared Hospital Laboratory (Kozak); Department of Medicine (Bogoch), University of Toronto; Sunnybrook Research Institute (Mubareka); Department of Laboratory Medicine and Pathobiology (Kozak, Mubareka), University of Toronto, Toronto, Ont.

Correspondence to: Robert Kozak, rkozak@shn.ca

