

# Highly Pathogenic Avian Influenza

Understanding the Risk and Public Health's Role

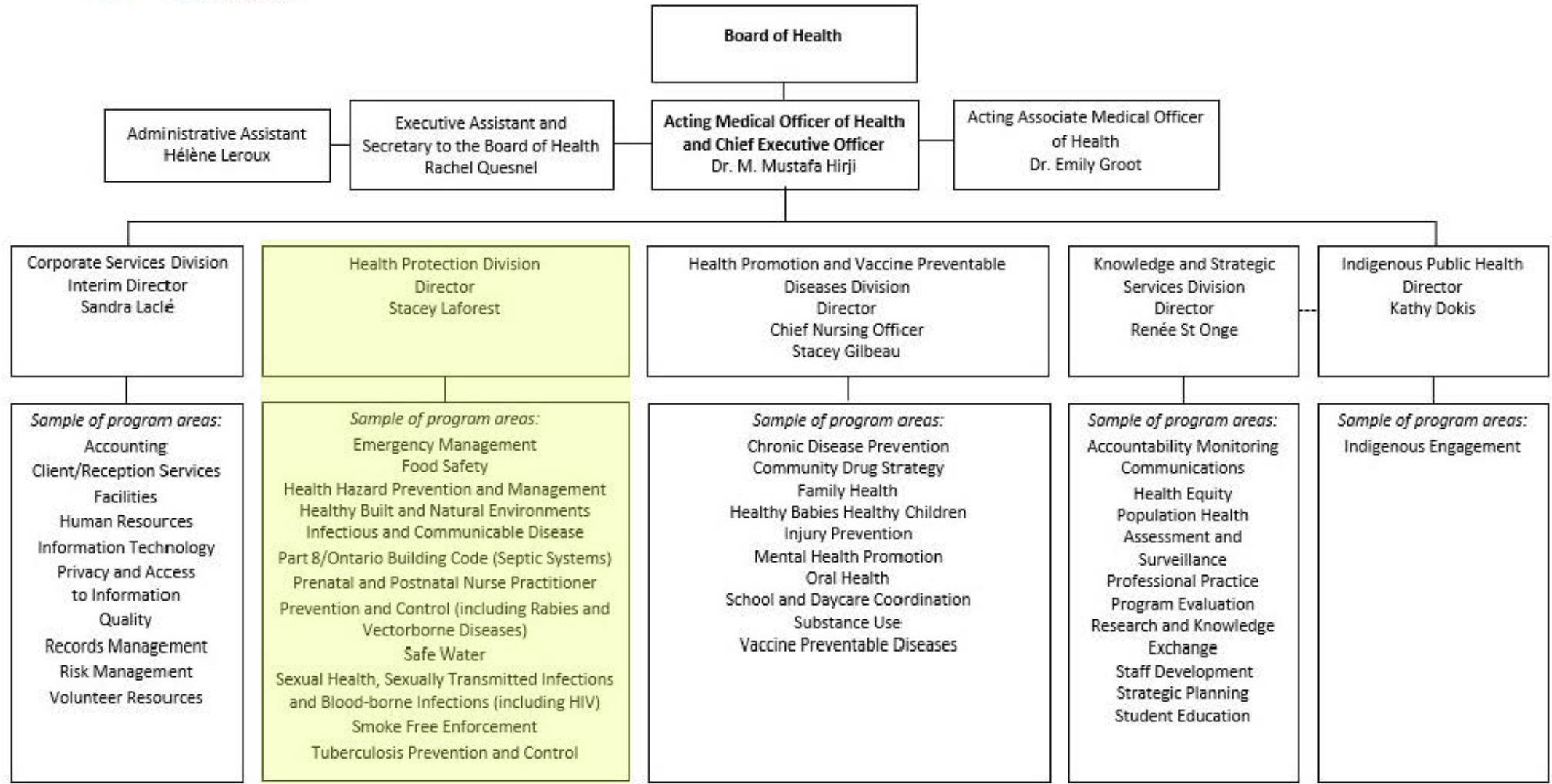
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**Public Health**  
**Santé publique**  
SUDBURY & DISTRICTS



R: January 6, 2025

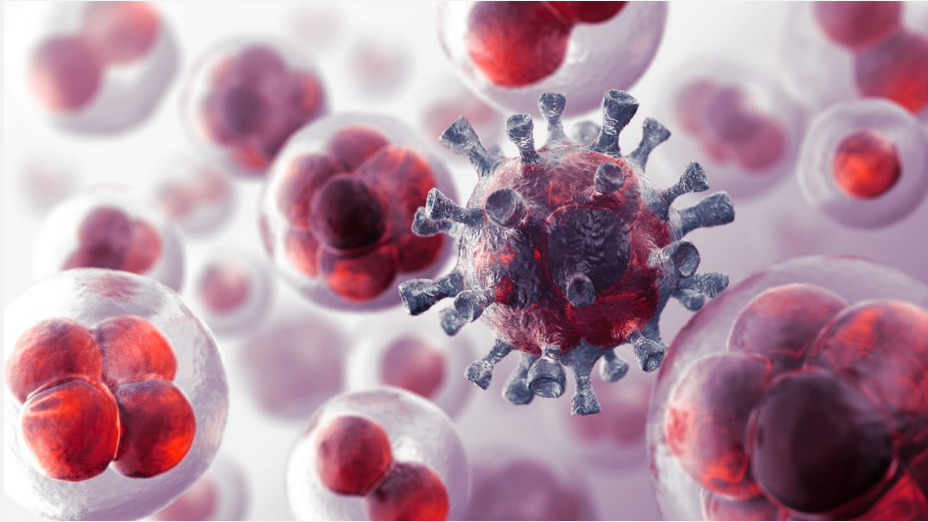
# What is avian influenza?

- Caused by Type A influenza virus (very common).
- Affects food-producing birds (chickens, turkeys, quails), pet birds, and wild birds. Rarely mammals (for example: cattle, humans).
- Not a food safety concern: eating properly cooked poultry and eggs is safe.
- **Avian influenzas are common** and typically do not spread much to humans or cause severe illness.



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# Types of avian influenza



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- **Classified by surface proteins:**
  - Hemagglutinin (H): 16 types
  - Neuraminidase (N): 9 types
- **H5 and H7 subtypes:**
  - Can mutate from LPAI to HPAI
  - Pose a pandemic risk if they gain the ability for human-to-human transmission.

# Types of avian influenza continued

Two main types based on pathogenicity:

- **Low Pathogenic Avian Influenza (LPAI):**
  - Causes mild illness or no illness in birds.
- **Highly Pathogenic Avian Influenza (HPAI):**
  - Causes severe illness and death in birds.
  - More likely to spill over into humans.
- **H5N1** has been monitored for over 20 years due to its severity in humans.
- **H5N2** detected in British Columbia poultry in November 2024.



Source: iStock

# Risks of H5N1 evolution

- **Pathway to a pandemic strain:**
  1. Mutation: Gains ability to spread between humans.
  2. Reassortment: Combines with a human influenza virus to create a hybrid.
- **Spread increases opportunities for:**
  - Natural mutations during replication.
  - Spillover into humans and reassortment.
  - **Note:** Seasonal influenza vaccine reduces reassortment risk!
- **Creation of a new novel virus with high severity and transmissibility in humans.**



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# Current HPAI situation

## Two simultaneous outbreaks:

- **D1.1 genotype:** Poultry outbreak linked to migratory flyways; severe cases in humans (for example: British Columbia teenager).
- **B3.13 genotype:** Dairy cattle outbreak; less severe but more transmissible in mammals.
- Increased spread raises the risk of mutation and reassortment.

## In Canada: sixth wave (October 2024–present):

- 84 infected flocks in BC, AB, SK, MB, ON, QC.
- H5N1 and H5N2 subtypes.
- **Notable case:** BC teenager with severe illness now recovering.
- H5N5 detected in a turkey vulture in Ottawa and linked to Nunavut die-offs.

# Human HPAI health risks

- Rare but serious human cases, mostly from direct contact with infected birds.
- 60 confirmed human cases in the United States in 2024; most mild, 1 severe.
- 1 severe case in Canada (BC Teen)
- Vaccination against seasonal influenza is critical to reduce the likelihood of reassortment.



Source: iStock



# Multi-agency response to HPAI

- Effective management of HPAI requires collaboration across federal, provincial, and local levels.
- Agencies Involved:
  - Canadian Food Inspection Agency (CFIA)
  - Ontario Ministry of Agriculture, Food, and Agribusiness (OMAFRA)
  - Ontario Ministry of Health (MOH)
  - Local Public Health Agencies (LPHAs)
  - Industry Groups



Source: iStock

# Role of the Canadian Food Inspection Agency (CFIA)

**Lead agency** for animal health response to HPAI outbreaks.

- Confirming HPAI cases through testing at the Animal Health Lab (AHL).
- Establishing Primary Control Zones (PCZs)
- Cleaning and disinfection orders
- Depopulation (ethical culling)
- Surveillance and monitoring
- Stakeholder communication
  - Coordinating with poultry operators, veterinarians, OMAFA, and other partners to ensure alignment on disease control measures.



Source: iStock

# Role of Ontario Ministry of Agriculture, Food and Agribusiness (OMAFRA)

Leads provincial animal health management.

Key responsibilities:

- Overseeing voluntary movement stops for livestock.
- Communicating with livestock owners and veterinarians.
- Supporting CFIA in disease containment efforts.



Source: microsoft

# Role of Ministry of Health (MOH)

Oversees human health response to HPAI outbreaks.

Key responsibilities:

- Coordinating between local public health units and federal agencies.
- Providing guidance on human exposure risk assessments and treatment protocols.
- Supporting health care providers in identifying and managing human cases.



Source: microsoft

# Role of LPHAs (like Public Health Sudbury and Districts)

Manage human health at the local level.

Key responsibilities:

- Conducting risk assessments for human exposures including follow up of close contacts.
- Leading epidemiological investigations with healthcare providers, Ministry of Health, CFIA, and OMAFA.
- Providing mental health resources to affected individuals.
- Reinforcing IPAC and biosecurity on farms.



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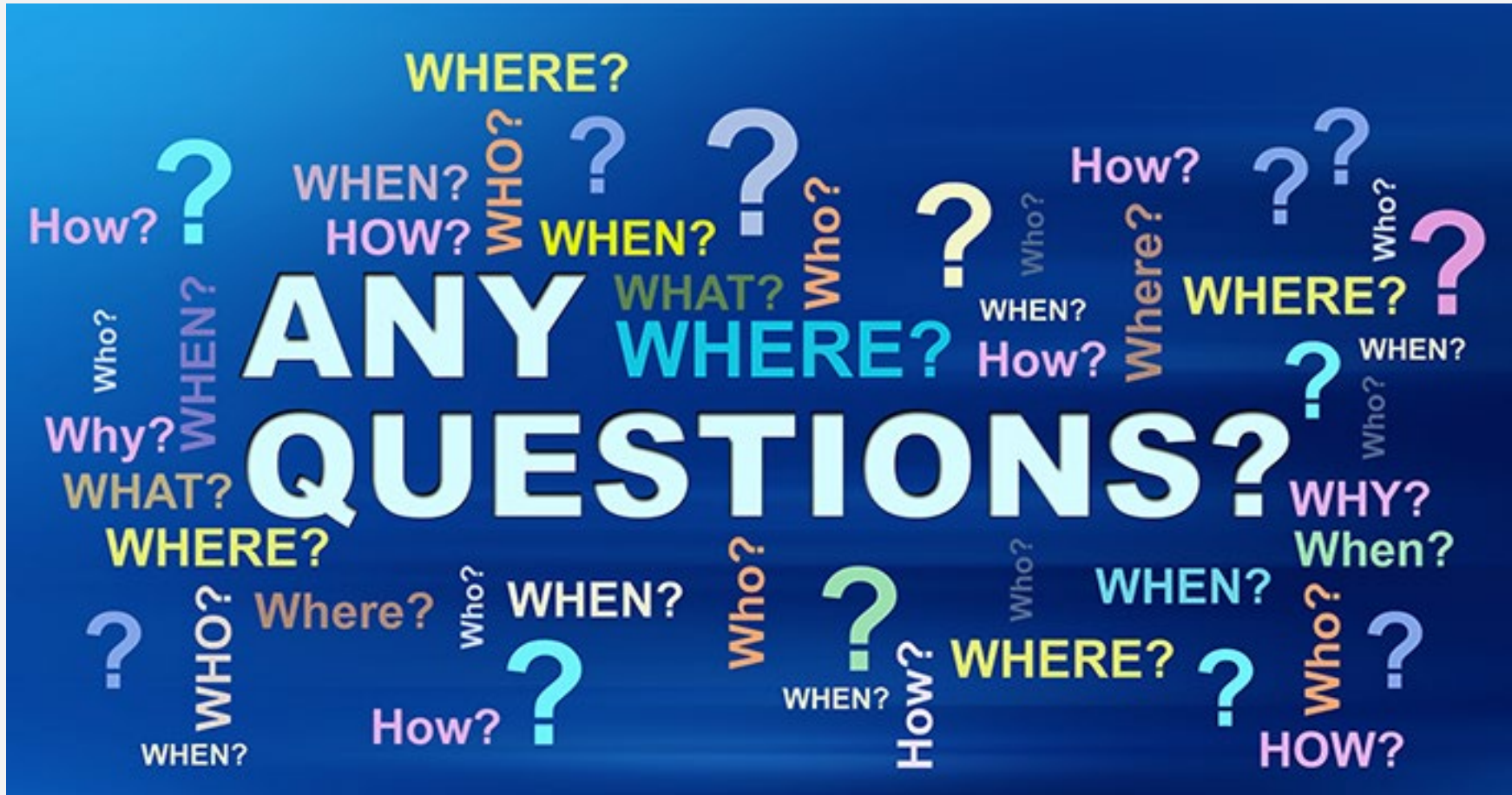
# Our work to date

- Participation in provincial meetings
- Role mapping and planning:
  - Internal review to clarify roles and responsibilities in event of an outbreak.
- Agency wide role-mapping project.
- Team and division-level planning:
  - Established clear protocols for human health response and interagency collaboration.
- Ongoing surveillance
- Public education
- Seasonal influenza campaign



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Thank you!



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