Risk associated with HPAI H5
Zoonotic infections Sept 2020-Feb 2023

- H5N6, H5N1, H9N2, H10N8
- H3N8, H1N1/2
- H5N8
- H1N1/2
- H3N2, H1N1/2, H5N1

Locations:
- Canada: 4 H1N1/2
- USA: 8 H3N2, 19 H1N1/2, 1 H5N1
- Brazil: 2 H1N1/2
- Canada: 4 H1N1/2
- Denmark: 2 H1N1/2
- Netherlands: 2 H1N1/2
- Brazil: 2 H1N1/2
- Canada: 4 H1N1/2
- France: 1 H1N2
- Germany: 2 H1N1
- Austria: 1 H1
- Nigeria: 3(7) H5N6
- India: 1 H5N1
- Spain: 1 H5N1
- England: 1 H5N1
- Vietnam: 1 H5N1
- Ecuador: 1 H5N1
- Laos: 2 H5N6
- Cambodia: 2 H9N2
- China: 59 H5N6, 2 H5N1, 47 H9N2, 3 H10N8, 2 H3N8, 14 H1N1/2

Zoonotic infections Sept 2020-Feb 2023
The objectives are to:
• support a timely and updatable hazard risk assessment;
• Document risk features of the virus:
• identify knowledge gaps;
• facilitate information sharing.
Multiple, weighted, elements considered

- Public Health
  - 1. Human infection
  - 2. Disease severity
  - 3. Population immunity

- Animal Health
  - 4. Geographical distribution in animals
  - 5. Infection in animals
  - 6. Receptor binding properties
  - 7. Transmission in animal models

- Virology
  - 8. Susceptibility to antiviral treatment
  - 9. Genomic characteristics
2.3.4.4b considered lower risk 2021

- Driven a lot by low number of human infections
What has changed since early 2021?
What has changed since early 2021?
2.3.4.4 A(H5NX) human infections

- England
- US
- China (2 N1, 26 N6)
- Spain (2)
- Ecuador

- Still relatively low considering scope of infected animals
Geographic distribution in animals

2021
49 countries/territories

2023
65 countries/territories
Bird Flu Found in Dolphin in Florida and Porpoise in Sweden

The findings represent the first time a highly pathogenic form of the virus, which has devastated bird populations this year, has been detected in cetaceans.
Infection in animals - new maintenance hosts?

Courtesy Dave Stallknecht, Rebecca Poulson UGA
Genomic characteristics

- Polymerase
- NA
- HA
Data needs for improved risk assessments

- **Genomic characteristics**
  Encourage more labs to share sequences timely
- **Receptor binding**
  More in vitro studies using different platforms
- **Transmission in animal models**
  More ferret studies in different laboratories
- **Population immunity**
  Examine impact of heterologous immunity
- **Infection in animals**
  Role of poultry vaccination
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