

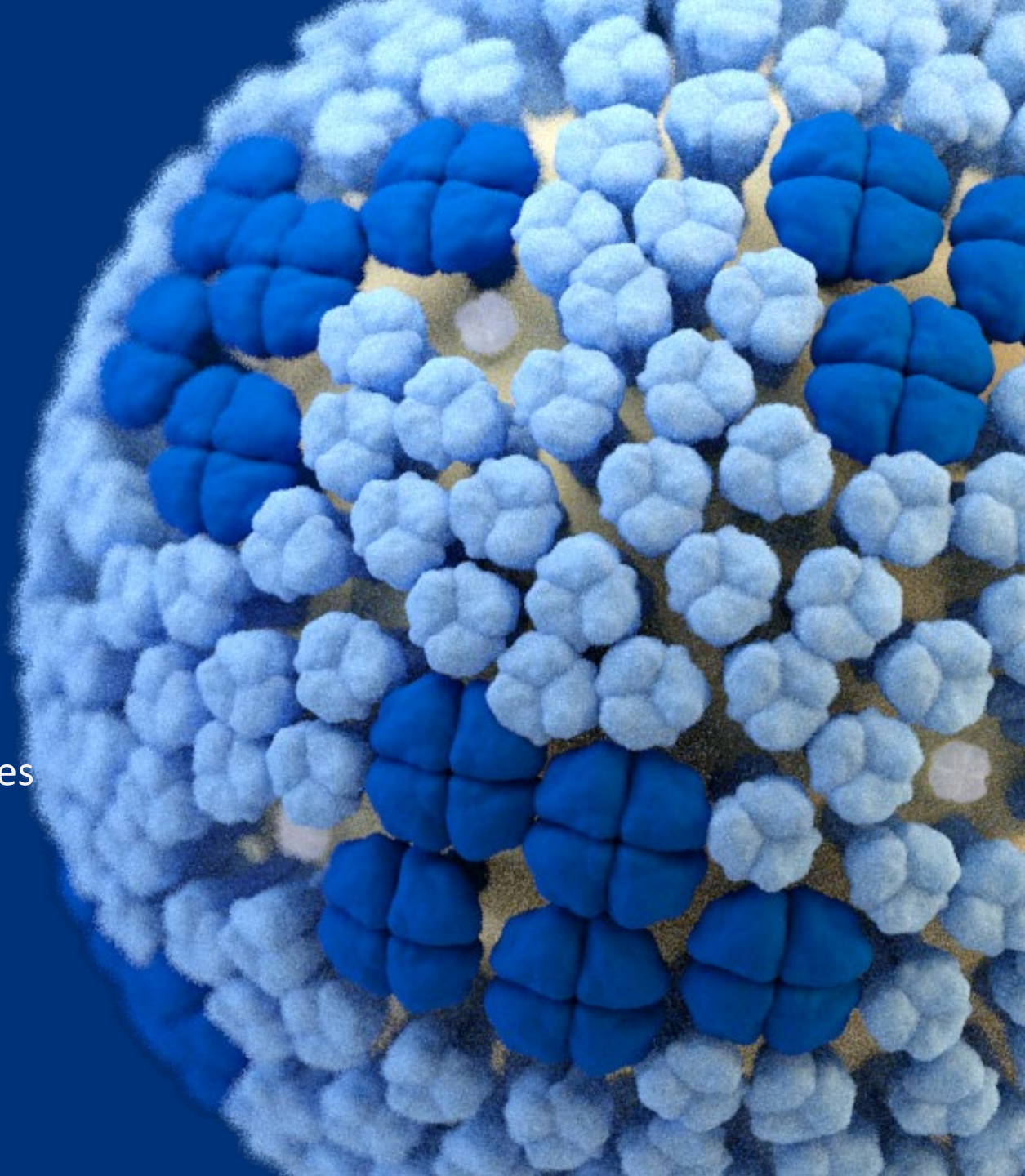
# Highly Pathogenic Avian Influenza A(H5N1)

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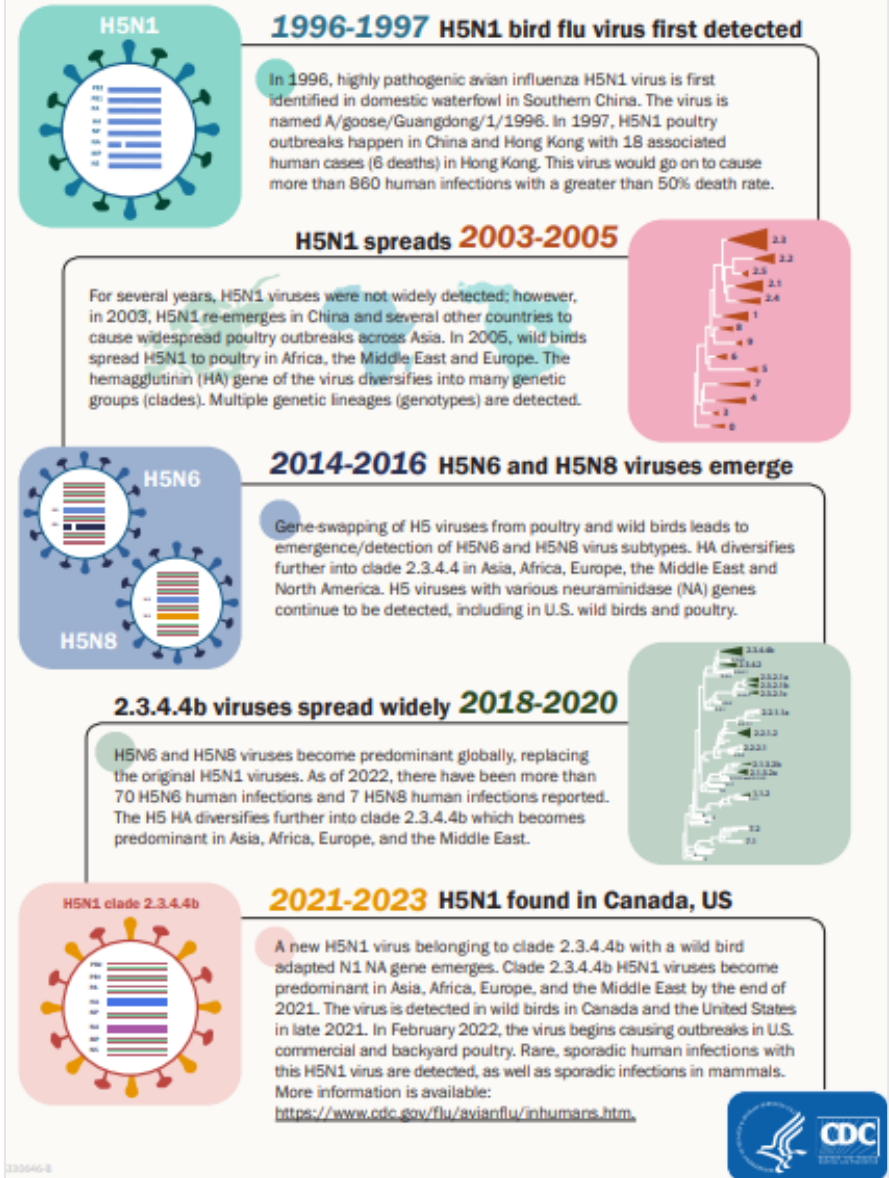
**June 27, 2024**



# Overview of HPAI A(H5N1)

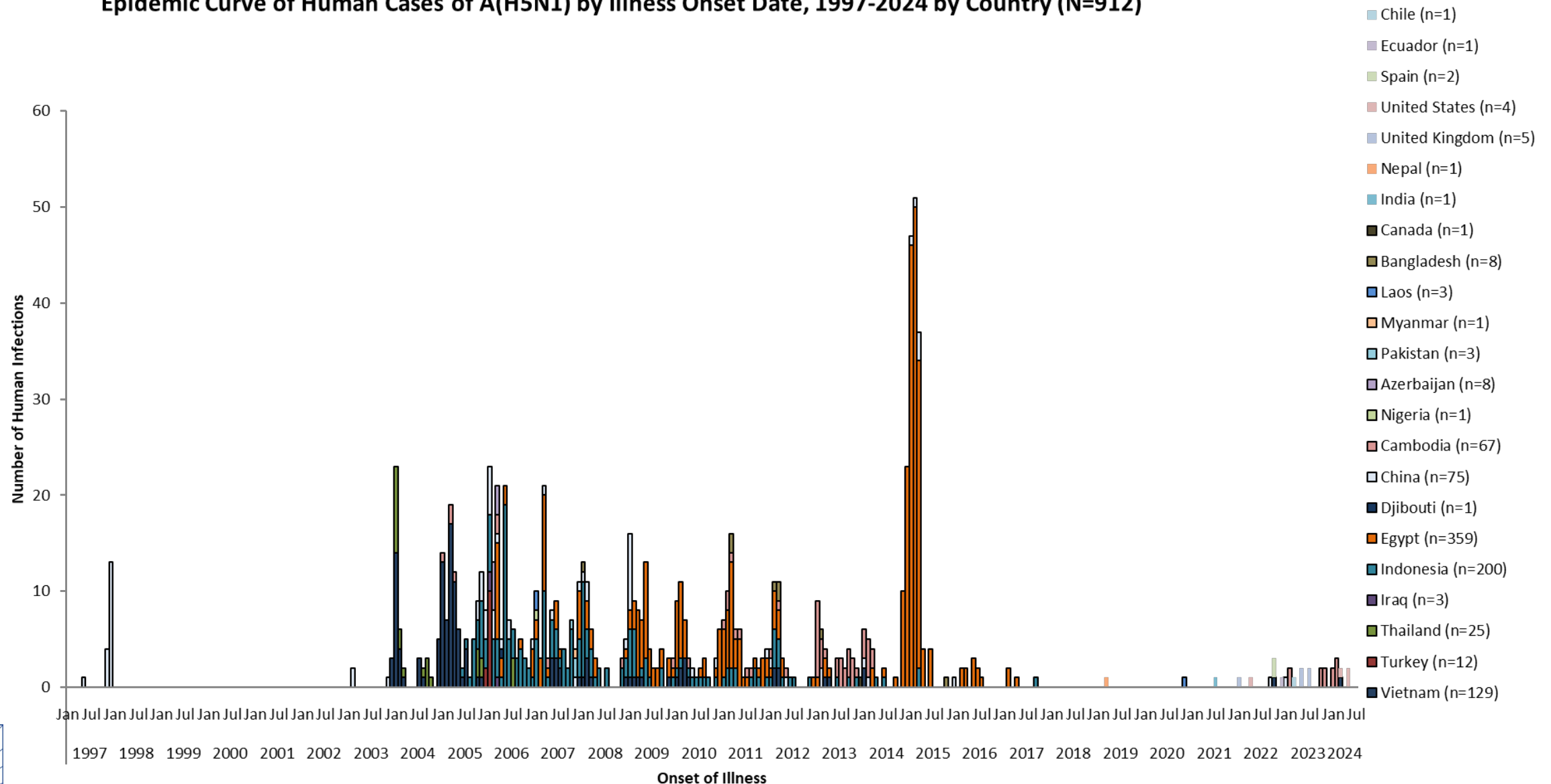
- HPAI A(H5N1) detected in birds in 1996  
→ **A(H5N1) is not a new threat**
- Sporadic HPAI A(H5N1) virus infections of mammals have been reported since 2003-2004
- A(H5N1) clade 2.3.4.4b viruses emerged in wild birds in 2020
- 29 human cases of HPAI A(H5N1) have been detected globally since January 2022
  - U.K. (5), U.S. (4), Spain (2), Vietnam (2), China (2), Ecuador, Cambodia (11), Chile, Australia

## Emergence and Evolution of H5N1 BIRD FLU



# Human A(H5N1) Cases Since 1997

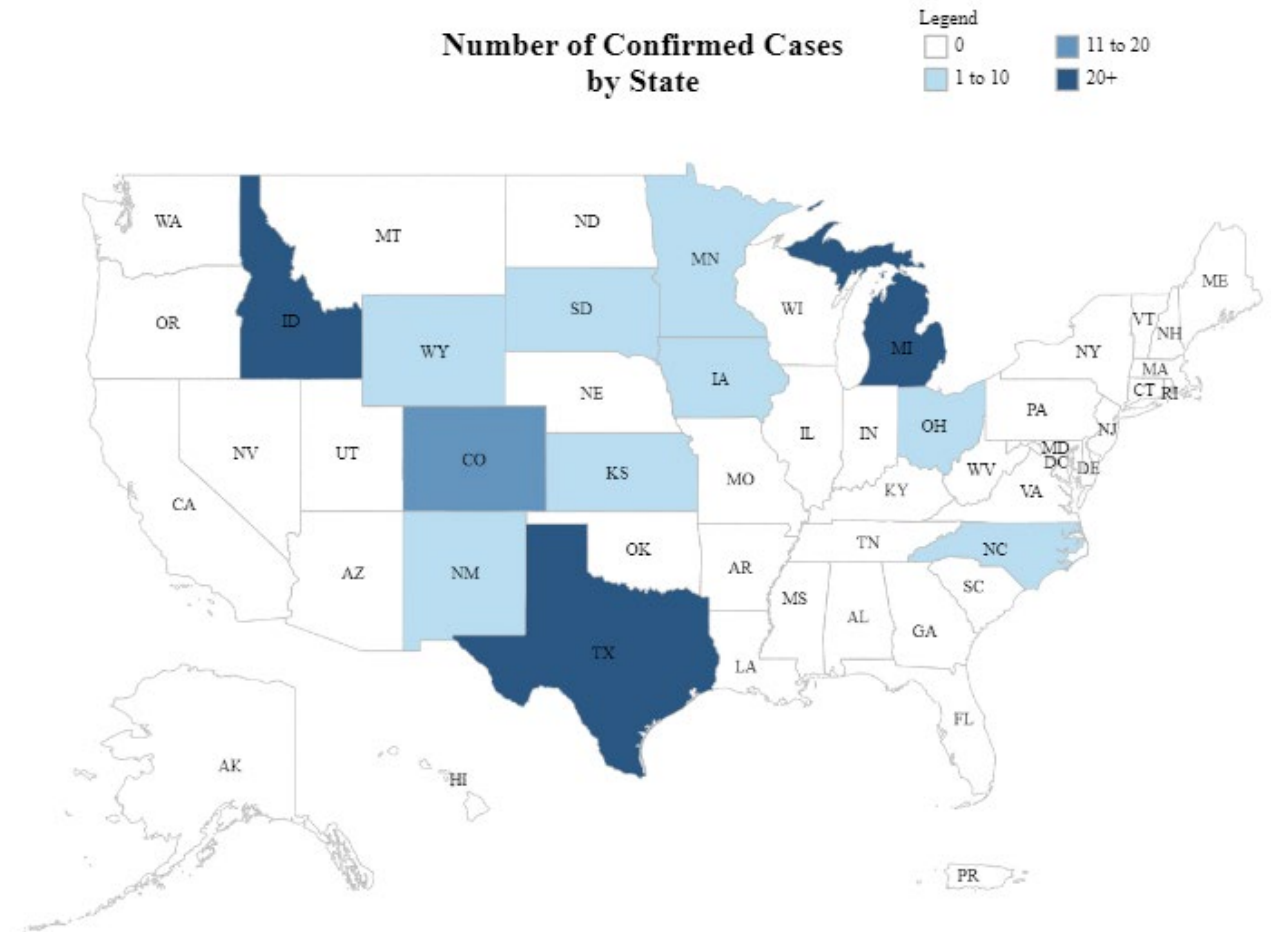
Epidemic Curve of Human Cases of A(H5N1) by Illness Onset Date, 1997-2024 by Country (N=912)



# **HPAI A(H5N1) in Dairy Cattle: Current Situation and Response Updates**

# HPAI A(H5N1) in Dairy Herds

- USDA has confirmed A(H5N1) virus infections of dairy herds in >100 farms across 12 states
  - Clade 2.3.4.4b virus
  - High levels of virus in raw milk
- Other animal species reported in association with infected dairy herds in the United States include:
  - Wild birds, cats, racoon, opossums
- Wide range of infected wild birds, terrestrial and marine mammal species worldwide



# A(H5N1) Human Cases

- April 1 – Texas announced 1<sup>st</sup> human infection of HPAI A(H5N1) virus\*
- May 22 – Michigan announced 2<sup>nd</sup> human infection of influenza A (H5)<sup>†</sup>
- May 30 – Michigan announced 3<sup>rd</sup> human infection of influenza A (H5)<sup>†</sup>
- Adults working at dairy farms and in contact with cows
- 1<sup>st</sup> and 2<sup>nd</sup> cases reported conjunctivitis only, 3<sup>rd</sup> reported minor respiratory symptoms
- All offered oseltamivir, mild illness and recovered without hospitalization
- No human-to-human transmission

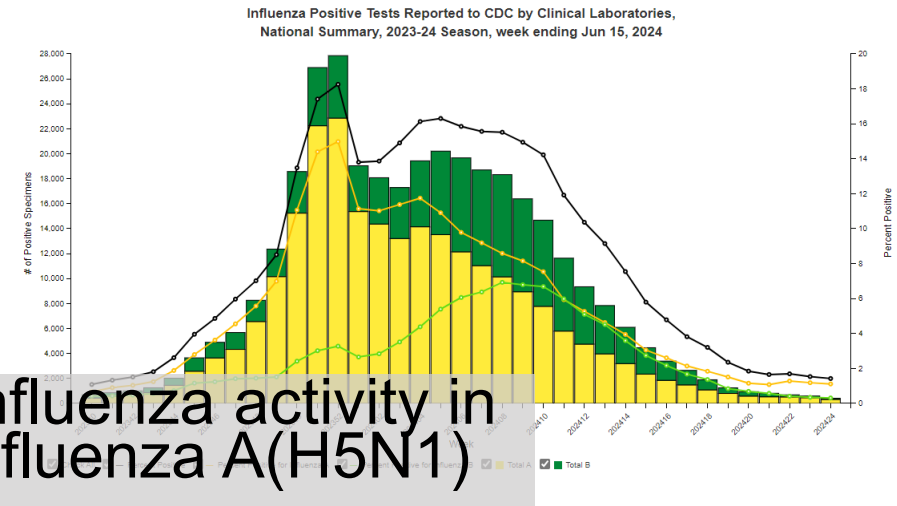
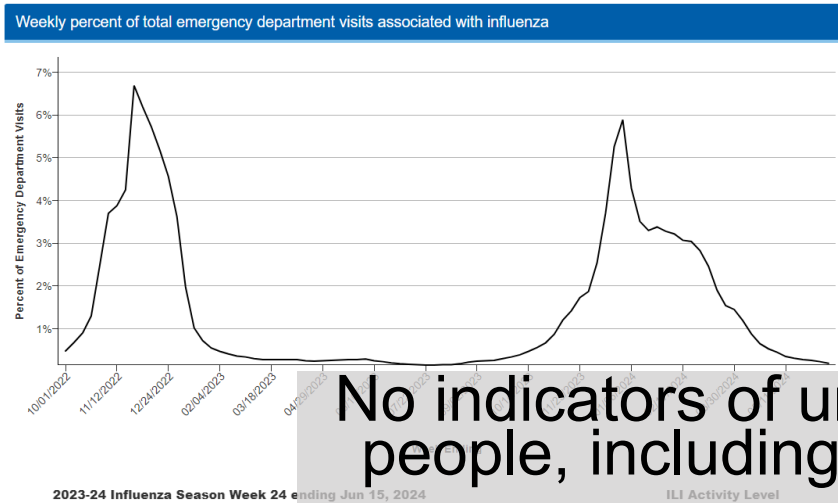


# A(H5N1) Human Cases – Virus Sequences to Date

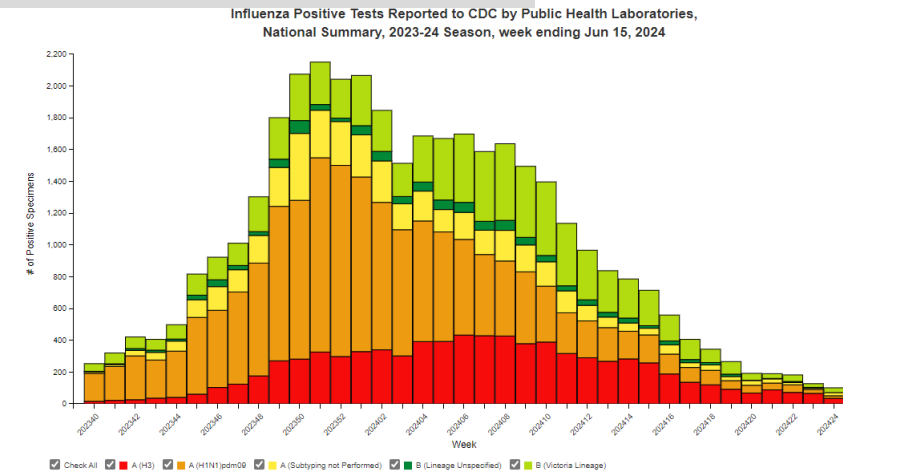
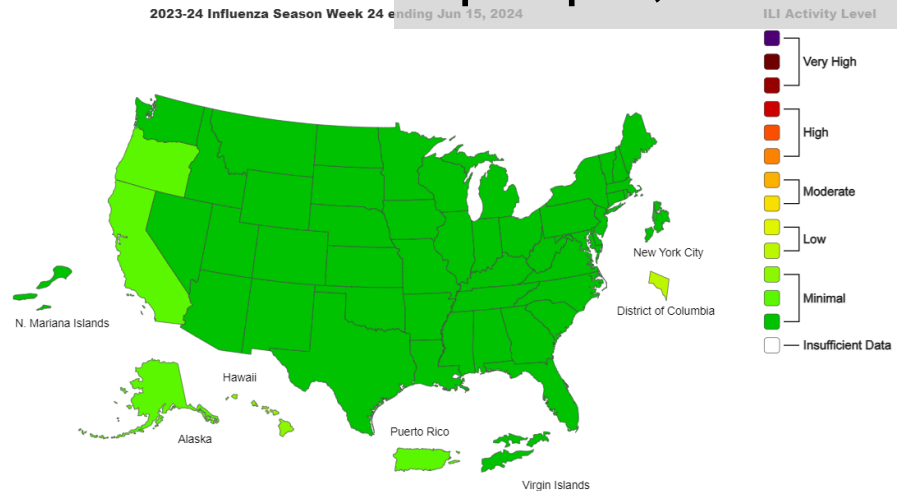
- **Diagnostics:** No impact to current CDC influenza diagnostic assay's ability to detect A(H5N1) viruses
- **Treatments:** No known markers of resistance to FDA approved antiviral drugs (polymerase acidic inhibitor: baloxavir; neuraminidase inhibitors: oseltamivir, peramivir, and zanamivir)
- **Candidate Vaccine Viruses (CVVs)**
  - HA of human influenza virus very closely related to **two available CVVs**
  - CVVs expected to provide good protection against this virus

# Surveillance, Human Monitoring, and Testing

- Since March 2024, during the current HPAI A(H5N1) outbreak in dairy cattle, at least 690 people monitored from affected farms, at least 51 tested, 3 positives (1 in TX, 2 in MI, last case detected May 30, 2024)
- Since March 2024, public health laboratory monitoring includes testing of 30,163 specimens have been tested using a protocol that would have detected A(H5N1) and other novel viruses

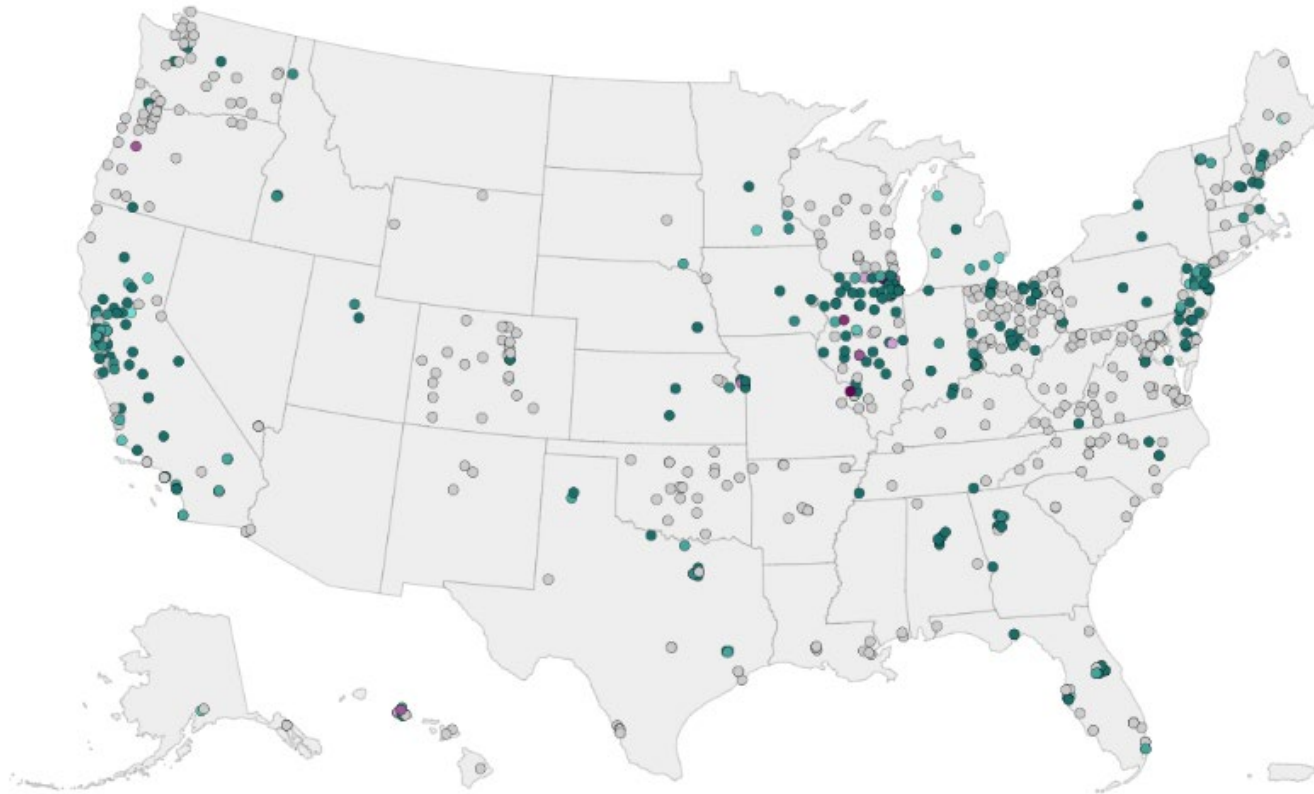


No indicators of unusual influenza activity in people, including avian influenza A(H5N1)





# 'High' Wastewater Sites and H5 Detections

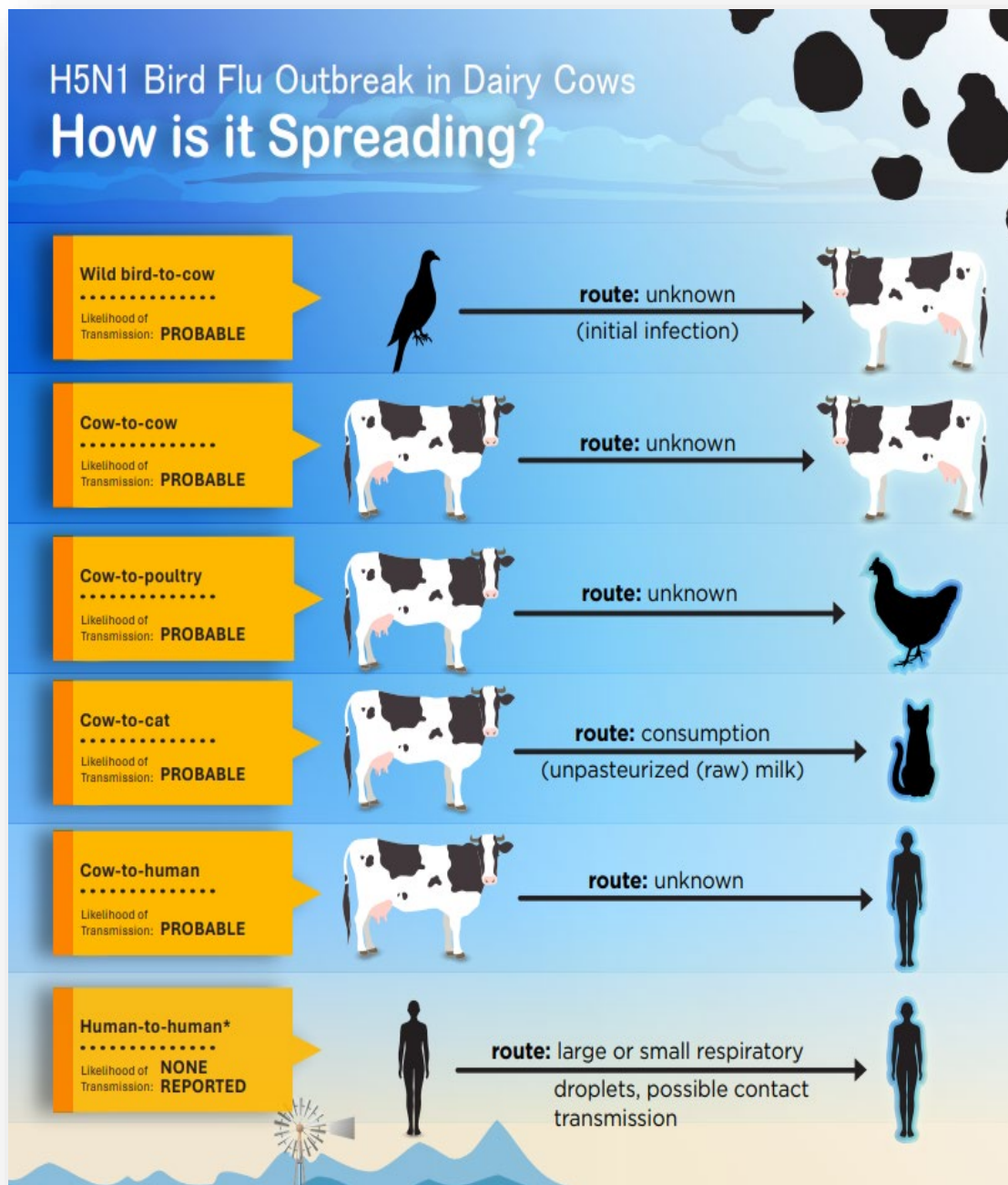


## Developed Levels for Influenza A Virus in Wastewater

- Influenza A Virus Level metric
- Compare current level to levels at the same site during the 2023-2024 influenza season
- Flag  $\geq 80$ th percentile as "high"
- Outreach to state/local partners in "high" areas, as well as notifying state, local, and federal partners

# Epidemiologic Investigations

- Health and agricultural partners at local, state and federal level, and affected farms using One Health approach
- Important public health questions
  - Evidence of infection in exposed populations?
  - Spectrum of illness and rate of asymptomatic infections?
  - Types of exposure on farms/dairies?
  - Behaviors associated with human infections or protection from infection?
- Assess risk for symptomatic and asymptomatic infection and a survey to assess exposures



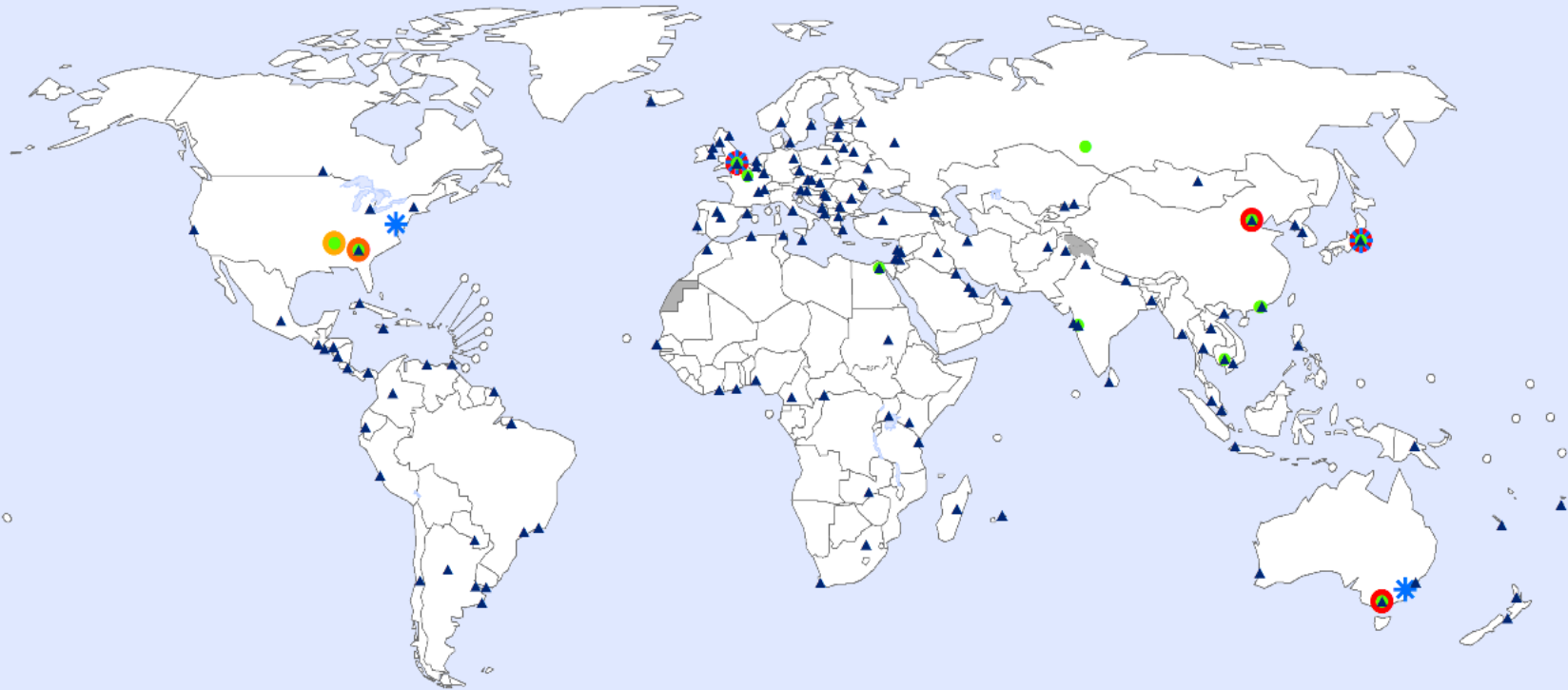
# Summer Influenza Surveillance Priorities

- Continued monitoring of people with recent exposure on confirmed farms
- Facilitate detection of A(H5N1) human cases in the community through enhanced, national surveillance at seasonal influenza levels
  - Subtyping of influenza A positive specimens, expanded specimen sources
  - Continued surveillance of lab-confirmed influenza associated hospitalizations through FluSurv-NET
- Continued follow-up for areas that flag in syndromic and wastewater data
- Provider outreach to continue influenza testing through summer, particularly for patients with recent history of relevant exposures

# Global Surveillance is Central to Prevention and Mitigation



- Characterize human and zoonotic influenza viruses
- Contribute data for biannual vaccine composition
- Generate and evaluate Candidate Vaccine Viruses



- ▲ National Influenza Centre
- WHO Collaborating Centre for Reference and Research on Influenza
- WHO Collaborating Centre for the Surveillance, Epidemiology and Control of Influenza
- WHO Collaborating Centre for Studies on the Ecology of Influenza in Animals
- ★ WHO Essential Regulatory Laboratory
- WHO H5 Reference Laboratory

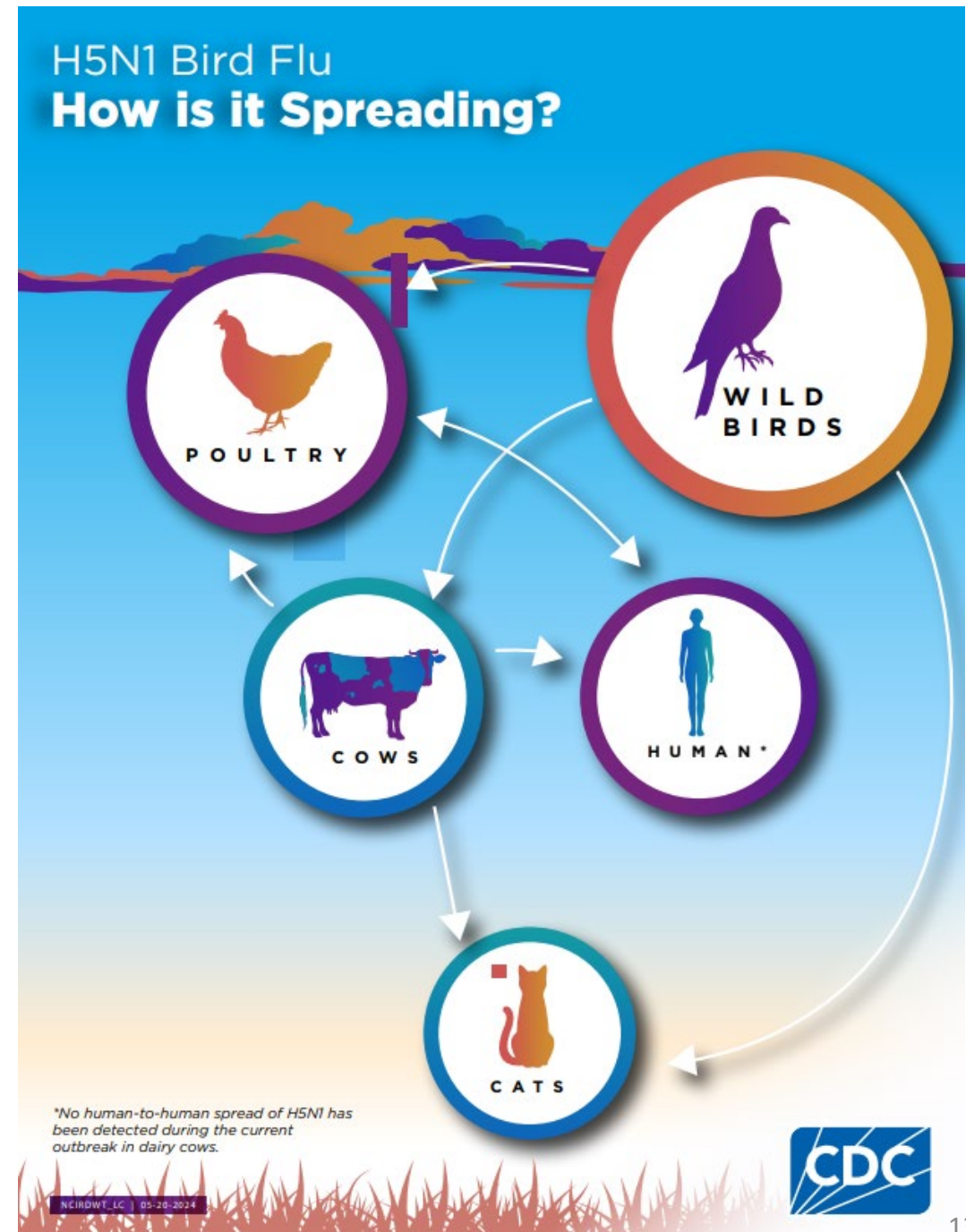
■ Not applicable

0 875 1,750 3,500 Kilometers

- 147 WHO National Influenza Centers in 123 Member States (CDC Atlanta Influenza Laboratory is one)
- 7 WHO Collaborating Centers for Influenza (CDC is one)
- 12 WHO H5 Reference Laboratories

# Public Health Risk

- Overall risk to the public remains low
- Increased risk with exposure to infected animals or environment (occupational, recreational)
- Exposed individuals should monitor for symptoms after first exposure and for 10 days after last exposure



# CDC's HPAI A(H5N1) Response Priorities

- CDC leads public health activities and is working closely with USDA, FDA, and state and local public health agencies
- Supporting and engaging public health and agricultural partners using a One Health approach
- Protecting human health and safety
- Understanding risk to people from A(H5N1) viruses
- Assessing A(H5N1) viruses for genetic changes



# Resources from CDC

- **Situation Updates**
  - [CDC A\(H5N1\) Bird Flu Response Update | Avian Influenza \(Flu\)](#)
- **Surveillance Updates**
  - [How CDC is monitoring influenza data among people to better understand the current avian influenza A \(H5N1\) situation | Avian Influenza \(Flu\)](#)
- **Technical Report**
  - [Technical Report: Highly Pathogenic Avian Influenza A\(H5N1\) Viruses | Avian Influenza \(Flu\) \(cdc.gov\)](#)
- **Updated Recommendations**
  - [Highly Pathogenic Avian Influenza A\(H5N1\) Virus in Animals: Interim Recommendations for Prevention, Monitoring, and Public Health Investigations | Bird Flu | CDC](#)
  - [Recommendations for Worker Protection and Use of Personal Protective Equipment \(PPE\) to Reduce Exposure to Novel Influenza A Viruses Associated with Severe Disease in Humans](#)
- **CDC Public Health Science Agenda**
  - [CDC Public Health Science Agenda for Highly Pathogenic Avian Influenza A\(H5N1\) – June 2024 | Bird Flu | CDC](#)



**Avian Influenza (Bird Flu)**

EXPLORE TOPICS

JUNE 21, 2024

## CDC A(H5N1) Bird Flu Response Update June 21, 2024

**AT A GLANCE**

CDC provides an update on its response activities related to the multistate outbreak of avian influenza A(H5N1) virus, or "H5N1 bird flu," in dairy cows and other animals in the United States.

### CDC Update

**June 21, 2024** – CDC continues to respond to the public health challenge posed by a multistate outbreak of avian influenza A(H5N1) virus, or "H5N1 bird flu," in dairy cows and other animals in the United States. CDC is working in collaboration with the U.S. Department of Agriculture (USDA), the Food and Drug Administration (FDA), state public health and animal health officials, and other partners using a [One Health approach](#). To date, there have been 3 human cases associated with an ongoing multistate outbreak of A(H5N1) in U.S. dairy cows. (a) Based on the information available at this time, CDC's current H5N1 bird flu human health risk assessment for the U.S. general public remains low. All three sporadic cases had direct contact with sick cows. On the animal health side, [USDA is reporting](#) that 118 dairy cow herds in 12 U.S. states have confirmed cases of avian influenza A(H5N1) virus infections in dairy cows as the number of infected herds continues to grow.

Among other activities previously reported in [past spotlights](#) and still ongoing, recent highlights of CDC's response to this include:

- Posting an [appendix to CDC's interim H5N1 bird flu guidance](#) to categorize the degree of risk among people at higher risk of exposure based on specific activities, from highest to lowest risk. This information will help public health officials and clinicians as they work with farm workers to assess risk and implement monitoring, treatment and testing recommendations.
- Looking at the receptor binding profiles of recent avian influenza A(H5N1) viruses to see how well-adapted they are to causing infections in people (compared to birds). Humans and birds have different types and distributions of receptors to which influenza viruses can bind and cause infection. The hemagglutinin protein is responsible for the virus binding (or attaching) to host cells, which has to happen in order for infection to occur. For the receptor binding analysis of A/Texas/37/2024, the hemagglutinin (HA) surface protein of the virus was expressed in the lab and tested for its ability to bind to both human- and avian-type receptors. Preliminary results from these studies show that the A/Texas/37/2024 hemagglutinin only binds to avian-type receptors, and not to human-type receptors. This means the virus's HA has not adapted to be able to easily infect people.

**RELATED PAGES**

- News & Spotlights
- CDC A(H5N1) Bird Flu Response Update June 14, 2024
- Story: Study Shows Ferrets Became Sick with A(H5N1) Virus After Eye Exposure
- CDC A(H5N1) Bird Flu Response Update June 7, 2024
- CDC Reports A(H5N1) Ferret Study Results
- CDC A(H5N1) Bird Flu Response Update May 31, 2024

**TOPIC**  
Bird Flu

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# Questions

