A Discussion on H5N1 Avian Flu

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Regional Disaster Health Response System

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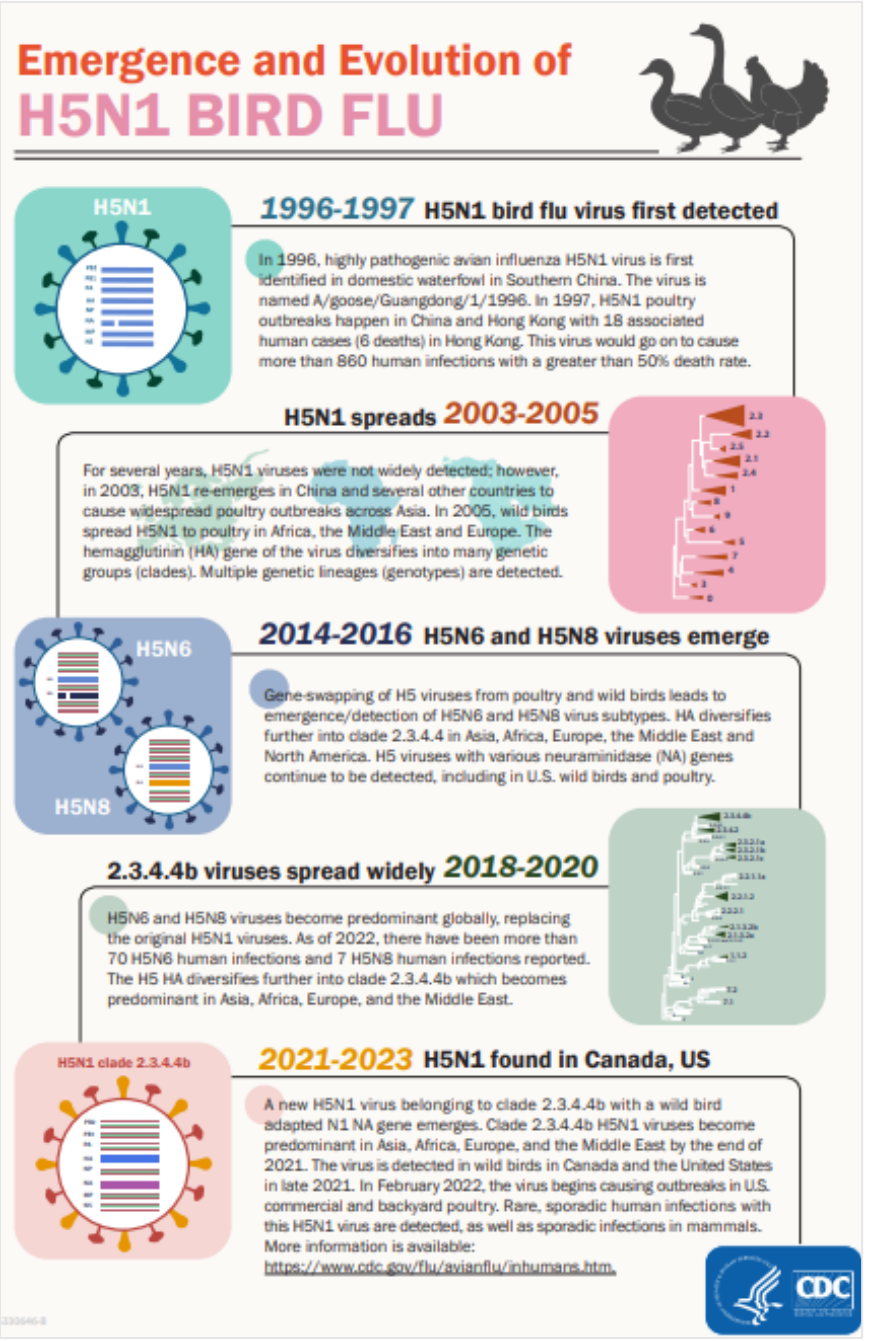
Learning Objectives

1. Understand updated information on H5N1 viruses, the epidemiology of human cases of H5N1, and the associated risk to humans.
2. Identify and access quality and up-to-date resources and guidance on H5N1, an evolving landscape.
3. Assess risk to individual patients and mitigate risk to healthcare providers and facilities through the implementation of the Identify, Isolate, Inform approach.

Overview of Human HPAI A(H5N1) Cases

- Highly Pathogenic Avian Influenza (HPAI) A(H5N1) virus first detected in a poultry outbreak in Scotland (1959)
  - Continue to evolve (classified into clades)
- First human infection identified in 1997 (Hong Kong)
  - 18 cases, 6 deaths
- 1997 to date: 912 human cases reported (24 countries)
  - >50% case fatality proportion
- Clade 2.3.4.4b viruses emerged in 2020 in wild birds
  - Detected in wild birds in N. America (end of 2021)
  - Poultry outbreaks, wild bird detections 2022 ongoing
  - Wide range of infected mammals
- Other virus clades are circulating among wild birds, poultry

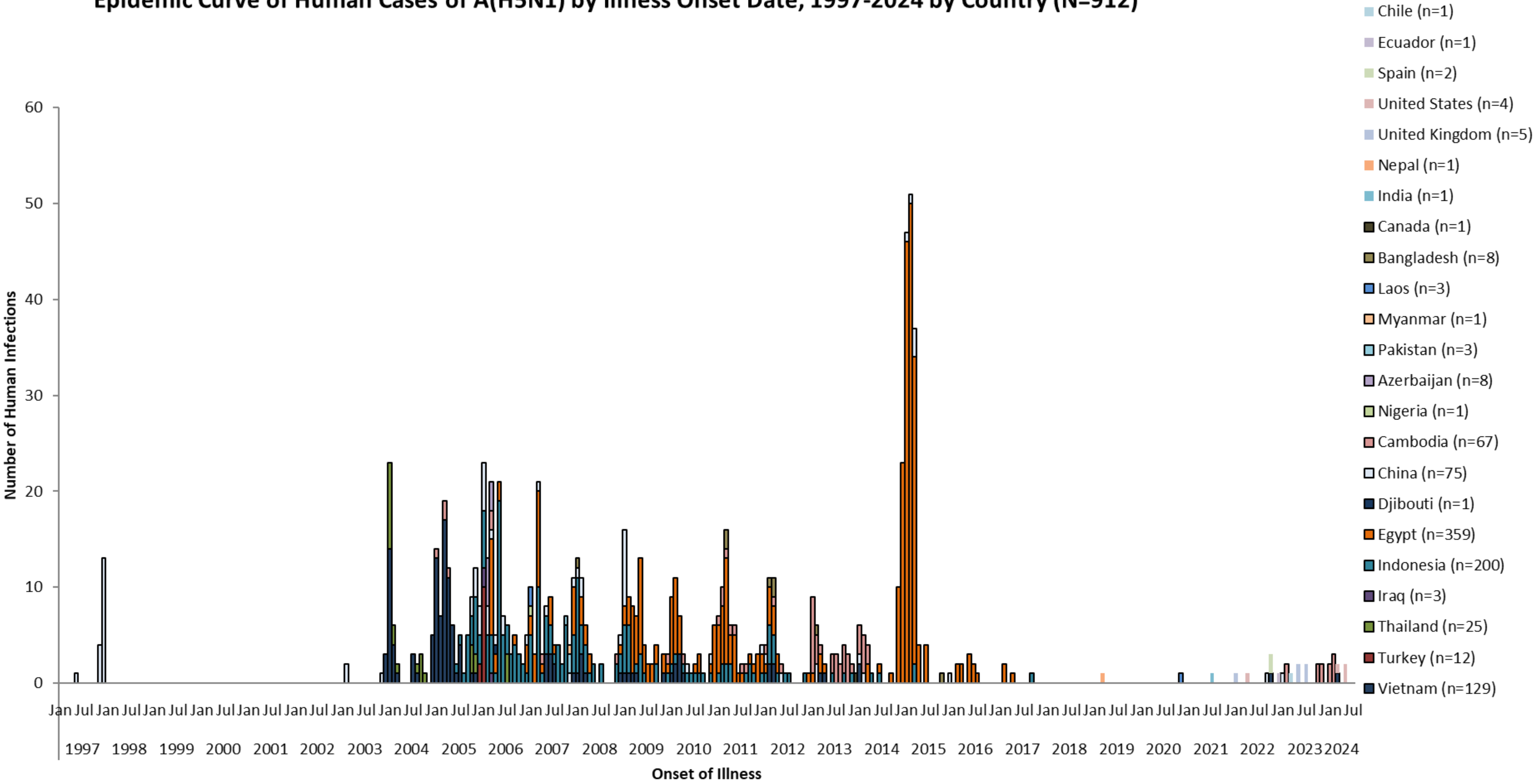


CDC Influenza

H5N1 Cases Since 1997

2022-2024: 29 cases
(Australia 1, Cambodia 11, Chile 1, China 2, Ecuador 1, Spain 2, UK 5, US 4, Vietnam 2)

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



Technical Report: Highly Pathogenic Avian Influenza A(H5N1) Viruses | Avian Influenza (Flu) (cdc.gov)

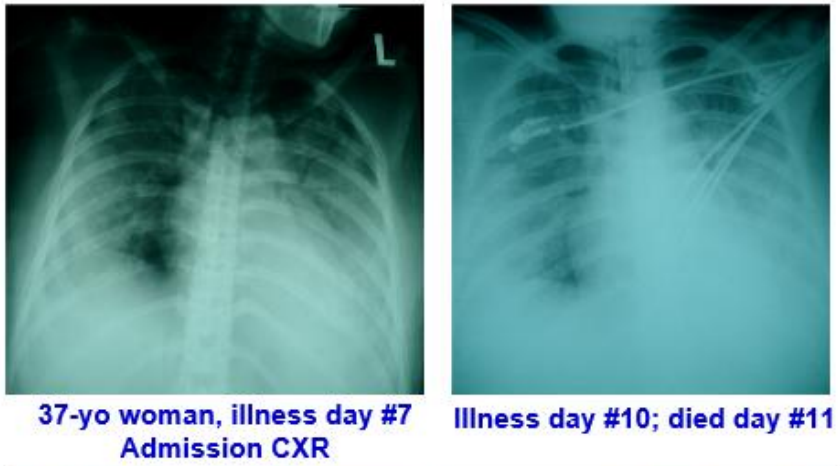
CDC Influenza

Human Infections with HPAI A(H5N1) Viruses

- HPAI A(H5N1) viruses bind preferentially to receptors most prevalent in the human lower respiratory tract
  - Also found on conjunctivae
- Wide symptomatic clinical spectrum
  - Mild (conjunctivitis, upper respiratory illness)
  - Severe/critical (pneumonia, respiratory failure, sepsis)
- Unprotected exposures resulting in human infection
  - Direct contact with sick/dead poultry
  - Visiting a live poultry market
  - Preparing poultry for consumption that were sick/died
  - Exposure to other infected animals (swans, dairy cows)
  - Limited, non-sustained transmission from prolonged exposure to a symptomatic H5N1 patient

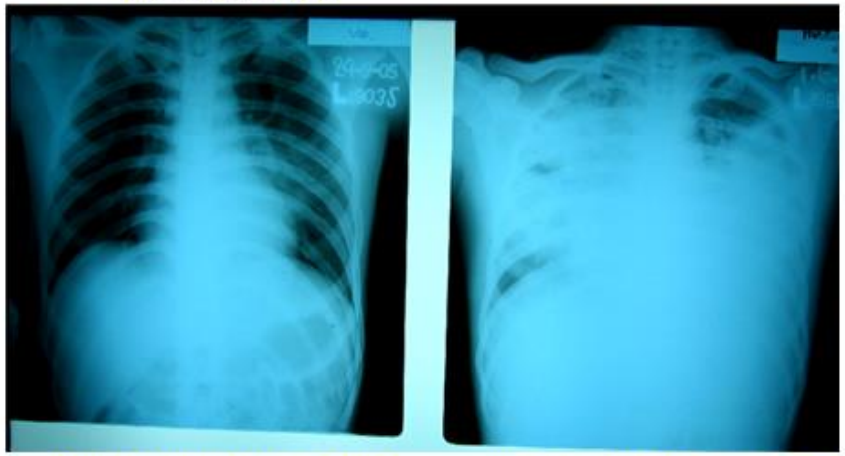
Figure 1. Conjunctivitis with Subconjunctival Hemorrhage in Both Eyes.

T Uyeki NEJM 2024



37-yo woman, illness day #7
Admission CXR

Illness day #10; died day #11



21-yo male, illness day #5
Admission CXR

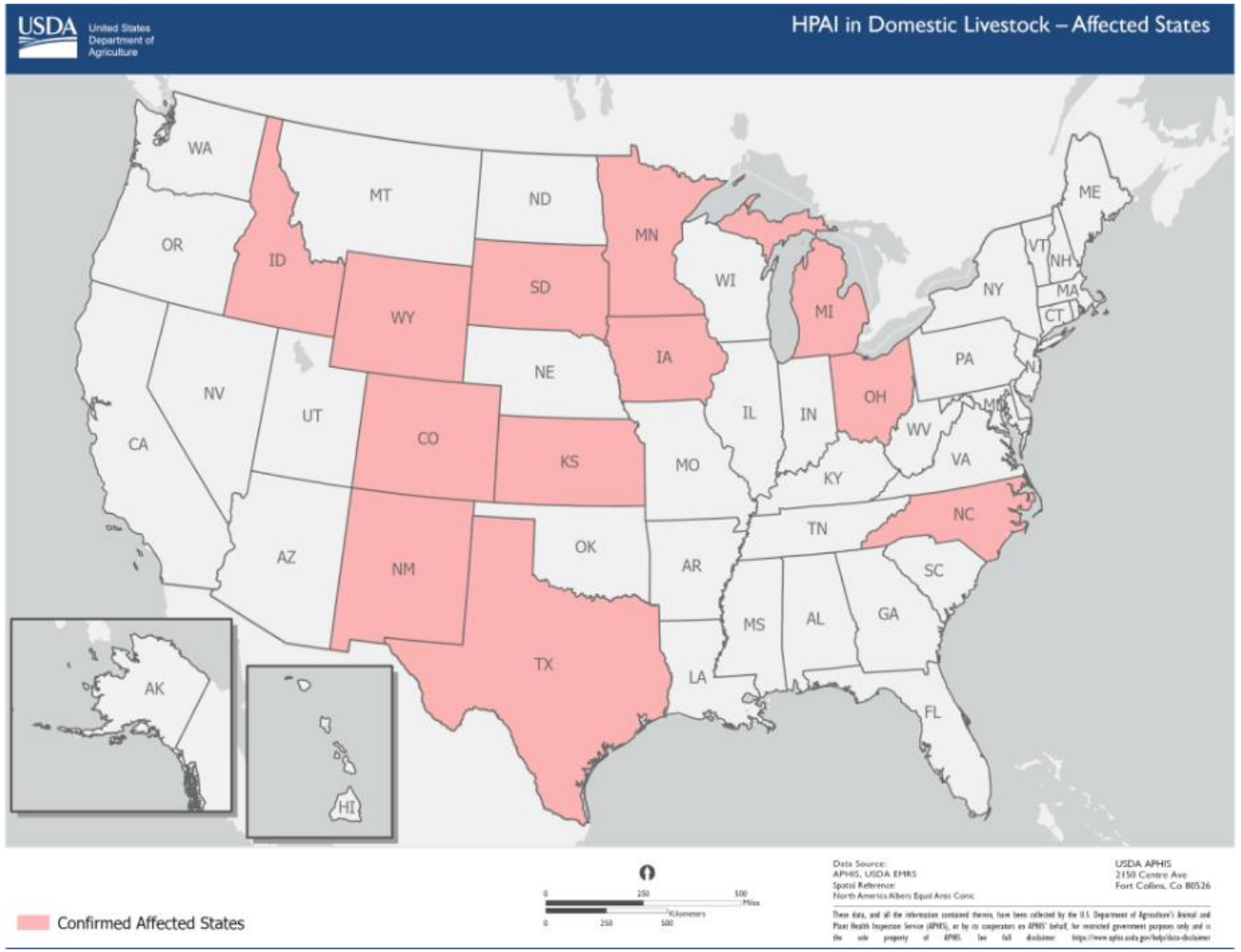
Illness day #12; survived
(not ventilated)

T Uyeki, CDC September 2005

CDC Influenza

H5N1 in Dairy Herds

- USDA confirmed H5N1 virus infections of dairy herds in 95 farms across 12 states
  - Clade 2.3.4.4b virus
  - High levels of virus in raw milk
- Other animal species reported:
  - Wild birds, cats, racoon, opossums, alpacas, baby goats in the U.S.
- Wide range of infected wild birds, terrestrial and marine mammal species worldwide



CDC Influenza

Highly Pathogenic Avian Influenza (HPAI) Detections in Livestock; WAHIS (woah.org); USDA Support for Producers with Affected Dairy Premises

H5N1 Human Cases in 2024, U.S.

- Three human cases with cattle exposure detected:
  - April 1 – Texas, farmworker, conjunctivitis
  - May 22 – Michigan, farmworker, conjunctivitis
  - May 30 – Michigan, farmworker, upper respiratory symptoms, watery eyes
- Not hospitalized, isolation recommended
- Antivirals recommended
- No human-to-human transmission
- Virus isolated from 2 cases

CDC Influenza

Health Alert: First Case of Novel Influenza A (H5N1) in Texas, March 2024 | Texas DSHS

H5N1 Human Cases – Virus Sequences to Date

Diagnostics

- No impact to current CDC influenza diagnostic assay's ability to detect A(H5N1) viruses
- Public health laboratories have the CDC real-time RT-PCR A(H5) assay

Antivirals

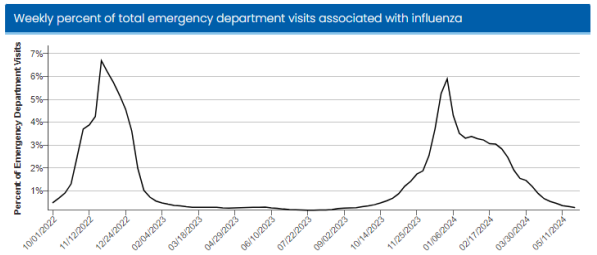
- No known markers of resistance to FDA approved antiviral drugs (PA inhibitor: baloxavir; NA inhibitors: oseltamivir, peramivir, and zanamivir)
- Oseltamivir recommended for treatment and post-exposure prophylaxis

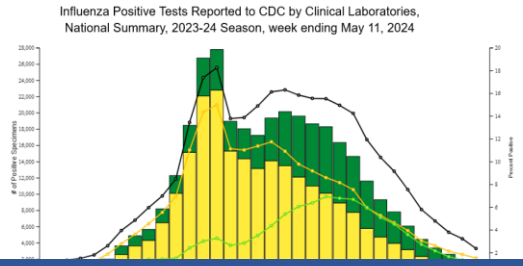
Candidate Vaccine Viruses (CVVs)

- H5N1 viruses (hemagglutinin gene) identified from the 3 human cases are very closely related to two available CVVs
- CVVs expected to provide good protection against clade 2.3.4.4b viruses

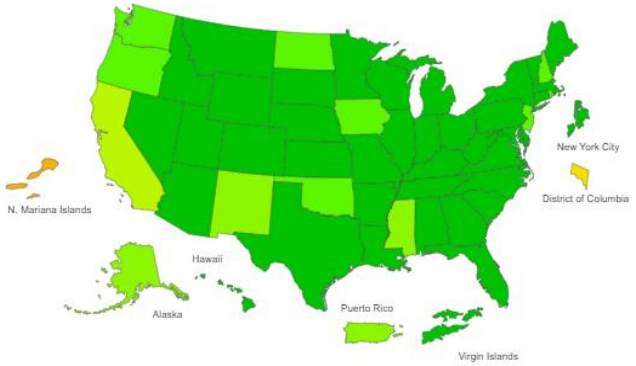
Surveillance, Human Monitoring, and Testing

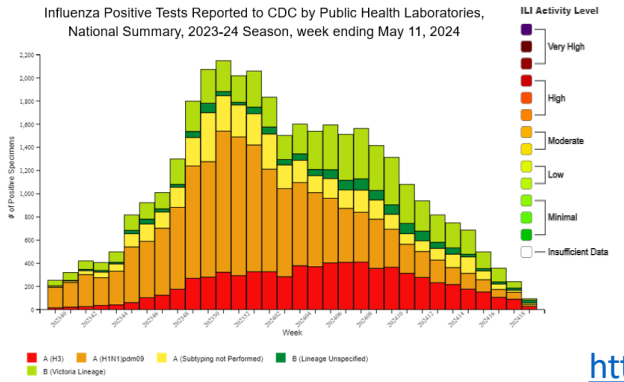
- Since March 24, **>500 people monitored** from affected farms, **>45 tested**
- CDC monitoring multiple surveillance systems for unusual activity

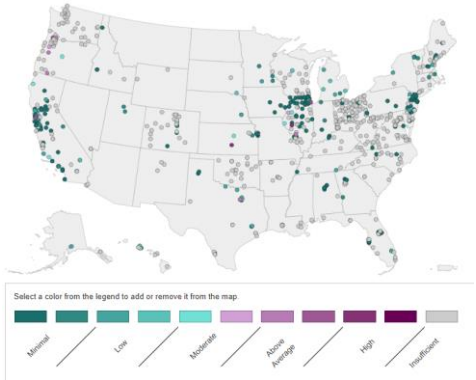




No indicators of unusual influenza activity in people, including avian influenza A(H5N1)







https://www.cdc.gov/flu/avianflu/h5-monitoring.html

CDC Influenza

Summer Influenza Surveillance Priorities

- Continued monitoring of workers with recent exposure on confirmed farms
- Facilitate detection of A(H5N1) 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

CDC Influenza

CDC Strategy for Enhanced Summer 2024 Influenza Surveillance | Avian Influenza (Flu)

Opening Poll Question

In terms of level of concern with respect to the current outbreak of H5N1, I have:

- **Low concern** - continue to follow, no major changes recommended to preparedness activities.
- **Moderate concern** - following closely; planning some changes to preparedness activities.
- **High concern** - following very closely; planning and implementing major changes to preparedness activities.

Questions

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Closing Poll Question

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Thank you!

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