Monthly Healthcare Provider & Public Health Partner Webinar

Emerging Public Health Topics

April 11, 2024

NH DIVISION OF
Public Health Services
Department of Health and Human Services

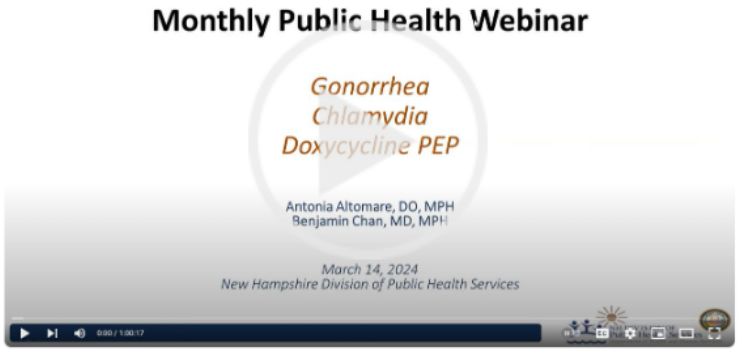
Webinar Slides Will Be Posted to Our Healthcare Provider Resources Website

https://www.dhhs.nh.gov/programs-services/disease-prevention/infectious-disease-control/bidc-resources-healthcare-providers

Watch the webinar on Syphilis

Healthcare Provider Webinar, 12/14/2023: Syphilis & Congenital Syphilis

Watch the webinar on Gonorrhea, Chlamydia, and Doxycycline PEP



Healthcare Providers and Public Health Partners Call Presentation, March 14, 2024

NH DIVISION OF Public Health Services
Department of Health and Human Services

Changing Webinar Call-In Information

- Our monthly healthcare provider webinar will continue to occur on the 2nd Thursday of every month from 12:00 – 1:00 pm
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- Webinar link and call-in information WILL BE CHANGING starting in May as we transition from Zoom to Microsoft Teams
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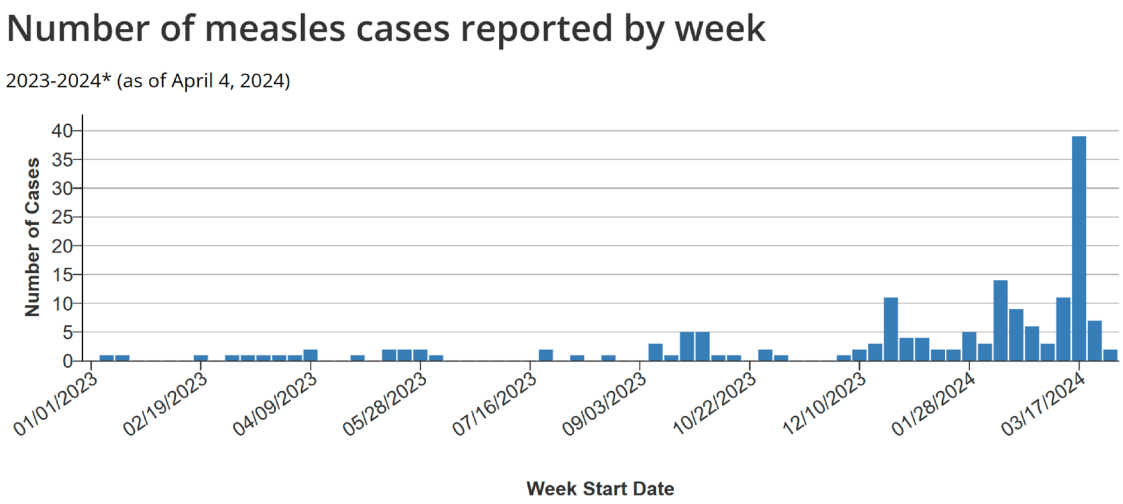
Topics for Today's Discussion

- Global and US measles epidemiology and response
- HPAI updates

Measles Update

Measles Epidemiology

- Assessing Measles Outbreak Risk in the United States | CDC [cdc.gov] (April 4): global measles activity trends, U.S. MMR vaccination coverage among kindergarteners*, models.



Top 10 Countries with Measles Outbreaks*

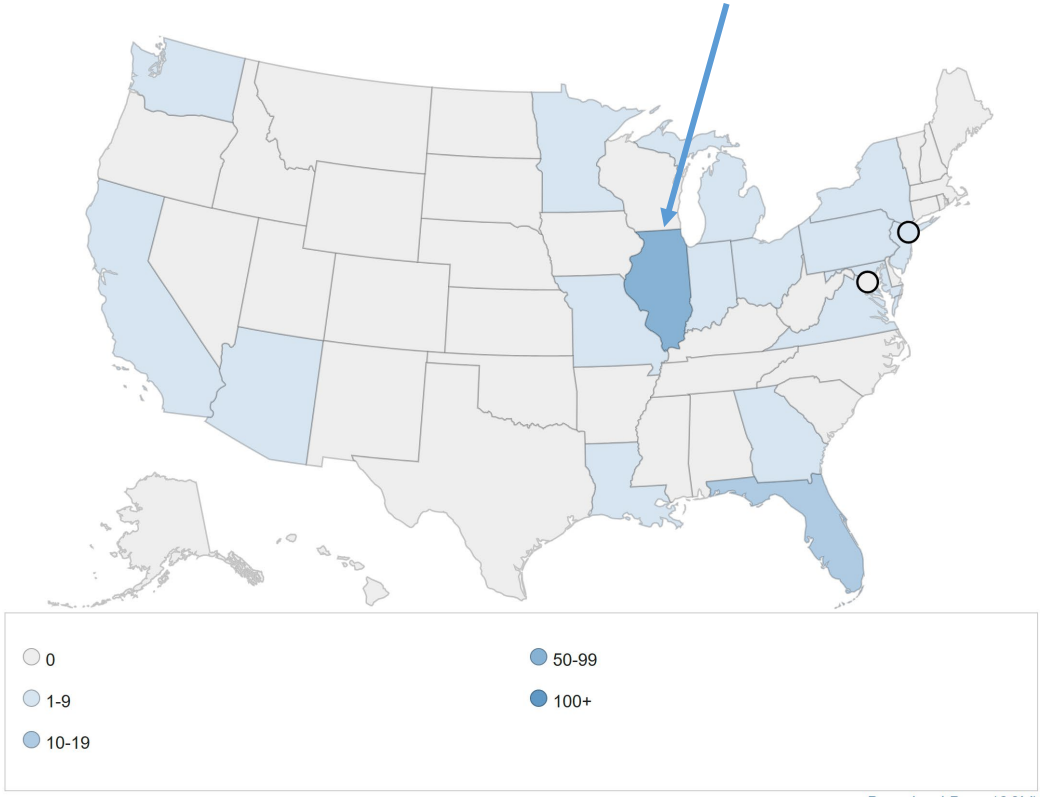
Rank	Country	Number of Cases
1	Kazakhstan	21,740
2	Azerbaijan	13,720
3	Yemen	13,676
4	India**	13,220
5	Iraq	11,595
6	Ethiopia	9,042
7	Kyrgyzstan	7,601
8	Russian Federation	7,594
9	Pakistan	5,812
10	Indonesia	5,648

*NH: 89.4% in 2022-2023 school year

Measles Outbreaks in US

- Measles Cases and Outbreaks | CDC [cdc.gov] (April 4) 113 measles cases reported by 18 jurisdictions
  - 2024: 7 outbreaks (>3 related cases) reported, and 73% of cases (83 of 113) are outbreak-associated
    - 2023: 4 outbreaks were reported and 48% of cases (28 of 58) were outbreak-associated.
  - 65 (57%) people were hospitalized for measles complications
  - 83% of people were unvaccinated or had an unknown vaccination status.

Chicago Department of Public Health Measles Update [chicago.gov].



3 Measles Outbreak Mitigations

On April 5, CDC released talking points that provide 3 outbreak mitigation steps, including:

1. Parents should get their children vaccinated on schedule with MMR vaccine.
   - Children who are not traveling internationally should receive their 1st dose of MMR at 12-15m and their 2nd dose at 4-6y.
2. People ≥6m should be protected against measles before leaving for international trips.
3. Healthcare providers and health departments should be prepared to identify and manage measles cases

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1. Measles Outbreak Mitigation

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1. Measles Vaccination Support for Clinicians

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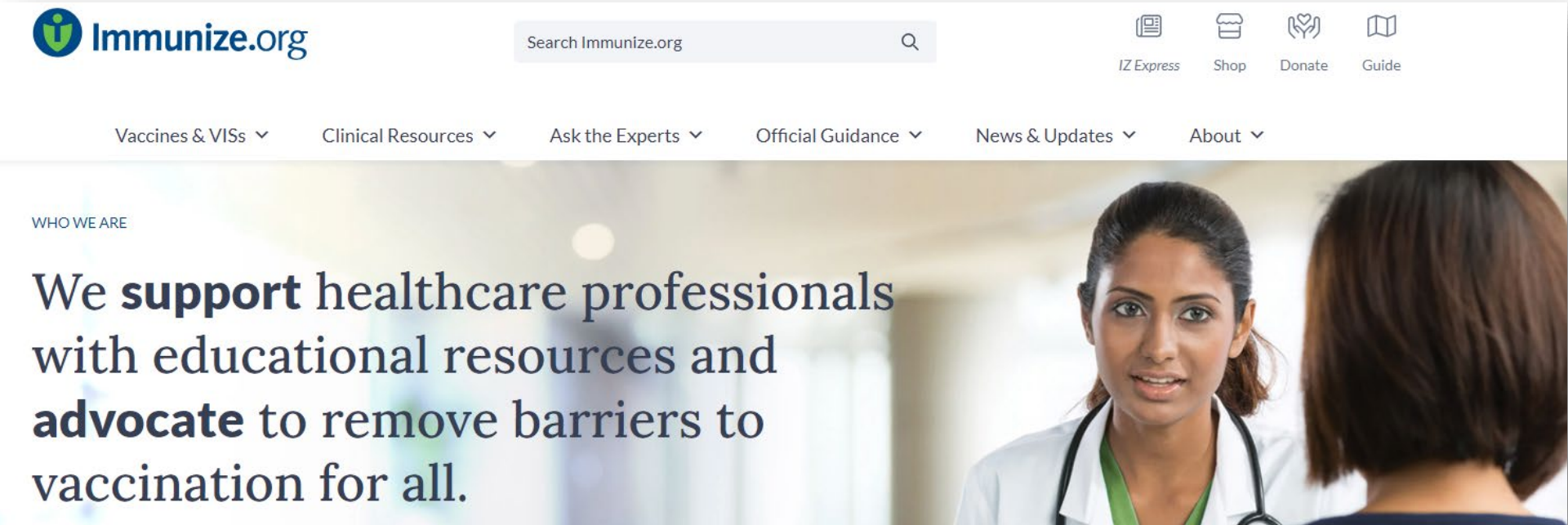
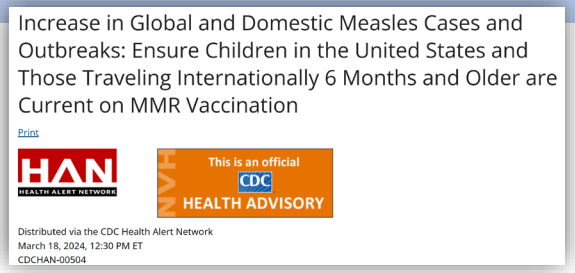


2. 3/18/24 CDC HAN



Increase in Global and Domestic Measles Cases and Outbreaks: Ensure Children in the United States and Those Traveling Internationally 6 Months and Older are Current on MMR Vaccination

Print

HAN HEALTH ALERT NETWORK

This is an official CDC HEALTH ADVISORY

Distributed via the CDC Health Alert Network
March 18, 2024, 12:30 PM ET
CDCHAN-00504

All U.S. residents >6m without evidence of immunity* who are planning to travel internationally should receive MMR vaccine prior to departure.

- Infants 6-11m should receive one dose before departure.
  - Infants who receive dose before their first birthday should receive 2 more doses, the first of which should be administered when child is 12-15m and the second at ≥28d later.
- Children ≥12m should receive 2 doses of MMR vaccine, separated by ≥ 28d.
- Teenagers and adults without evidence of measles immunity* should receive 2 doses of MMR vaccine separated by ≥28d.

*At least one is considered evidence of measles immunity: 1) birth before 1957, 2) documented admin of 2 doses of live measles virus vaccine, or 3) serologic proof of immunity or laboratory confirmation of disease

3. Clinicians Prepared to ID and Manage

COCA Call 8/17/2023

Consider measles in anyone with fever and generalized maculopapular rash with **cough, coryza, or conjunctivitis** who has recently been abroad, especially in countries with ongoing outbreaks. Then:

- **Isolate:** Do not allow patients with suspected measles to remain in waiting room or other common areas of a healthcare facility; isolate immediately - ideally single-patient AIIR or in private room with closed door until AIIR is available.
  - Healthcare providers should be adequately protected against measles and should adhere to standard and airborne precautions when evaluating suspect cases, regardless of their vaccination status.
    - Healthcare providers without evidence of immunity should be excluded from work from day 5 after first exposure until day 21 following their last exposure.
  - Offer testing outside of facilities to avoid transmission in healthcare settings. Call ahead to ensure immediate isolation for patients referred to hospitals for a higher level of care.
- **Notify NH DPHS:** Report suspected/confirmed measles cases; DPHS reports confirmed cases to CDC.

*At least one is considered evidence of measles immunity: 1) birth before 1957, 2) documented admin of 2 doses of live measles virus vaccine, or 3) serologic proof of immunity or laboratory confirmation of disease

3. Clinicians Prepared to ID and Manage

COCA Call 8/17/2023

- **Test:** Follow CDC's testing recommendations and collect either NP swab, throat swab, and/or urine for RT-PCR and a blood specimen for serology.
  - RT-PCR is available at NH PHL.

- **Manage:** In coordination with NH DPHS, provide appropriate measles PEP ASAP to close contacts without evidence of immunity, either MMR (within 72 hours) or IG (within 6 days).
  - The choice of PEP is based on elapsed time from exposure or medical contraindications to vaccination.

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H5N1 Highly Pathogenic Avian Influenza (HPAI) Update

NH DIVISION OF
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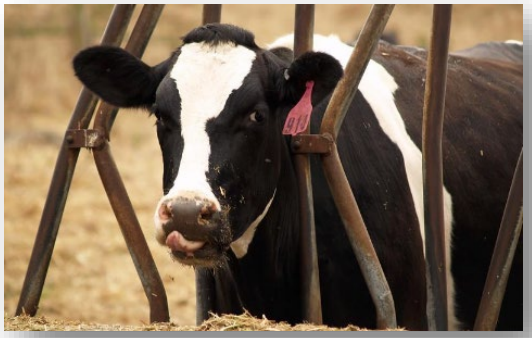
Department of Health and Human Services

Summary Situation with HPAI: Cattle

- H5N1 influenza identified in 21 dairy cattle herds in 7 states
  - Texas, Kansas, Michigan, New Mexico, Idaho, Ohio, North Carolina
    - Michigan, Idaho, and Ohio infections introduced by transport of cows from Texas
- Evidence of cow-to-cow (and barn cat) transmission
  - ~10% of cows in impacted herds are infected
    - Symptoms include decreased lactation, low appetite, tacky stool or diarrhea
    - NOT high mortality in cows
- Milk from affected cows is diverted before going into the commercial supply; pasteurization is expected to kill influenza viruses
  - Avoid raw milk and raw milk products



https://www.aphis.usda.gov/news; CIDRAP

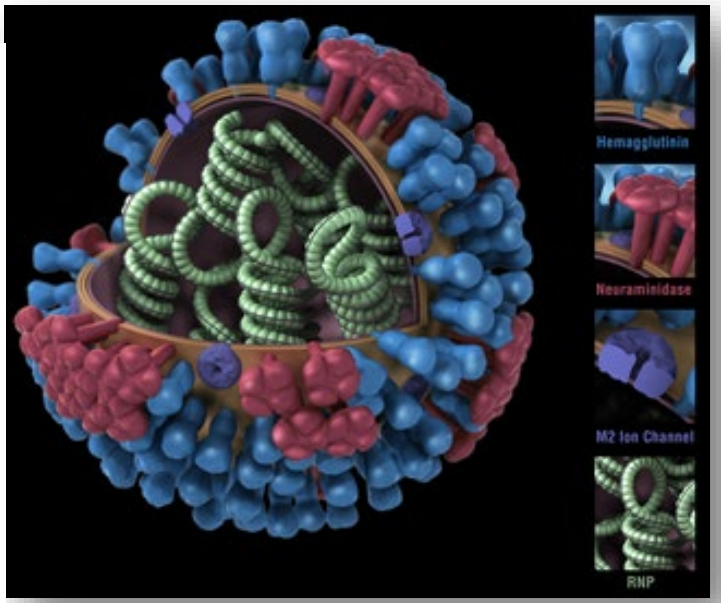
Summary Situation with HPAI: Human

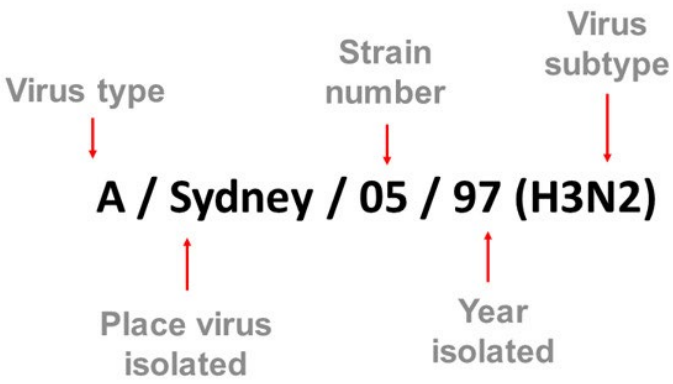
- One person who had direct contact with infected cows in Texas came down with conjunctivitis (only symptom) and tested positive for H5N1
  - Upper respiratory sites negative
- CDC compared human H5N1 sample to viruses from cattle, wild birds, and poultry and detected mutation linked to mammalian host adaptation
  - No viral mutations have been identified to suggest increased risk for humans or H2H transmission

https://www.aphis.usda.gov/news; CIDRAP

Background Flu Virology

Flu A viruses are divided into subtypes based on two proteins on the surface of the virus: hemagglutinin (HA) and neuraminidase (NA). There are 18 different HA subtypes (H1 through H18) and 11 different NA subtypes (N1 through N11).





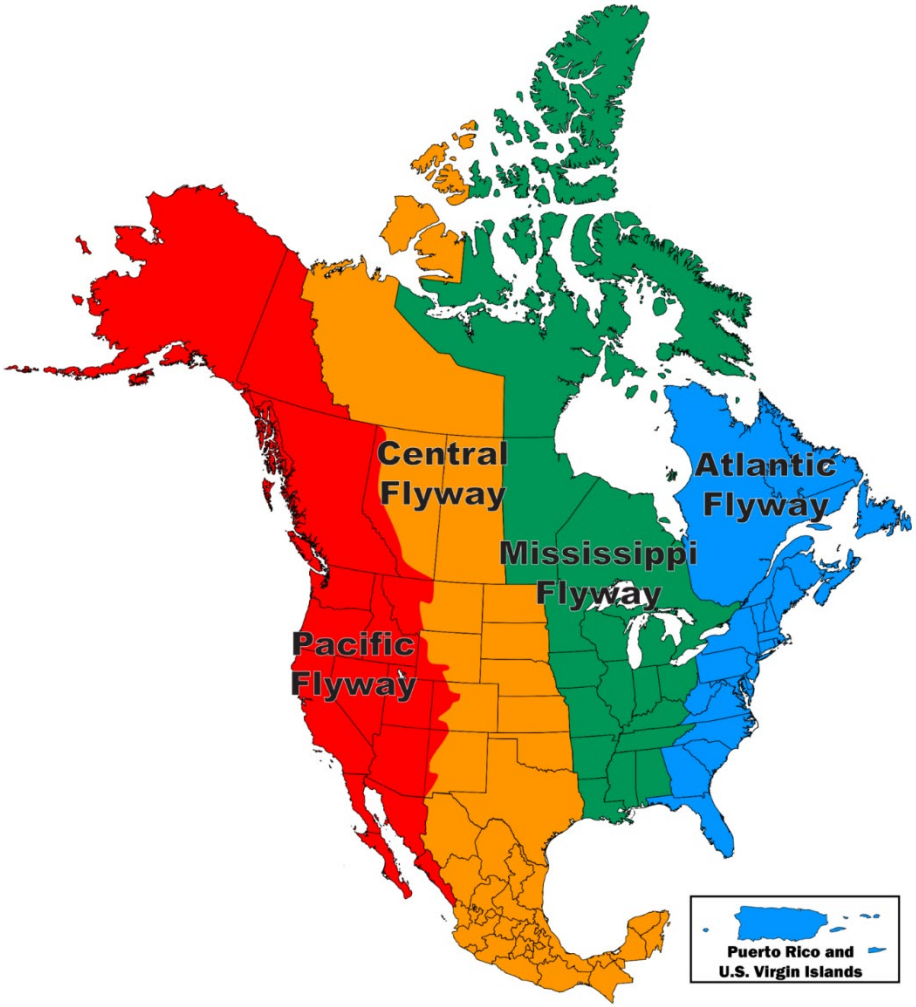
https://www.cdc.gov/flu/avianflu/timeline/avian-timeline-background.htm

Background: Avian Influenza

- Avian influenza A viruses are classified:
  - Low pathogenic avian influenza (LPAI): no or mild signs of disease in poultry
  - High pathogenic avian influenza (HPAI): severe disease, high mortality in poultry
    - Some strains cause 90-100% mortality in chickens within 48 hours
- LPAI and HPAI do NOT correlate with severity of illness in people who might become infected
- HPAI emerged globally in 1997
  - Evolved into different genetic "clades" through re-assortment
    - Eurasian lineage H5 clade 2.3.4.4b is currently circulating
  - Introduced into Americas Dec 2021 via the Atlantic Flyway with spillover from wild birds into commercial and backyard poultry and mammals

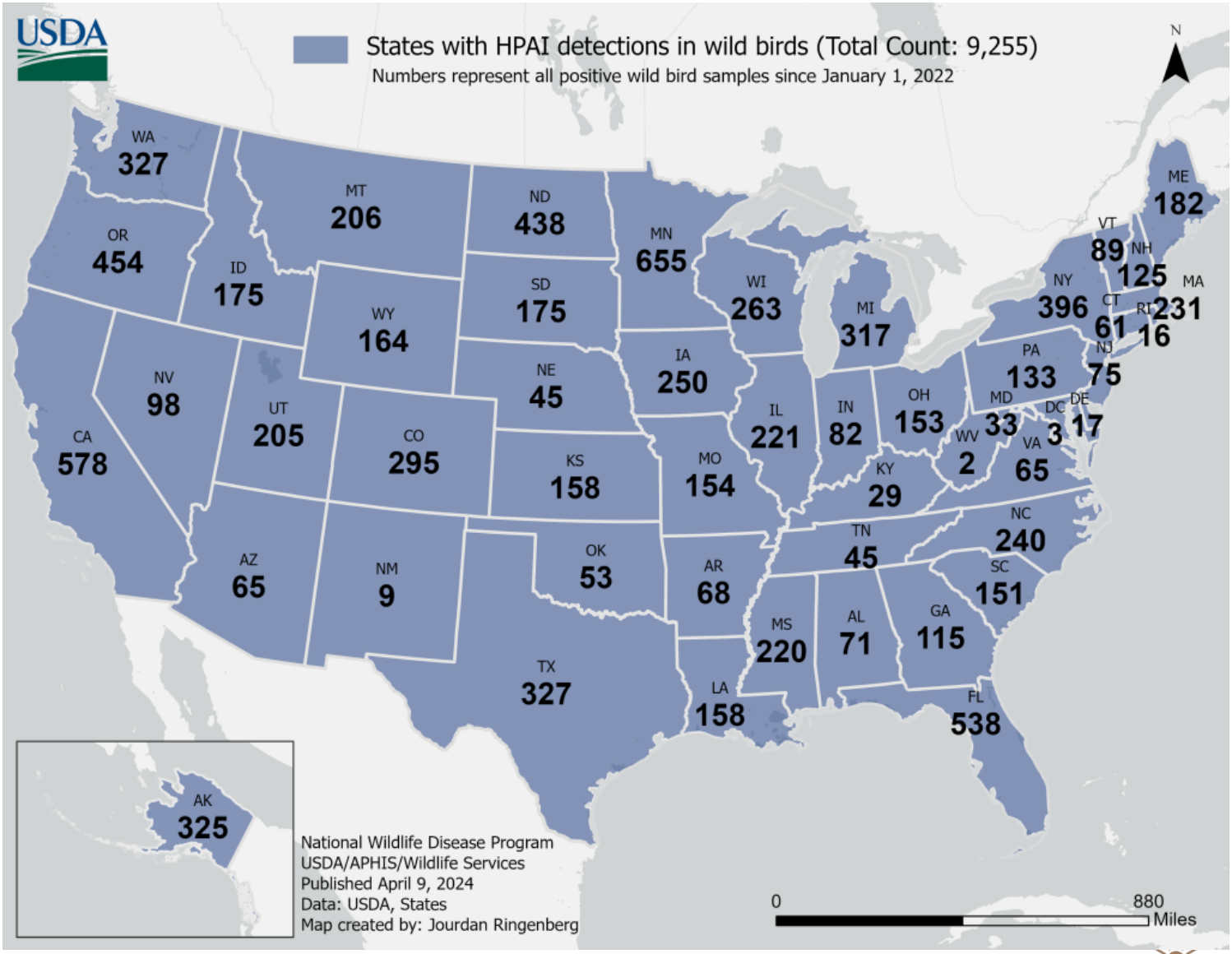
https://www.biorxiv.org/content/10.1101/2023.03.10.532068v1
https://www.ecdc.europa.eu/en/publications-data/avian-influenza-overview-december-2022-march-2023

Migratory Bird Flyways



https://www.fws.gov/media/migratorybirdprogramadministrativeflywaysstateandprovincemapjpg

US Wild Bird Detections 2022-2024



https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/wild-birds

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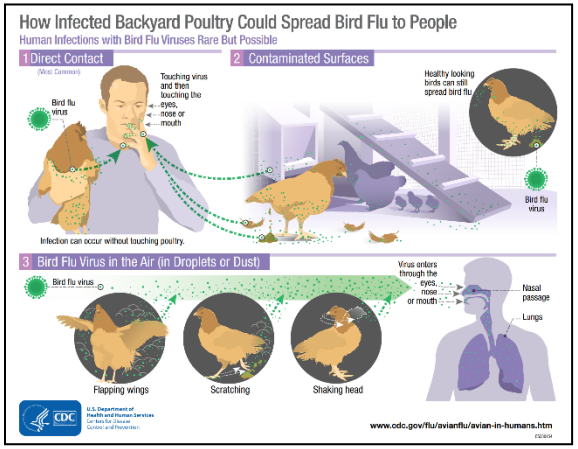
Commercial Flock Outbreaks

Backyard Flock Outbreaks

Since 2022, outbreaks have led to the loss of tens of millions of poultry across all states.
4/2 outbreak at US' largest egg producer (TX) where ~2M chickens died/culled

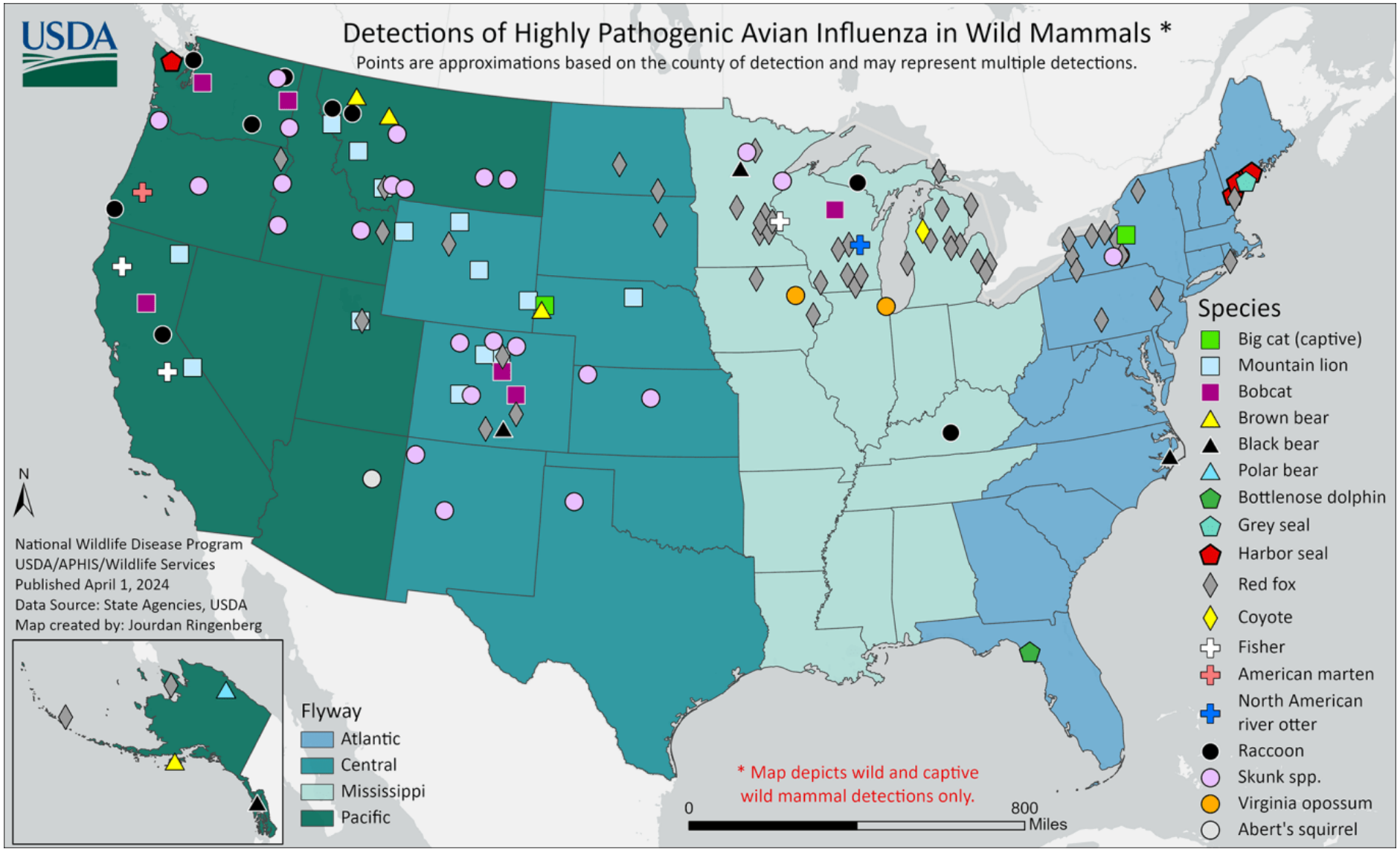
https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/hpai-2022/2022-hpai-commercial-backyard-flocks

Public Health Recs for Persons Exposed to **Infected Birds**



- Public health monitoring for 10 days after exposure
- Contaminated property should lay fallow for 120 days
- Avoid bringing contaminated clothing or supplies into home
- In consultation with NH DPHS, PPE should be worn by any person who needs to go into contaminated area
  - Self-monitoring for 10 days if re-exposed
- Call NH DPHS if influenza symptoms develop after exposure to coordinate testing with a local healthcare facility

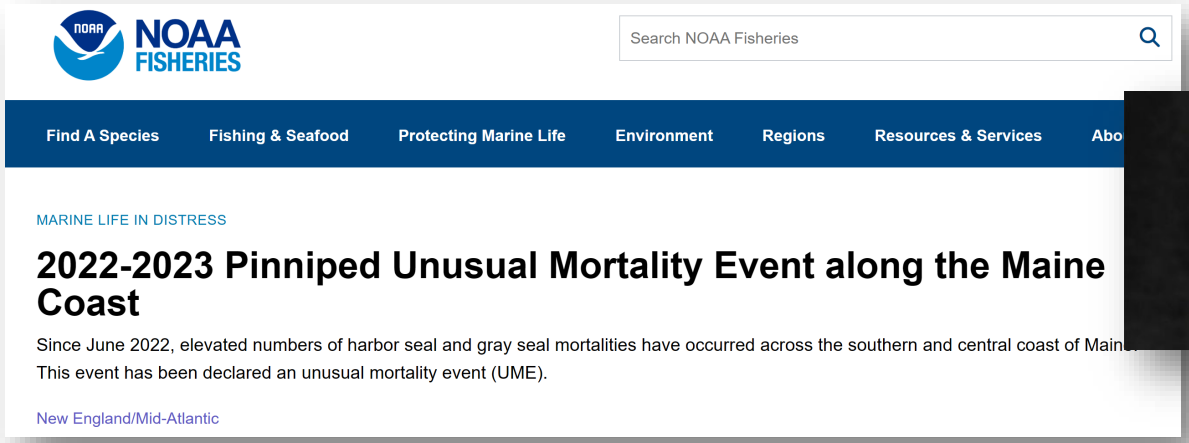
Detection in Mammals in U.S. (2022-2024)



https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/mammals

Mammal-to-Mammal Transmission: Mortality Events in Mammals

- June-July 2022: Seals in Maine US



- October 2022: Mink in Spain
- Jan-Feb 2023: Sea lions in Peru

https://www.ecdc.europa.eu/en/publications-data/avian-influenza-overview-december-2022-march-2023
https://wwwnc.cdc.gov/eid/article/29/4/22-1538_article
https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2023.28.3.2300001

Highly pathogenic avian influenza A(H5N1) virus infection in farmed minks, Spain, October 2022

"Viruses from minks present an alanine (A) at position 271 of PB2 (T271A), which enhances the polymerase activity of influenza A viruses in mammalian host cells and mice… the same mutation is present in the avian-like PB2 gene of the 2009 pandemic swine-origin influenza A(H1N1) virus."

https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2023.28.3.2300001

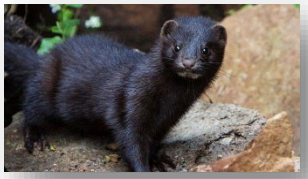
Is There Increased Risk to Humans?

"While there was a genetic marker [PB2] in the H5N1 viruses detected during the outbreak in mink in Spain that may have increased the amount of virus in infected mink, this marker is unlikely to make it easier for H5N1 virus to transmit to humans… Humans lack the type of cell receptor in the upper respiratory tract that H5N1 viruses use to cause infection."

- Dr. Tim Uyeki, CDC
(March 2023)

https://www.cdc.gov/flu/avianflu/spotlights/2022-2023/avian-flu-updated.htm

ECDC Risk Assessment: March 2023



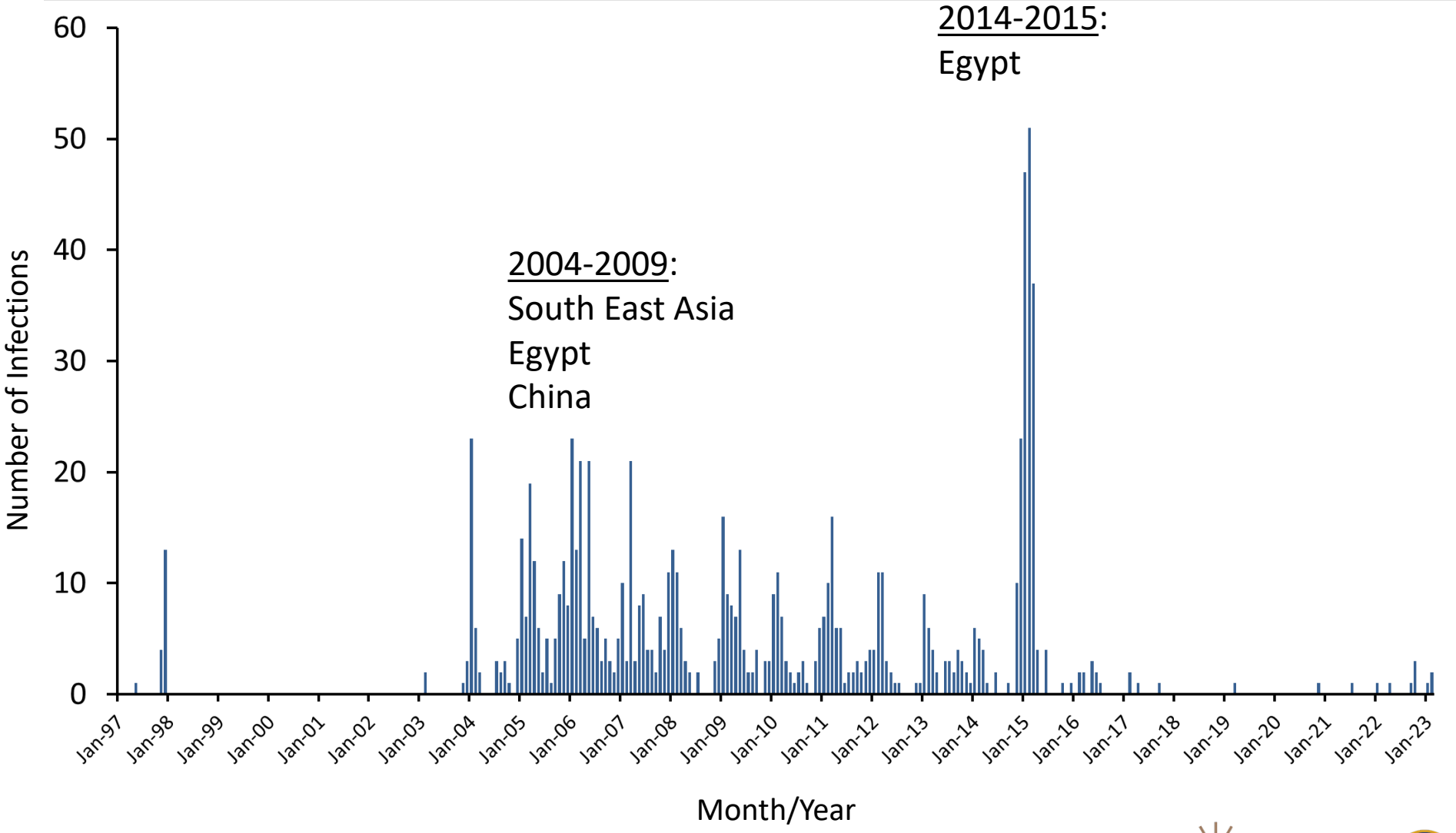
"Mutations associated with mammalian adaptation such as in the PB2 that confer an increased replication have been observed, however, no mutations in the hemagglutinin (HA) gene have been detected in A(H5N1) viruses from birds or mammals that would support a switch of the viruses from avian-like… to human-like… receptors."

"Only sporadic human infections have been reported globally, and transmission to humans remains a rare event. No sustained transmission between humans has been observed."

"However, the expansion of mammal species identified infected with A(H5N1) viruses as well as the detection of viruses carrying markers for mammalian adaptation in other genes such as the PB2 that correlated with increased replication and virulence in mammals, is of concern."

https://www.ecdc.europa.eu/en/publications-data/avian-influenza-overview-december-2022-march-2023

Global Human H5N1 Infections, 1997-2023



https://www.cdc.gov/flu/avianflu/chart-epi-curve-ah5n1.html

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FYI: **Second** US Human H5N1 Detection*

Month & Year	# of Human Infections	Countries
Apr 2022	1	**U.S.**
May 2022	0	
Jun 2022	0	
Jul 2022	0	
Aug 2022	0	
Sep 2022	1	China
Oct 2022	3	Spain, Vietnam
Nov 2022	0	
Dec 2022	1	Ecuador
Jan 2023	1	China
Feb 2023	2	Cambodia
Mar 2023	1	Chile
TOTAL	10	

Month & Year	# of Human Infections	Countries
Apr 2023	0	
May 2023	2	U.K.
Jun 2023	0	
Jul 2023	2	U.K.
Aug 2023	0	
Sep 2023	0	
Oct 2023	2	Cambodia
Nov 2023	2	Cambodia
Dec 2023	0	
Jan 2024	2	Cambodia
Feb 2024	3	Cambodia
Mar 2024	2	Vietnam, **U.S.**
TOTAL	15	

*Not all “detections” indicate infection or disease

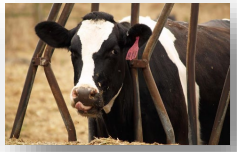
https://www.cdc.gov/flu/avianflu/chart-epi-curve-ah5n1.html

Influenza A(H5N1) detection in two asymptomatic poultry farm workers in Spain, September to October 2022: suspected environmental contamination

- Poultry farm outbreak in Spain, Sept 2022
- NP swabs taken "according to a national screening protocol for exposed workers"
  - H5N1 detected in 2 workers, both asymptomatic and never developed symptoms
- Absence of symptoms, low viral load on PCR testing, & negative serology suggested mucosal surface contamination and NOT true infection

https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2023.28.8.2300107

CDC Analysis of H5N1 Sequences from Texas April 2024



- Cattle and human sequencing shows “primarily avian genetic characteristics”
- Human isolate had change (PB2 E627K) associated with viral adaptation to mammalian hosts
  - No hemagglutinin gene mutations that increase adaptation to mammalian respiratory track receptors
- No markers associated with antiviral resistance
- No evidence of H2H spread; human risk remains “low”
  - Virus is closely related to 2 existing candidate vaccine viruses (CVVs) available to vaccine manufacturers, prn

https://www.cdc.gov/flu/avianflu/spotlights/2023-2024/h5n1-analysis-texas.htm

Public Health Recs for Persons Exposed to **Infected Livestock**

- Public health monitoring for 10 days after person is exposed
- NO REC that contaminated property lay fallow for 120 days
- PPE for any person who has direct or close exposure contact with sick animals or contaminated material: carcasses, feces, milk, litter, etc.
  - PPE for worker protection: N95 mask, eye protection, gloves, disposable coveralls, boots, head/hair cover
- Call NH DPHS if symptoms develop after exposure to coordinate testing with a local healthcare facility; clinical specimens include either:
  - NP swab **PLUS** a nasal swab combined with an OP swab
  - Conjunctival swab (if person has conjunctivitis) **PLUS** a NP swab

https://www.cdc.gov/flu/avianflu/hpai/hpai-interim-recommendations.html

CDC HAN 4/5/2024 Recommendations for Clinicians

Clinicians should consider the possibility of HPAI A(H5N1) virus infection in people showing signs or symptoms of ARI or conjunctivitis and who have relevant exposure history outlined in Highly Pathogenic Avian Influenza A(H5N1) Virus in Animals: Interim Recommendations for Prevention, Monitoring, and Public Health Investigations [cdc.gov].

- Examples of symptoms include but are not limited to:
  - Mild illness: e.g., cough, sore throat, eye redness or eye discharge such as conjunctivitis, fever or feeling feverish, rhinorrhea, fatigue, myalgia, arthralgia, and headache
  - Moderate to severe illness: e.g., SOB or difficulty breathing, altered mental status, and seizures
  - Complications: e.g., pneumonia, respiratory failure, ARDS, multi-organ failure, sepsis, and meningoencephalitis

CDC HAN 4/5/2024
If Compatible with H5N1

1. Isolate patient and follow infection control recommendations, including using PPE.
2. Initiate empiric antiviral treatment as soon as possible.
   - Regardless of time since onset of symptoms.
   - Do not delay treatment while awaiting laboratory results.
3. Notify NH DPHS to arrange testing.
4. Collect respiratory specimens to test for H5N1 at the PHL.
   - If the exposed person has conjunctivitis, with or without respiratory symptoms, both a conjunctival swab and an NP swab should be collected.
5. Encourage patients to isolate at home away from their household members until it is determined they do not have H5N1 infection.

CDC HAN 4/5/2024
Recommendations for Public

- People should avoid being near sick or dead animals [cdc.gov] or surfaces contaminated with the animal's feces, litter, raw milk, or other byproducts when not wearing respiratory or eye protection.
- As always, people should not prepare or eat uncooked or undercooked food or related uncooked food products, such as unpasteurized (raw) milk or raw cheeses, from animals with suspected or confirmed [fda.gov] HPAI A(H5N1) virus infection.

Q&A

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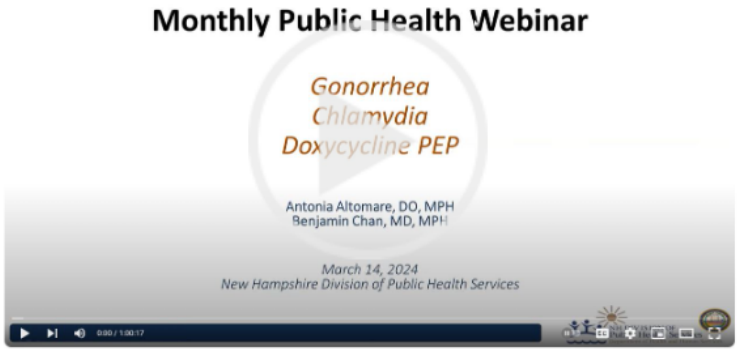

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