CDPH
California Department of Public Health

Avian Influenza (A)H5N1

California Department of Public Health

Center for Infectious Diseases

Updated as of April 15, 2025

Table of contents

1 Background and epidemiology

2 Transmission and protection from spread

3 Information for healthcare providers

4 Seasonal influenza testing and subtyping

5 Summary and resources

Background and epidemiology

What is avian influenza A (H5N1)?

- Avian influenza viruses are those whose natural host is wild waterfowl, and which can cause serious illness and death in birds and other animals.
- Avian influenza A(H5N1) was first discovered in 1996 in domestic waterfowl in China; human cases first occurred in China in 1997 and over 900 human cases have been identified since then.
- In addition to waterfowl, avian influenza A(H5N1) can affect many other types of animals.
  - In California, it was first identified in domestic poultry in August 2022.
  - It was first identified in US dairy cows in March 2024, and in California dairy cows in September 2024.
- Human infections with avian influenza viruses are rare but can happen when avian influenza virus gets into a person's eyes, nose, mouth or is inhaled.

CDPH

Current situation in the U.S. as of April 15, 2025

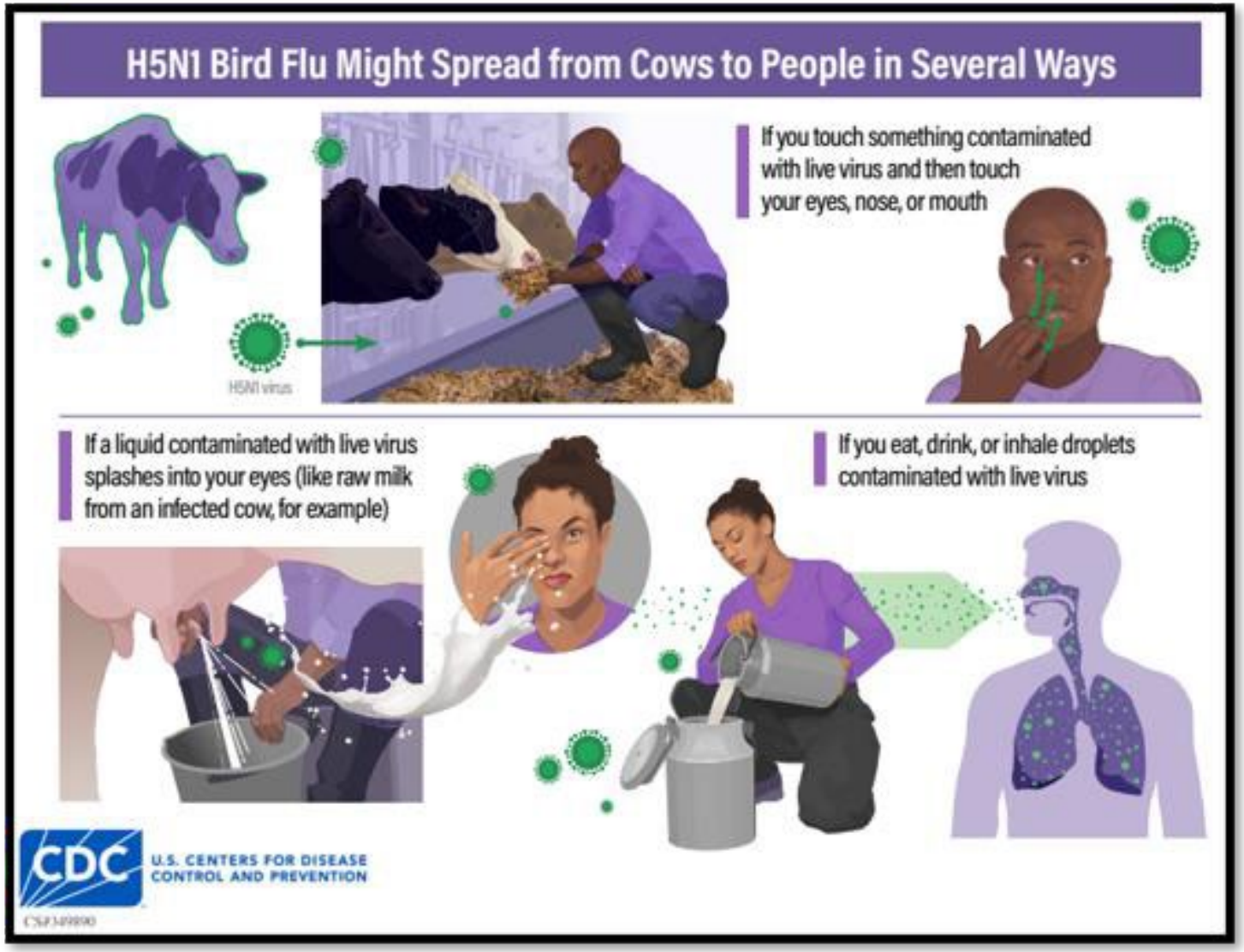
We continue to learn more about avian influenza A(H5N1). Some things we know now:

- The risk to the general population is low. People working with infected animals are at greater risk of becoming infected.
- No person-to-person spread of avian influenza A (H5N1) has been detected in the current outbreak.
- Most human cases in California have had exposure to infected dairy cows.
- The virus has been found in raw milk from infected dairy cows.

CDPH

Transmission and protection from spread

How avian influenza could spread on a dairy farm



CDPH

Occupational exposure risks: dairy and poultry farms

Modes of transmission

- Direct contact
  - Splashing
- Ingestion
  - Eating/drinking
- Inhalation
- Indirect contact
  - Contaminated surfaces

Work activities with higher occupational exposure risk:

- Working with dairy cattle and handling **raw milk** (milking, cleaning pens, providing care to sick cows, handling dead cows)
- Feeding, caring for infected birds
- Handling live or dead birds
  - Depopulating birds
  - Handling or disposal of carcasses
- Cleaning and disinfecting contaminated surfaces, bedding
- Handling eggs, feed, or other materials

CDPH

Personal protective equipment (PPE) for workers

To protect against the virus:

- **Wash hands often and do not touch eyes while working**
- **Wear:**
  - **Eye protection (e.g., goggles or face shield)**
  - **N95 or higher-level NIOSH-approved respirator**
  - **Gloves**
  - Coveralls
  - Apron, if needed
  - Head covering
  - Boots or shoe covers

Worker PPE recommendations:

CDPH

Information for health care providers

Role of healthcare providers

- Healthcare providers and clinics are key partners with public health departments in:
  - Preventing;
  - Identifying;
  - Testing;
  - Treating;
  - Managing; and
  - Reporting human H5N1 influenza infections

CDPH

Screening patients with H5N1 symptoms for H5 exposure risk factors

- Work with your clinic or healthcare system to establish screening protocols for patients with H5N1 influenza symptoms and exposure risk factors.

CDPH

H5N1 clinical presentation

Most U.S. cases have had mild symptoms; symptoms can include:

- Eye redness and irritation (conjunctivitis)
  - All California dairy worker cases have had conjunctivitis, but absence of conjunctivitis **does not** rule out H5N1 in patients with high-risk exposures
- Mild fever (≥100°F or 37.8°C) or feeling feverish
- Cough, sore throat, runny/stuffy nose
- Muscle or body aches, headaches
- Fatigue

Diarrhea, nausea, and vomiting are uncommon

Conjunctivitis with Subconjunctival Hemorrhage in Both Eyes.
N Engl J Med 2024;390: 2028-2029. Vol. 390 No. 21.

CDPH

Clinical presentation

Timing

- **Onset:** Symptoms typically begin ~3 days after exposure (range: 2–7 days). Eye symptoms may occur 1–2 days after exposure.

- **Contagiousness:** Most contagious in the first few days; severe cases may remain contagious longer.

- **Duration:** Symptoms typically last a few days to less than two weeks but may persist longer in severe cases.

CDPH

Groups at higher risk for exposure

Farmworkers who:

- Work with dairy cows
- Work with poultry
- Handle raw dairy products
- Work in hatcheries

Other groups:

- Slaughterhouse workers
- Rendering plant workers
- Live bird market workers
- Veterinary clinic staff
- Persons with sick backyard flocks

Wildlife workers:

- Wildlife rehabilitation center staff and volunteers
- Pest management and animal removal personnel
- Animal control officers and shelter staff
- Zoo staff and volunteers

CDPH

Taking an occupational history

- **Identify** patient's job title and specific work tasks
  - Remember that workers in non-agricultural settings (see prior slide for examples) can also be at risk for occupational exposure to H5N1 influenza.
  - Obtain work history (how long in the occupation) and changes in work tasks (engaging in new/unfamiliar tasks could increase risk of exposure).

CDPH

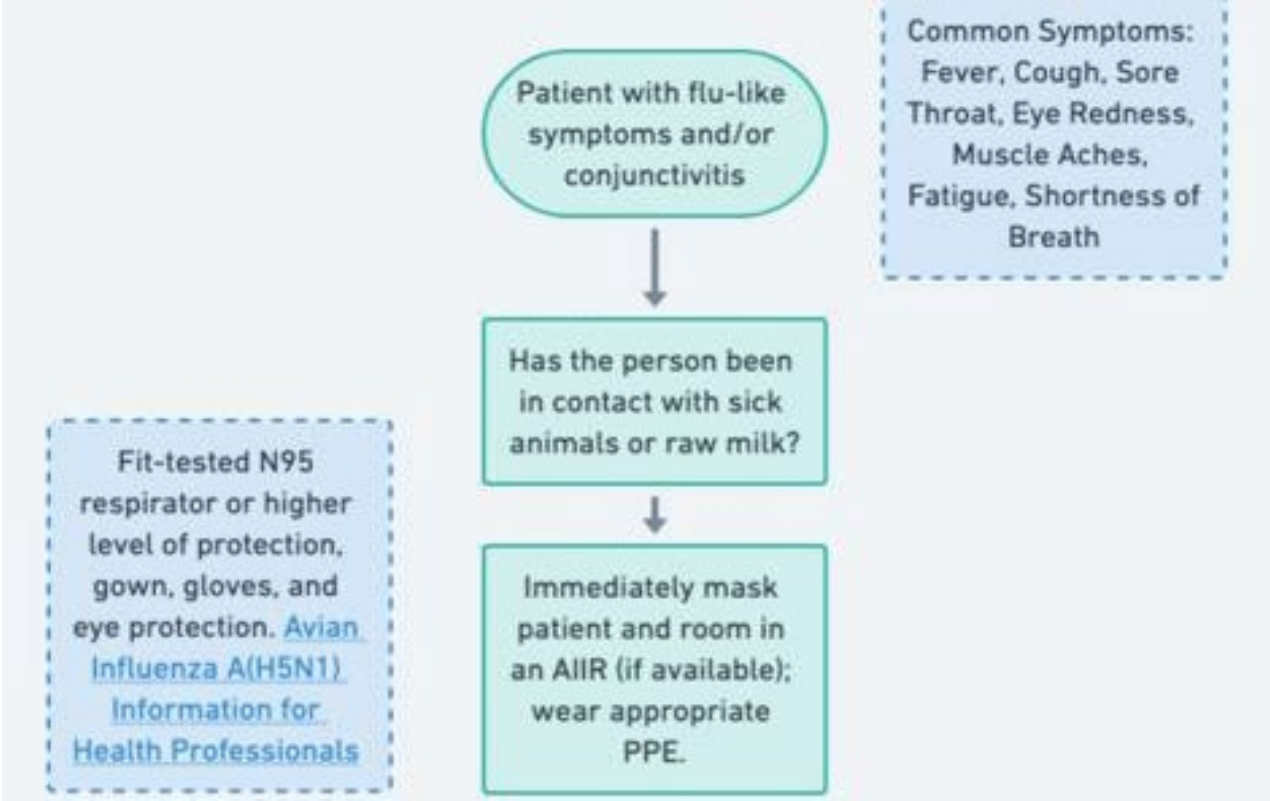
Taking an occupational history (cont.)

- **If the symptomatic patient is in a higher risk group,** ask about:
  - Exposure to sick or dead animals with suspected or confirmed avian influenza infection.
  - Contact with **raw milk**, feces, or saliva from infected animals including surfaces and water that might be contaminated with animal waste and viscera and udders from lactating dairy cattle.
  - Interaction with people who have suspected or confirmed H5N1 influenza (though to date, no person-to-person spread of avian influenza has been documented in the US).
  - **Timing of exposures** before symptom onset.
  - **Use of appropriate PPE**, including masks/respirators, eye protection (if used, type of eye protection is helpful), gloves, gowns, and hand hygiene.

CDPH

Infection prevention protocols from initial contact

- Room patient in an airborne infection isolation room (AIIR), if available.
- Personal protective equipment (PPE) for healthcare providers
- Initiate contact with healthcare setting (e.g., phone, front desk)



CDPH

Patient rooming: use an AIIR if available

- If H5N1 infection is suspected, **immediately mask the patient** and place them in an airborne infection isolation room (AIIR) and keep the door closed.
  - While in an AIIR, the patient's mask may be removed.
- **If an AIIR is not available, place the patient in a single-patient room with the door closed.**
  - Have the patient remain masked.
  - After the patient leaves, the room should not be reused and unprotected individuals should not enter until sufficient time has elapsed for enough air changes to remove potentially infectious particles, per CDC guidance. For example, in a patient-care area with 6 air exchanges per hour, the time to removal of airborne contaminants with 99.9% efficiency is 69 minutes.
- Limit room entry to essential personnel. Limit transport of patient outside their room.

CDPH

Personal protective equipment for healthcare personnel

- Respiratory protection: Fit-tested N95 respirator or higher-level respiratory protection
- Eye protection: Goggles or face shield
- Gown and gloves
- Use diligent hand hygiene before and after contact with the patient
- See CDC Interim Guidance for additional infection control recommendations

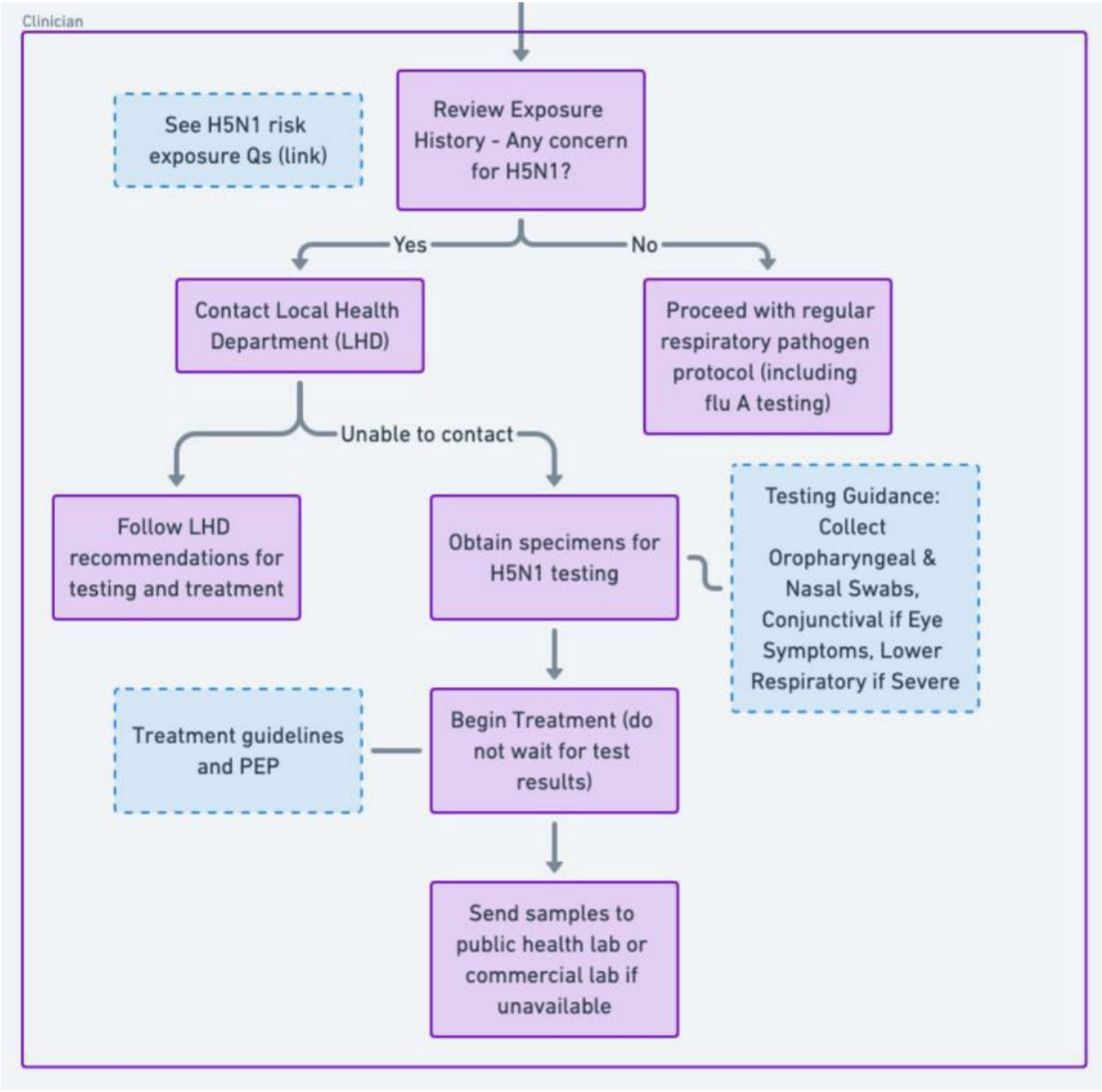
CDPH

Testing

- Who to test for H5N1
- Specimen collection
- Where to send specimens
- California's Public Health Laboratory capacity

CDPH

Testing Flow Chart for Symptomatic Patients



CDPH

Testing Recommendations for H5N1

- Collect specimens from all suspect cases with:
  - Signs and symptoms consistent with acute respiratory tract infection and/or conjunctivitis; AND
  - A history of exposure in the last 10 days to animals or humans with suspected or confirmed H5N1 influenza infection, or to raw milk
- Standard clinical or commercial laboratory PCR tests for influenza can be used to rule out influenza A (and therefore H5N1) in people for whom there is low suspicion for H5N1 infection
- Influenza A positive specimens from symptomatic patients with exposure risk factors for H5N1 should be referred to a public health laboratory for subtype testing

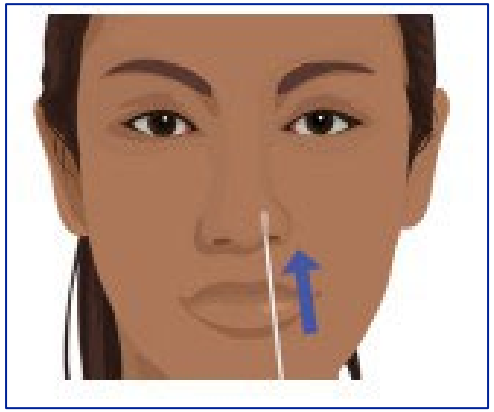
CDPH

Testing for H5N1: Specimen Collection

If testing is performed in a public health laboratory*:

- Conjunctival swab(s) should be collected from anyone with conjunctivitis; and
- Respiratory specimens should be collected from anyone with respiratory symptoms
  - Separate oropharyngeal (throat) and anterior nares (nasal) swab specimens are preferred, but can be combined in one tube
  - Nasopharyngeal swabs are also acceptable, but to date have had lower yield for positive test results in cases than oropharyngeal or anterior nares swabs

Conjunctival swab



Anterior nares swab

**Please note: If testing is performed in a commercial laboratory respiratory specimens must be collected in addition to conjunctival swab(s) even if the patient does not have respiratory symptoms*

CDPH

Testing for H5N1: Specimen Collection

- Ideally, collect specimens 24–72 hours (max 10 days) after symptom onset
- Coordinate testing of specimens with the local health department for the patient's residence
- Collect specimens using swabs with synthetic tips (e.g., polyester or Dacron) and an aluminum or plastic shaft.
  - Swabs with cotton tips and/or wooden shaft are NOT RECOMMENDED.
  - Specimens collected with calcium alginate will NOT be ACCEPTED.

CDPH

CDPH Avian Influenza A(H5N1) Information for Health Professionals

Testing for H5N1: Specimen Collection

- Swabs should be placed in vial with viral transport media (VTM) or universal transport media (UTM).
- Specimens should be refrigerated or frozen after collection until transported to testing laboratory.
  - Refrigerated specimens should be transported on cold packs
  - Frozen specimens should be transported on dry ice

More information can be found at CDPH Avian Influenza A(H5N1) Information for Health Professionals

CDPH

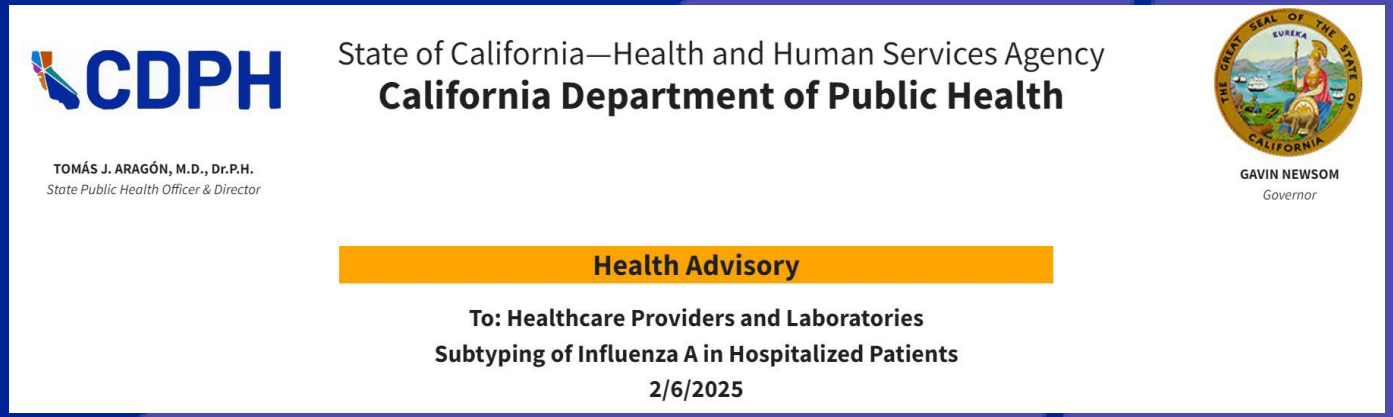
Testing for H5N1: Laboratory

- Some commercial laboratories (Quest, ARUP and LabCorp*) can perform H5 subtyping on influenza A positive specimens, but CDPH recommends use of commercial lab H5 subtype testing only for low-suspicion cases with no known or likely exposure to infected animals or humans.
- **Title 17 requirement:** Laboratories must notify the state public health laboratory about any testing or request for testing for influenza A(H5).
- For further information about laboratory testing for influenza A(H5) at the CDPH state laboratory, please refer to the CDPH Viral and Rickettsial Diseases Laboratory (VRDL) website.
- Email questions to VRDL.submittal@cdph.ca.gov, or call the VRDL at 510-307-8585 (M-F, 9am – 5pm Pacific Time, excluding holidays).

*LabCorp will only accept nasopharyngeal specimens for H5 testing.

CDPH

Seasonal influenza testing and subtyping



CDPH

State of California—Health and Human Services Agency
California Department of Public Health

TOMÁS J. ARAGÓN, M.D., Dr.P.H.
State Public Health Officer & Director

GAVIN NEWSOM
Governor

Health Advisory

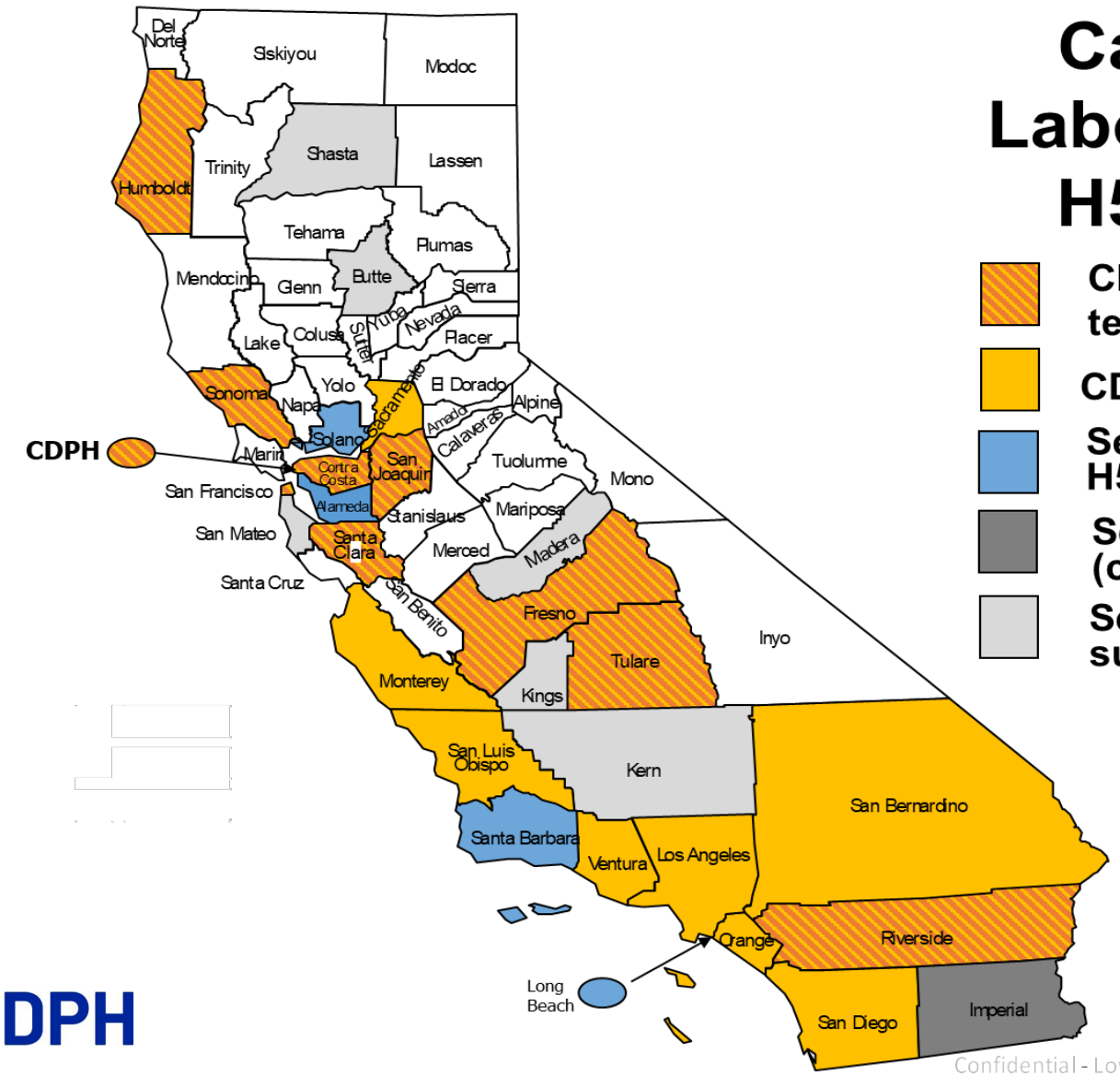
To: Healthcare Providers and Laboratories
Subtyping of Influenza A in Hospitalized Patients
2/6/2025

Influenza testing for hospitalized patients with acute respiratory illness

- Test for influenza A in hospitalized patients with acute respiratory illness.
  - Initial influenza testing can be done using whatever diagnostic test is available, but preferably by real-time RT-PCR.
  - If available, an initial diagnostic test that can provide influenza A subtyping results for A(H1) and A(H3) can be ordered.
- If the initial testing is positive for influenza A but **did not include testing for seasonal influenza subtypes A(H1) and A(H3), order subtyping** as soon as possible for patients in the ICU (and, when resources allow, all hospitalized patients with influenza A infection).
  - **If reimbursement for influenza A subtyping may be an issue, specimens can be referred to a local public health laboratory for subtype testing**.

CDPH

California Respiratory Laboratory Network (RLN) H5N1 HPAI Readiness



- CDC H5 respiratory + conjunctival swab testing = 9 local PHLs +VRDL
- CDC H5 respiratory testing = 8 local PHLs
- Seasonal Flu A subtyping available, H5 testing being verified = 4
- Seasonal Flu A subtyping (commercial reagents) = 1
- Sending specimens for Flu A subtyping to Reference PHL = 6

As of 02/19/2025

CDPH

Therapeutics

- Antiviral treatment and post-exposure prophylaxis
- Start treatment while waiting for results in suspect cases

CDPH

Antiviral Treatment

- CDC recommends initiation of antiviral treatment with oseltamivir as soon as possible for symptomatic outpatients who are confirmed, probable, or suspected cases of infection with a novel influenza A virus associated with severe human disease.
- The standard dose of oseltamivir for adolescents and adults is 75 mg twice daily for 5 days.
- For information on oseltamivir dosage recommendations for treatment by age group, visit: Emergency Use Instructions (EUI) for Oseltamivir | Bird Flu | CDC and Influenza Antiviral Medications: Summary for Clinicians.

CDPH

Post-Exposure Chemoprophylaxis (PEP)

- Consider for persons exposed to H5N1 influenza (including household contacts of human cases, persons at-risk for severe disease, exposed persons who had a break in PPE).
- **Oral oseltamivir** at treatment dosing frequency (**twice daily)** is recommended for **chemoprophylaxis.**
  - If exposure was time-limited, 5 days of medication from last known exposure recommended.

CDPH

[CDC Interim Guidance of Follow up of Close Contacts for Novel Influenza A]

Inform public health

- **Contact the local health department (LHD) of the patient's residence if you have a symptomatic patient with H5N1 influenza exposure.**
  - It is recommended that the local health department be alerted prior to testing so they can provide testing guidance.
  - The local health department may be able to talk to the patient over the phone and make recommendations for isolation.

CDPH LHD Communicable DiseaseContact List

CDPH

Additional information for your patients

- Modified work isolation in non-healthcare settings
- Home isolation
- Return to work
- California paid sick leave
- Public health investigation
- Patient education

CDPH

Modified Work Isolation Recommendations in Non-healthcare settings

Suspect, probable, and confirmed cases may work if they are well enough to work and if they and their coworkers:

Wear appropriate recommended PPE while working; and

Wash hands frequently with soap and water or if soap and water aren't available, a 60% alcohol-based hand sanitizer to clean hands; and

Wear well-fitting facemasks while together in breakrooms or other areas where PPE is typically not worn, including shared transportation to and from work

CDPH

CDPH Human Avian Influenza A(H5N1) Quicksheet

Isolation and Return to Work

- Stay home unless necessary to:
  - See a healthcare provider.
  - Go to work.
- If living with other people or pets, ill person should:
  - Avoid contact with others and pets in the home
  - Wear a well-fitting mask when indoor contact can't be avoided
  - Cover coughs/sneezes
  - Wash hands regularly, particularly before contact with other household members
  - Avoid touching eyes
  - Clean/disinfect frequently touched items avoid sharing bedding, towels, and personal items with others, particularly if conjunctivitis is present

CDPH

Isolation and Return to Work

- **When to discontinue isolation:**
  - If patient had an eye infection, patient eyes are no longer red, irritated or draining.
  - Any other symptoms are mild and improving.
  - Any fever has been gone for at least 24 hours without the use of fever reducing medicine. Fever means a temperature of 100 degrees Fahrenheit or 37.8 degrees Celsius or higher.

Oseltamivir treatment is recommended for suspected or confirmed cases, and oseltamivir PEP is recommended for their household members

CDPH

Paid Sick Leave

Employers are required to provide paid sick leave

- Employers must allow an employee to use up to 40 hours or 5 days, whichever is more, of earned paid sick leave in a 12-month period.
- To qualify for paid sick leave, employees must have:
  - Worked at least 30 days for the same employer in a year
  - An employee is entitled to use what they have earned on the 90th day of employment, although an employer can lend paid sick leave in advance of accrual.

- More information: Paid Sick Leave in California (available in English and Spanish)

CDPH

Reference: Cal/OSHA: Avian Influenza Information for Employers

Local health departments may contact exposed workers for health checks

What will be collected during the health check?

- Name
- Date of birth
- Address
- Contact information
- Work duties
- Current health status
- Personal protective equipment used at work, including type of eye protection

Let patients who are workers at farms with infected cows or poultry know:

- They may receive a call from their local health department for a health check (or their health may be monitored by their employer).
- This is to ensure they are not developing any H5N1 symptoms, and to help them stay healthy at work.
- Health departments consider this private, protected information.

CDPH

The health department will not ask for a social security number or immigration status.

Patient Education and Prevention

- Recommend seasonal influenza vaccine
  - Prevents missing work
  - Protects patient, coworkers and family
  - Protects against serious illness from seasonal influenza
  - Can lower the risk of being infected with both seasonal and avian influenza at the same time
- Do not consume raw milk or raw or uncooked beef or poultry.
- Monitor symptoms for 10 days following last known exposure.
- PPE education and training; protecting the eyes, nose and mouth is especially important.
- Wash or clean hands often and keep hands away from eyes, nose, and mouth.
- Provide health education fliers: Bird Flu Communication Toolkit
- If patient has confirmed H5N1 influenza, let them know they may be eligible for worker's compensation.

CDPH

PPE Recommendations

- PPE flyers are available (in English and Spanish) that describe PPE recommendations for farmworkers who may be exposed to avian influenza found on Bird Flu Toolkit:
  - Worker Protection from Bird Flu (PDF) English | Spanish (CDPH)

Protect Yourself From Bird Flu When Working With Infected Dairy Cows

CDPH

Bird flu can spread from an

- The virus can be in raw milk,
- It can spread through splashe
  These can get in the eyes, no
- It can also spread if you touch
  touch your face.

Protect your eyes, nose and

Wear personal protective equip

- Milking cows, handling raw m
- Caring for sick cows or clean
- Handling dead cows or clean

Wear Goggle
goggles) or a
from splashes
protective tha
shields keep

Wear gloves
and don't tou
your face.

All PPE should be provided
If you have flu-like symptoms inclu
out to your local health departmer

CDPH E
Questions: Ha
(HESIS) V

December 20

Protéjase de la gripe aviar cuando trabaje con vacas lecheras infectadas

CDPH

La gripe aviar puede transmitirse de animales a personas y hacer que usted se enferme.

- El virus puede estar en la leche cruda (leche bronca), los fluidos animales o en superficies.
- Puede propagarse a través de salpicaduras, polvo o gotitas en el aire. Estas pueden entrar en los ojos, la nariz, la boca y los pulmones.
- También puede propagarse si usted toca superficies infectadas y luego se toca la cara.

Protéjase los ojos, la nariz y la boca.

Use equipo de protección personal (EPP) cuando realice trabajos de alto riesgo como:

- Ordeñar vacas, manipular leche cruda o limpiar la sala de ordeño.
- Cuidar vacas enfermas o limpiar sus corrales.
- Manipular vacas muertas o limpiar sus corrales.

Gafas protectoras (gafas protectoras con ventilación indirecta) o **pantalla facial** para protegerse de las salpicaduras. Las gafas protectoras son más protectoras que una pantalla facial. Las pantallas faciales mantienen secas las mascarillas.

Use un **respirador N95** o mejor para protegerse del virus en el aire.

Use **guantes** y no se toque la cara.

Lávese o **límpiese las manos** con frecuencia mientras trabaja.

Antes de irse a casa, lávese las manos y la cara.

Su empleador debe proporcionarle todos los EPP de forma gratuita.

Si tiene síntomas similares a los de la gripe, como enrojecimiento o secreción de los ojos, comuníquese con el departamento de salud local.

Para obtener más información:
Página web sobre la gripe aviar del CDPH: go.cdph.ca.gov/birdflu
Preguntas: Línea de ayuda sobre peligros en el lugar de trabajo del Sistema de evaluación de peligros y servicio de información (HESIS): (866) 282-5516

Diciembre de 2024 · © 2024. Departamento de Salud Pública de California

CDPH

Putting it all together

One Health response to H5N1 in California

CDPH

Key Takeaways

- The risk of H5N1 infection to the general public is low, BUT people who work directly with wild birds, poultry, dairy cows, and raw milk have the highest risk of exposure.
- Recommend patients receive seasonal flu vaccine.
- **Contact the local health department immediately** if anyone with exposure to possibly infected animals or humans develops symptoms.
- Provide recommended testing.
- **Healthcare providers should follow** standard, contact, and airborne precautions when caring for patients suspected of having H5N1 infection.
  - Use PPE to protect staff if H5N1 influenza is suspected.
- **Advise persons with suspect or confirmed H5N1 influenza infection to follow CDPH** Guidance for People with Possible or Confirmed Bird Flu Infection.
- Influenza **antiviral treatment** is recommended for persons suspected or confirmed to have H5N1 infection.

CDPH

Contact information

- To contact the local health department communicable disease program:
  - LHD Communicable Disease Contact List
- Questions or inquiries related to avian influenza for CDPH coordination contact
  - Inquiry Submission Portal
- CDPH Email inbox:
  - cdphgpinquiries@cdph.ca.gov
  - cidgp@cdph.ca.gov

CDPH

Resources for Healthcare Providers

- CDPH Bird Flu Website
- CDPH Avian Influenza A(H5N1) Information for Health Professionals
  - CDPH Human Avian Influenza A(H5N1) Quicksheet
  - Guidance for People with Possible or Confirmed Bird Flu Infection | Spanish
- CDC: Interim Guidance on the Use of Antiviral Medications for Treatment of Human Infections with Novel Influenza A Viruses Associated with Severe Human Disease
- CDC: Interim Guidance for Infection Control Within Healthcare Settings When Caring for Confirmed Cases, Probable Cases, and Cases Under Investigation for Infection with Novel Influenza A Viruses Associated with Severe Disease

CDPH

Additional resources

- Western Center- Paid Leave Eligibility

- DIR: Avian Influenza Information for Employers
- DIR: What Workers Need to Know About Avian Influenza
- National Center for Farmworker Health

CDPH

References

- Guidelines for Environmental Infection Control in Health-Care Facilities (Appendix B) www.cdc.gov/infection-control/hcp/environmental-control/appendix-b-air.html
- CDC Interim Guidance for Infection Control Within Healthcare Settings When Caring for Confirmed Cases, Probable Cases, and Cases Under Investigation for Infection with Novel Influenza A Viruses Associated with Severe Disease www.cdc.gov/bird-flu/hcp/novel-flu-infection-control/index.html
- CDPH Human Avian Influenza A(H5N1) Quicksheet(PDF) www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CDPH-Human-Avian-Influenza-A(H5N1)-Quicksheet-ADA.pdf

CDPH

Visit the California Department of Public Health website.