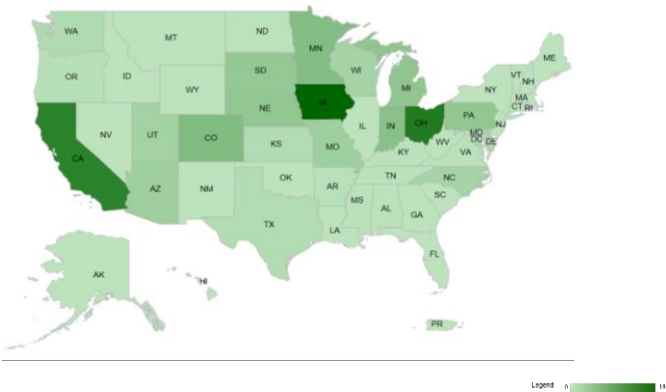




# Highly Pathogenic Avian Influenza (HPAI): a biosecurity perspective for youth poultry producers

## Background

Highly pathogenic avian influenza (HPAI), also known as “avian flu” or “bird flu”, is a contagious viral respiratory disease caused by the influenza A virus that can lead to serious illness and death in domesticated and wild birds. In the U.S., the first case of HPAI H5N1 in a commercial flock was confirmed in February 2022. Since then, hundreds of millions of birds have been affected (Figure 1), with Iowa, Ohio, California, Colorado and Indiana being the most affected states (Table 1), as of May 30, 2025. More recently, HPAI H5N1 has also been detected in dairy cows and other mammals, such as cats. According to the Centers for Disease Control and Prevention (CDC), most reported human cases in the U.S. have been mild, and the current public health risk remains low.



**Figure 1: While every state has been affected by bird flu some states have been more affected than others. States that have reported bird flu outbreaks<sup>2</sup>**

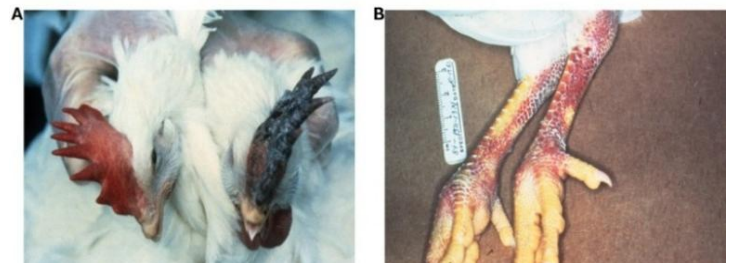
**Table 1: The top states effected by HPAI (as of May 30, 2025)<sup>2</sup>**

State	Number of affected birds since Feb. 2022
Iowa	30,656,034
Ohio	25,362,776
California	23,717,122
Colorado	9,735,802
Indiana	8,512,805

## Indications of HPAI in Poultry

The USDA highlights the following signs of HPAI:

- Sudden death without any prior symptoms of illness
- Lack of energy and appetite
- A drop in egg production or soft-shelled, misshapen eggs in layer birds
- Purple discoloration of the wattles, comb, and legs (Figure 2A)
- Swelling of the eyelids, comb, wattles, and shanks (Figure 2B)
- Gasping for air (difficulty breathing)
- Nasal discharge, coughing, sneezing
- Twisting of the head and neck
- Stumbling or falling
- Diarrhea



**Figure 2: Signs of HPAI. (A) Purple discoloration of the comb. (B) Swelling and Hemorrhage of legs. (USDA photo)**

## What we know about the spread of HPAI

According to the USDA, 82% of HPAI detections are consistent with wild bird introduction. Wild birds, such as ducks, gulls, geese and shorebirds, can carry and spread HPAI but may show no signs of illness. However, HPAI can kill domestic poultry. The remaining 18% are consistent with farm-to-farm transmission due to poor biosecurity. This transmission can occur directly via bird-to-bird contact or indirectly when birds encounter contaminated surfaces or materials like manure, egg flats, crates, other farming equipment, and people's clothing, shoes, or hands.

**AUTHORS:** Hedmon Okella, Ph.D. (UC Cooperative Extension), Rúbia Branco Lopes, Ph.D. (UC Cooperative Extension), Erica Pettey, Ph.D. (California Statewide 4-H), Maurice Pitesky DVM, MPVM, DACVPM (UC Davis School of Veterinary Medicine)



Figure 3: A disposable plastic boot (PBS photo)

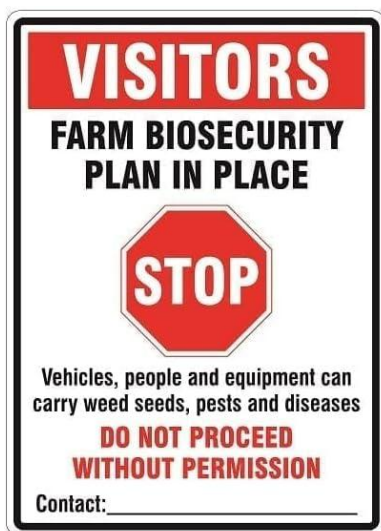


Figure 4: A Farm biosecurity signage

## How to prevent HPAI

Biosecurity is key to protecting your flock. Biosecurity is a practice designed to prevent the entry of disease/pathogen onto your farm. Early this year, the California State Veterinarian implemented a [ban](#)<sup>3</sup> on all California Poultry and Dairy Cattle Exhibitions at Fairs and Shows on January 7, 2025 (until further notice). This is an attempt to minimize the danger of exposing people and non-infected livestock and poultry to the disease. Making biosecurity an “every day, every time” practice is the best way to protect your birds. It minimizes the spread of contagious diseases<sup>4</sup>. Biosecurity involves four aspects best abbreviated as **TIPS**: **T**raffic control, **I**solation, **P**lan, and **S**anitation.

- **Traffic control:** Restrict traffic onto and off your property. Prevent visitors from having contact with your flock and avoid visits to other poultry farms or with bird owners. If you or others must visit, make sure to wash hands and scrub boots before entering the bird area. You may also use disposable boot covers (Figure 3) and coveralls. Alternatively, have dedicated clothing that only is used with your flock as opposed to the clothes you may wear to the feedstore.
- **Isolation:** Isolation refers to the confinement of animals within a controlled environment. A fence keeps your birds in, but it also keeps other animals out. Don't let your poultry have contact with migratory waterfowl or other wild birds by keeping netting over your chicken yard. These birds can introduce germs and diseases to your flock. Secure feed bins and water to prevent wildlife contamination. Isolate any birds returning from shows/fairs for 30 days to observe for signs of illness before placing them with the rest of your flock. Similarly, a 14-day isolation should be applied to young/new birds procured from reputable sources.
- **Plan:** Have a written biosecurity plan in place. Make sure that anyone who enters the poultry area or has contact with your birds knows and follows your biosecurity rules<sup>5</sup>. Biosecurity signage (Figure 4) also helps with implementation of your biosecurity plan with respect to visitors who can accidentally introduce diseases to your flock via objects or materials which are likely to carry infection.
- **Sanitation:** Disinfect shoes, clothes, hands, egg trays or flats, crates, vehicles, and tires after visiting other chicken yards or feed stores. Having hand sanitizing signs at the fairground or farm is vital. Study shows that having signage may increase hand washing (hand sanitizing) frequency at California county fairs<sup>6</sup>

## How is HPAI treated?

There is no treatment for HPAI. The only way to stop the disease is to depopulate all affected and exposed poultry. Report any unusual/suspicious illness or deaths to your local veterinarian or CDFA Sick Bird Hotline at 866-922-BIRD (2473). Please visit [https://www.cdfa.ca.gov/ahfss/Animal\\_Health/Avian\\_Influenza.html](https://www.cdfa.ca.gov/ahfss/Animal_Health/Avian_Influenza.html) for Avian Influenza Updates.

### Reference

1. CDC (27 September 2024). Types of Influenza Viruses. *U.S. Center for Disease Control and Prevention (CDC)*. Retrieved 1 June 2025: <https://www.cdc.gov/flu/about/viruses-types.html>
2. US APHIS (2025). Confirmations of Highly Pathogenic Avian Influenza in Commercial and Backyard Flocks. *USDA*. Retrieved on May 30, 2025, from: <https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/commercial-backyard-flocks>.
3. Annette Jones (7 January 2025). State Veterinarian Bans All California Poultry and Dairy Cattle Exhibitions at Fairs and Shows. *California Department of Food and Agriculture*. [https://www.cdfa.ca.gov/AHFSS/Animal\\_Health/docs/ca\\_h5n1\\_hpai\\_2022-25\\_ca\\_poultry\\_and\\_dairy\\_exhibition\\_ban\\_final.pdf](https://www.cdfa.ca.gov/AHFSS/Animal_Health/docs/ca_h5n1_hpai_2022-25_ca_poultry_and_dairy_exhibition_ban_final.pdf)
4. Smith, M. H., Meehan, C. L. et al., (2011). Biosecurity in 4-H Animal Science. Oakland, CA: *University of California, Division of Agriculture and Natural sources*. Retrieved from: <https://anrcatalog.ucanr.edu/Details.aspx?itemNo=8438>
5. Gail Damerow (1993). Your Chicken: A kids guide to Raising and Showing. *United State Capital City Press*. Pg. 97-111.
6. Ibarra, M, C Meehan, M Daniels, W Smith, and M Smith. 2021. “Low Prevalence of Handwashing and Importance of Signage at California County Fair