



## Animal and Plant Health Inspection Service

### NATIONAL ANIMAL HEALTH LABORATORY NETWORK

# Avian Surveillance

## Avian Influenza

Avian influenza (AI) is caused by viruses that can infect poultry (primarily chickens and turkeys) and some wild bird species (such as wild ducks and swans). AI viruses are classified by a combination of two groups of proteins: hemagglutinin or “H” proteins, of which there are 16 (H1–H16), and neuraminidase or “N” proteins, of which there are 9 (N1–N9). They are further classified by their ability to produce disease, or pathogenicity, in domestic chickens. Highly pathogenic avian influenza (HPAI) strains are extremely infectious, often fatal to domestic poultry, and spread rapidly. Low pathogenic avian influenza (LPAI) strains occur naturally in wild migratory waterfowl and shorebirds without causing illness. However, because LPAI H5 and H7 viruses can change to HPAI in poultry, infection of commercial poultry with H5 and H7 viruses is reportable to State, Federal, and international animal health authorities.

## Newcastle Disease

Newcastle disease (ND) in commercial poultry is reportable to both domestic and international animal health authorities. A finding of this disease negatively impacts international trade in poultry and poultry products. The two most devastating outbreaks in the United States occurred in southern California. The 1971–1974 outbreak was caused by imported, infected exotic pet birds and cost over \$56 million in Federal funds to eradicate. The 2002–2003 outbreak began in illegally imported backyard game fowl and spread to commercial poultry. It cost over \$180 million in Federal funds to eradicate. Although the disease has been eradicated from the U.S. poultry population, it is found periodically in illegally imported birds and migratory waterfowl. These sources of ND are an ongoing threat to the U.S. poultry industry.

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## Surveillance Efforts

The National Animal Health Laboratory Network (NAHLN) can handle both nationwide surveillance testing and large-volume testing during disease outbreaks. Screening tests conducted at the NAHLN labs determine whether the AI or ND viruses are present in the sample. AI samples are also tested for the H5 and H7 subtypes. Regardless of subtype, all presumptive positive AI and ND samples from commercial poultry, the live-bird marketing system, and backyard flocks are sent to USDA's National Veterinary Services Laboratories (NVSL) for confirmation and additional testing. H5 and H7 presumptive positive samples from wild birds are also sent to NVSL.

### DOMESTIC POULTRY

USDA conducts routine surveillance for AI in commercial poultry, the live-bird marketing system, and backyard flocks. State and Federal staff collect samples, NAHLN and National Poultry Improvement Plan-authorized laboratories test the samples, and NVSL carries out all confirmatory testing.

At this time, there is no nationwide surveillance program for ND taking place, but personnel at approved NAHLN labs are trained on ND-specific testing methods and ready to respond when needed.

### WILD BIRDS

For several years, AI surveillance also took place in wild birds due to concerns about the potential for highly pathogenic H5N1 AI entering the United States. This testing was a joint effort between USDA, the U.S. Department of the Interior, and State wildlife management agencies. Wild migratory species, including primarily ducks, geese, and shorebirds, were tested. USDA and State wildlife agencies collected the samples, which were tested by 35 NAHLN laboratories and the National Wildlife Health Center. NVSL conducted all confirmatory testing. This surveillance effort ended in 2011, but USDA continues to test for AI in wild bird mortality events.

## National Animal Health Laboratory Network

NAHLN, a State and Federal partnership to safeguard animal health

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