THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212
June, 2025 Vol.5(6), 7462-7473

Popular Article

Wings of Disease: The Bird Flu Chronicle

Dr. Shruti Malakar, Dr. Sonam Ranwa, Dr. Pooja Saini, Dr. Rajendra Choudhary, *Dr. Rajni Arora,
M.V.Sc. Scholar, Department of LPM*
Assistant Professor, Department of LPM
DOI:10.5281/ScienceWorld.15773985

Abstract

Avian flu has generated widespread panic across the globe and has been confirmed as an epidemic in many parts of the world. Among the various strains of bird flu, the H5N1 influenza virus is the most commonly encountered. Human infections with H5N1 are primarily believed to result from direct or close contact with infected or sick poultry. Vulnerable populations, such as children and pregnant women, are especially at risk. Additionally, individuals with pre-existing respiratory conditions like asthma, pneumonia, and bronchitis are more susceptible to the severe effects of this potentially deadly virus.

Introduction

- "Bird flu" is a phrase similar to "swine flu," "dog flu," "horse flu", "human flu" or the viral infection caused by any of the several types of bird influenza virus.[1] Avian influenza also known informally as avian flu or bird flu, refers to "influenza caused by viruses adapted to birds.
- Bird flu is mostly affected by influenza A virus. The flu subtype virus are adapted to different types of birds so mostly Avian flu virus is also called as influenza A virus. The alphabet A does not stand for "Avian".
- H5N1 is a type of influenza virus that causes a highly infectious and severe respiratory disease in birds, commonly known as avian influenza or bird flu.
- While human cases of H5N1 avian influenza do occur occasionally, it is still challenging for this virus to transmit from person to person.

What is avian or bird flu?

- The H5N1strain of bird or avian flu is believed to be the source of infection across the globe and become the next flu pandemic, sickening and killing tons of people. The H5N1 bird flu virus from the infected bird passes it among the birds such as chickens or ducks that are being raised for human consumption.
- The infected wild birds may not show the symptoms of the bird flu but the tamed birds which are raised for human economic dependence will be seriously affected and also may lead to death.

AI viruses are divided into 2 groups based on their ability to cause disease in poultry. High pathogenicity or low pathogenicity. Highly pathogenic viruses result in high death rates(up to 100% mortality within 48 hours) in some poultry species. Low pathogenicity viruses also cause outbreaks in poultry but are not generally associated with severe disease.

Prevalence And Dissemination of Virus:

- Bird flu is mostly affected by direct contact with the infected fowl or by close contact with that of the infected persons, it is a air borne disease, like other viruses through different routes it enters from the cavities of our body (like nose, mouth, mucous membranes), bird flu is mostly affected in spring/winter season.
- Mostly this infection spread before the appearance of the symptoms and after one week of illness.
- It was wrongly believed that eating chicken will infect personnel with bird flu but properly cooked meat at 72oC for one hour will probably kill the virus and they are safe and can consume the meet.

Incubation And Life Cycle of Bird Flu:

- Current data for H5N1 infection indicate an incubation period ranging from 2 to 8 days and possibly as long as 17 days. Current data for H7N9 infection indicate an incubation period ranging from 2 to 8 days, with an average of five days. WHO currently recommends that an incubation period of 7 days be used for field investigations.

Should we Eat Meat?

- The most popular myth is that bird flu will be affected to the people who consume chicken. But the fact is Bird flu is not transmitted through cooked food.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 29 /06/2025

- The food should be thoroughly cooked and it is completely safe to eat poultry and eggs during the pandemic conditions also. Small measures will make the meet safe and free from flu are.
- Use different utensils for cooked and raw meat.
- Careful monitoring should be done while handling the meet.
- Wash your hands thoroughly with soap and warm water before and after handling meat.
- Ensure that meat is thoroughly cooked and sparkling hot before serving.

Signs And Symptoms:

In birds:

- Sudden and unexplained death
- Swelling around the head, neck, and eyes
- Purple discoloration of combs, wattles, and legs
- Drop in egg production or soft-shelled eggs
- Ruffled feathers and lethargy
- Coughing, sneezing, and nasal discharge
- Diarrhoea and dehydration
- Nervous signs like tremors or lack of coordination

In humans:

- H5N1 infections among humans range from mild, flu-like symptoms or eye inflammation to severe, acute respiratory diseases and even death.
- Upper respiratory tract symptoms such as rhinorrhea and sore throat may not be common in all patients, but the disease can progress rapidly.
- It is important to note that there is no evidence of sustained human-to-human transmission of the H5N1 virus.

Diagnosis:

- Nose and throat swab
- Chest X-ray
- Blood Tests

Virus Isolation and Identification:

- Virus isolation and identification are the “gold standard” for the detection of AIV.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 29 /06/2025

- The traditional method involves culturing the AIV from specific pathogen-free (SPF) eggs or cells and then detecting it via virus isolation.
- The respiratory secretions, brain tissue, blood, and spleens of diseased chickens can be selected as pathological material.

Advances in Detection Techniques for the H5N1 Avian Influenza Virus:

1. Serological Detection Technology
    - Enzyme-Linked Immunosorbent Assays (ELISA)
    - Haemagglutination inhibition tests and
2. Immunological Detection Technology
    - Collagen Gold Immunochromatography Technology
    - Fluorescence Immunodetection Technique
3. Molecular Biological Detection Technology
    - Reverse-Transcription Polymerase Chain Reaction (RT-PCR)
    - Recombinase Polymerase Amplification (RPA)
    - Loop-Mediated Isothermal Amplification (LAMP)
    - Nuclear Acid Sequence-Based Amplification (NASBA)

Prevention and control

- There is no specific cure for bird flu, but early diagnosis and proper management can reduce severity.
- Control & Management (As per ICAR, CARI, and IVRI guidelines):
- Culling of infected and exposed birds
- Proper disposal of dead birds (burial/lime/bleach)
- Disinfection of premises using formalin, phenol, etc.
- Quarantine and movement restriction
- Vaccination: Limited use in India; depends on government policy
- In Humans: Infections in humans are rare but can be severe. Early treatment improves survival chances.

☑ **Antiviral Drugs:**

- Oseltamivir (Tamiflu) – First-line treatment
- Zawahiri – Alternative (inhaled)
- Most effective when given within 48 hours of symptom onset

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 29 /06/2025

Preventive Measures:

- Avoid contact with sick/dead birds
- Use PPE (mask, gloves) when handling birds
- Cook poultry and eggs thoroughly
- Surveillance and reporting of outbreaks

Conclusion:

- Bird flu is a highly contagious viral disease of birds with significant economic and public health concerns. According to the Indian Council of Agricultural Research (ICAR) and the Central Avian Research Institute (CARI), the best approach to combat avian influenza lies in early detection, rapid containment, and strict biosecurity.
- Early diagnosis is crucial to controlling the spread of H5N1 AIV in good time. The methods used for detecting H5N1 AIV have been developing in the direction of more convenient, faster, more accurate, and more sensitive techniques.

Reference:

Arun Satyadev Sidhanadham et.al(2015) A REVIEW ON BIRD FLU

Jaffar A Al-Tawfiq et .al(2024) Feathered fears: Could avian H5N1 influenza be the next pandemic threat of disease

Xianshu Fu et.al (2023)Advances in Detection Techniques for the H5N1 Avian Influenza Virus