



# Avian Influenza

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## Why in News?

A recent study has shed light on significant shifts in the **ecology and evolution of highly pathogenic avian H5 influenza viruses**, revealing a change in their global distribution.

- These viruses have been of growing concern due to their potential impact on both avian and mammalian populations, including humans.

## What are the Major Findings of the Study?

- While the epicenter of these viruses was originally **confined to Asia**, the study's findings suggest that this **epicenter has now expanded to include new regions in Africa and Europe**.
- The **two H5 strains originating from African and European bird populations** were found to have evolved through **genetic reassortment with low pathogenic viral variants** as they spread.
  - This genetic reassortment is a critical factor driving the evolution and diversification of these viruses.
- The study underlined that the increasing persistence of avian influenza in wild bird populations is a **catalyst for the evolution and spread of new viral strains**.
  - Wild birds play a crucial role in transmitting and amplifying these viruses, contributing to their ongoing evolution.

## What is Genetic Reassortment?

- Genetic reassortment is a type of **genetic recombination that occurs when genes from two organisms are mixed to create a new genetic sequence**. This new sequence is called a recombinant.
- It can **increase genetic diversity during the evolution of seasonal viruses**. It can also lead to novel and potentially deadly viruses.

## What is Avian Influenza?

- **About:**
  - Avian influenza, **often referred to as bird flu**, is a highly contagious viral infection that primarily affects **birds**, particularly **wild birds and domestic poultry**.
  - In 1996, highly **pathogenic avian influenza H5N1 virus** was first identified in domestic waterfowl in Southern China. The virus is named **A/goose/Guangdong/1/1996**.
- **Transmission to Humans and Related Symptoms:**
  - Human cases of **H5N1** avian influenza occur occasionally, but it is difficult to transmit the infection from person to person. As per [World Health Organisation\(WHO\)](#), when people do become infected, **the mortality rate is about 60%**.

- It can range from **mild flu-like symptoms**, including **fever, cough, and muscle aches**, to severe respiratory issues like **pneumonia, difficulty breathing, and even cognitive problems** such as altered mental status and seizures.
- **Avian Influenza and India:**
  - **Initial Outbreak:**
    - The initial outbreak of **Highly Pathogenic Avian Influenza (HPAI) H5N1 in India occurred in 2006 in Navapur, Maharashtra**, and was followed by annual outbreaks.
    - **H5N8 was first observed in India in November 2016**, mainly affecting wild birds across five states, with **Kerala reporting the most cases**.
    - The disease has been reported in **24 states and union territories**, resulting in the culling of over 9 million birds to control its spread.
  - **Related Initiative:**
    - India's approach to controlling Highly Pathogenic Avian Influenza (HPAI) follows a **"detect and cull"** policy as outlined in the **National Action Plan for Prevention, Control, and Containment of Avian Influenza (revised - 2021)**
- **Treatment:**
  - Antivirals have demonstrated effectiveness in the **treatment of avian influenza virus infections** in humans, lowering severity and the risk of death.

## What are the Types of Influenza Virus?

Types	A Subtypes	HPAI vs LPAI
<b>Influenza A</b> (Infects a wide range of animals including birds)	Avian (Can infect humans) H5N1 H7N3 H7N7 H7N9 H9N2 H10N8	HPAI H5N1 LPAI H5N1 HPAI H5N8 LPAI H5N8
<b>Influenza B</b> (Mainly infects humans)	Swine (Can infect humans) H1N1 H1N2 H3N2	Subtypes can be classified as high path or low path based on the ability of the specific virus strain to kill chickens in the lab setting.
<b>Influenza C</b> (Infects humans and pigs but more rare than types A and B)	Most common human H1N1 H3N2	
<b>Influenza D</b> (Infects cattle)		

### Note

HPAI stands for Highly Pathogenic Avian Influenza and LPAI stands for Low Pathogenic Avian Influenza

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. H1N1 virus is sometimes mentioned in the news with reference to which one of the following diseases? (2015)**

**(a) AIDS**

- (b) Bird flu
- (c) Dengue
- (d) Swine flu

**Ans: (d)**

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