



H5N1- Avian Influenza

Why in News?

Recent reports of [H5N1 \(subtype of avian influenza\)](#) being transmitted between **mammals** have raised concerns about its **potential to cause a human pandemic**.

- Scientists are investigating a **potential spillover event after a mass mortality event that killed over 700 seals along the [Caspian Sea](#) coast** where a H5N1 variant was detected in wild birds a few months ago.

What is H5N1 Avian Influenza?

- **About:**
 - **Avian influenza** or bird flu refers to the disease caused by **infection with avian influenza Type A viruses**.
 - Infrequently, the **virus can infect mammals from birds**, a phenomenon called spillover, and rarely can spread between mammals.
 - **H5N1, a subtype of avian influenza**, has the potential to infect other mammals such as **minks, ferrets, seals, domestic cats**, and others through contact with infected **birds, their faeces, or infected bird carcasses**.
- **Symptoms in Humans:**
 - Range from mild to severe influenza-like illnesses such as **fever, cough, sore throat, muscle aches, nausea, abdominal pain, diarrhea, vomiting**.
 - People can also develop severe respiratory illness (e.g., **difficulty breathing, [pneumonia](#), acute respiratory distress, viral pneumonia**) and altered mental status, seizures etc.
- **Avian Influenza in India:**
 - In 2019, India has been declared free from **Avian Influenza (H5N1)**, which has also been notified to the [World Organization for Animal Health \(OIE\)](#).
 - **However**, in December 2020 and early 2021, **outbreaks of avian influenza H5N1 and H5N8** were reported in **poultry in 15 states in India**.
- **Treatment:**
 - Evidence suggests that some **antiviral drugs** can reduce the duration of viral replication and improve prospects of survival, however ongoing clinical studies are needed.
- **Concerns:**
 - The widespread H5N1 outbreaks have substantial economic impact, **resulting in significant losses to the [poultry industry](#)** and threatening **food and vaccine security**, apart from **raising animal welfare and environmental concerns**.

Types of Influenza Virus

- There are four types of influenza viruses: **influenza A, B, C, and D**
- Influenza A and B are the two types of influenza that **cause epidemic seasonal infections nearly every year**.
- Influenza C mainly occurs in humans, but has been known to also occur in dogs and pigs.
- Influenza D is found mainly in cattle. It's not known to infect or cause illness in humans yet.

Avian influenza Type A Viruses

- Type A viruses are classified based on two proteins on their surfaces - **Hemagglutinin (HA) and Neuraminidase (NA)**. There are about 18 HA subtypes and 11 NA subtypes.
- Several combinations of these two proteins are possible e.g., **H5N1, H7N2, H9N6, H17N10, H18N11 etc.**
- All known subtypes of influenza A viruses can infect birds, **except subtypes H17N10 and H18N11**, which have only been found in bats.

Types	A Subtypes	HPAI vs LPAI
Influenza A (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
Influenza 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.
Influenza C (Infects humans and pigs but more rare than types A and B)	Most common human H1N1 H3N2	
Influenza D (Infects cattle)		

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)

Source: TH

