

## Increased Risk H5N1 Virus in Humans

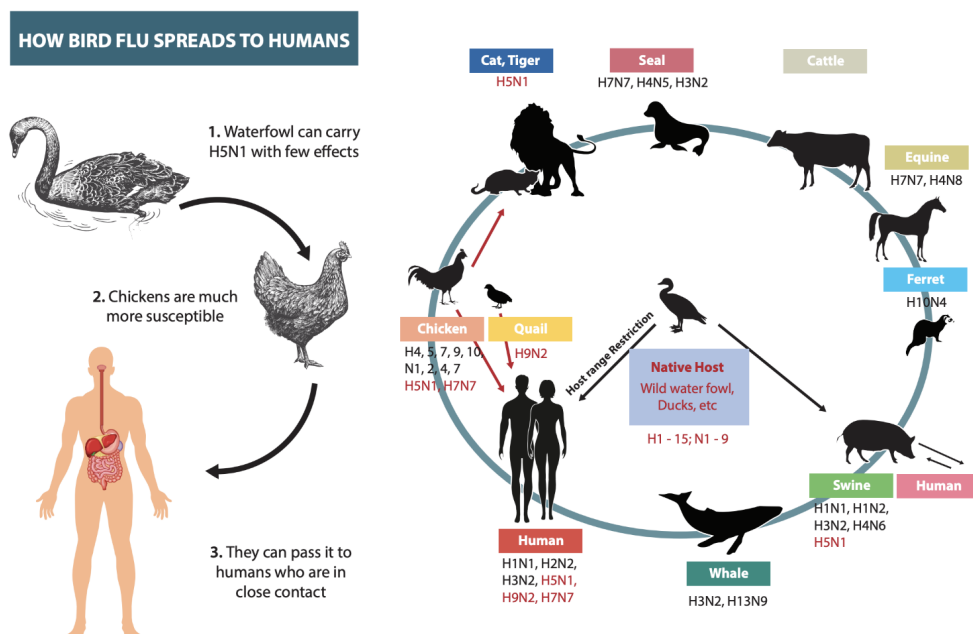
### Why in News?

Recently, the researchers found that circulating the H5N1 clade virus attached better in the human respiratory tract.

- **Avian influenza** - It is highly contagious and spreads through direct contact with infected birds or their secretions, including saliva, feathers, and faeces.

*Avian influenza* is a zoonotic disease, meaning it can spread from animals to humans.

- **H5N1** - It is a subtype of Avian Influenza A, was 1<sup>st</sup> detected in geese, China on 1996 and causing outbreaks in birds since then.
- **Key causes of spread**
  - Wildlife spillover
  - Large-scale poultry farming and poor biosecurity measures
  - Improper cooking practices



### H5N1 Clade

#### Clade 2.3.2.1a

- Detected in a child traveler returning to Australia from India, 2024.

#### Clade 2.3.4.4b

- Identified in dead migratory birds in China, November 2021.
- It is affecting wild and domestic birds and mammals worldwide.
- Since 2020, it led to an unprecedented number of deaths in wild birds and poultry in many countries.
- In 2021, spread to North America and in 2022 to Central and South America.

*A **clade**, in biology, is a group of organisms that consists of a common ancestor and all of its descendants.*

### H5N1 in Humans

- **H5N1 clade 2.3.4.4b** - Influenza A virus cross the species barrier and infect humans and spread from one person to another.
- It **infect the cells in the respiratory epithelium** of the upper respiratory tract.
- It is endowed with the ability to attach to and replicate in the upper respiratory tract lead to infection and transmission of the virus.
- The ability to attach to cells in the lower respiratory tract is associated with its ability to cause severe respiratory disease.
- **Increased risk** - The receptor binding repertoire of H5N1 virus has expanded to attach to receptors in the human upper and lower respiratory tracts.
  - There have been 64 confirmed human cases of H5N1 clade 2.3.4.4b in the U.S. as of December 2024.

*The H5N1 virus has now established its presence in 108 countries across 5 continents, impacting even endangered species like the California condor and polar bears. Alarmingly, bird flu was detected in gentoo and King penguins in Antarctica for the first time in January 2024.*

### References

1. [The Hindu| Increased Risk of H5N1 Clade Infection on Humans](#)
2. [WHO| Avian influenza A\(H5N1\) virus](#)