

1. H5N1- Avian Influenza

Prelims Syllabus: Medicine and Pharmaceuticals

Mains Syllabus: GS-II Issues relating to development and management of Social Sector or Services relating to Health, Education, Human Resources



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.

About the News:

- 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?

- 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.