



Avian Influenza: A Comprehensive Review of an Ongoing Global Threat

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DESCRIPTION

Avian influenza, often referred to as bird flu, is a highly contagious viral disease that affects birds, including domestic poultry and wild birds. In recent years, avian influenza has garnered significant attention due to its potential for zoonotic transmission to humans and its capacity to cause large-scale economic losses in the poultry industry. This research article provides a comprehensive review of avian influenza, covering its virology, transmission dynamics, impact on poultry, zoonotic potential, global surveillance efforts, and current prevention and control strategies. Understanding avian influenza is crucial to mitigating its impact on both animal and human health. Avian influenza, commonly known as bird flu, is a contagious viral disease that primarily affects birds. While avian influenza viruses have been known to exist for centuries, recent outbreaks have raised concerns due to their ability to mutate and cross species barriers. This review aims to provide a detailed overview of avian influenza, its virology, transmission dynamics, impact on poultry and humans, global surveillance efforts, and prevention and control strategies. Avian influenza viruses belong to the family *Influenzaviridae* and are classified into subtypes based on the surface glycoproteins hemagglutinin and neuraminidase. Sixteen subtypes and nine N subtypes have been identified in birds, leading to various possible virus subtypes. Among these, H5 and H7 subtypes are of particular concern due to their high pathogenicity and zoonotic potential. AIVs primarily infect wild birds, but they can also be carried by migratory birds, potentially spreading the virus across long distances. The virus can be transmitted through direct contact with infected birds, their saliva, faeces, or contaminated environments. Additionally, it can mutate and adapt to infect humans, leading to zoonotic transmission. The high mutation rate and the potential for re-assortment between AIVs and human influenza viruses pose on-going threats.

Avian influenza can have devastating consequences on the poultry industry. High pathogenic avian influenza strains can lead to significant mortality rates in domestic poultry. Outbreaks can result in culling of infected flocks, leading to substantial economic losses. The virus can also have a severe impact on the livelihoods of poultry farmers and disrupt the supply of poultry products. Certain AIV subtypes have shown the ability to infect humans. Notable zoonotic outbreaks, such as H5N1 and H7N9, have caused fatalities and raised concerns about a potential influenza pandemic. Proper surveillance and risk assessment are essential to monitor AIVs for their potential to infect humans and to develop countermeasures. International organizations and countries worldwide have established surveillance systems to monitor the spread of avian influenza. The World Health Organization (WHO), the World Organisation for Animal Health and the Food and Agriculture Organization of the United Nations (FAO) collaborate to provide guidance and share information about AIVs. Early detection, monitoring of wild bird populations, and prompt response to outbreaks are key components of these efforts. Preventing and controlling avian influenza requires a multifaceted approach. This includes biosecurity measures on poultry farms, vaccination programs for poultry, and public health interventions to reduce the risk of zoonotic transmission. The development of antiviral drugs and vaccines for humans is also a priority. Timely culling of infected birds and surveillance of potential outbreaks are essential to prevent the virus from spreading further.

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CONFLICT OF INTEREST

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