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## Avian Flu: A Looming Threat to Global Health Security



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Avian influenza A(H5N1), a highly pathogenic virus, known as bird flu is emerging as a serious global health security risk. Avian flu subtypes H5N1 and H7N9 circulate in bird populations worldwide with high genomic diversity and the ability to reconstruct with the human influenza virus to introduce new strains capable of zoonotic (human-to-human) transmission. Influenza virus evolves and develops new pathogenic strains very rapidly. Around 50 million people died due to the 1918 'Spanish flu' pandemic caused by an H1N1 influenza virus [1]. In addition to the H1N1 pandemic (Swine flu) in 2009, there have been a few other human AIV pandemics in the past decades: the H2N2 pandemic (Asian flu) in 1957 and the H3N2 pandemic (Hong Kong flu) in 1968 [2].

The H5N1 outbreak not only infects birds but also breaks and crosses the interspecies barrier and affects mammals including animals and humans. H5N1 virus has limited human transmission because it binds to alpha-2, 3-linked sialic acid receptors (during its replication cycle) which are less abundant in the human respiratory system as compared to birds but its genetic reassortment ability makes it highly pathogenic and a health hazard for humans. The outbreak of the H5N1 virus has been reported currently in US dairy cows and workers. In humans, it can cause severe respiratory problems, multi-organ failure, and high mortality rates. Four humans have been affected since 2020 in the US [3]. The Centers for Disease Control and Prevention (CDC) is thoroughly monitoring the people with animal exposure, carefully inspecting the situation, and currently reporting a low public health risk. Experts are raising alarm about the transfer of viruses from birds to humans and are urging the implementation of new protocols for handling airborne infectious diseases. However, the worldwide spread of H5N1 and its ability to infect mammals causes major threats regarding the potential for human-to-human transmission, which may result in a pandemic. In addition to its potential impact on human health, bird flu poses an immense threat to agriculture and food security because of its economic implications.

As the avian flu continues to pose a persistent and evolving threat to global health security, national, regional, and global vigilance, preparedness, and collaborative actions are needed. It is important to maintain robust surveillance, respond rapidly, and innovative prevention and control strategies due to sporadic outbreaks of avian flu. Management of avian flu demands a coordinated effort to protect human and animal health, mitigate economic impacts, and improve the global health security.

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