

Epidemiology of avian influenza in India

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Abstract

Highly pathogenic avian influenza (HPAI) H5N1 Virus first reported in 1996 in domestic geese. The upsurge of HPAI H5N1 epizootic waves connected to changes in rural practices, escalation of the poultry part, globalization of exchange live poultry and poultry items.

Exceptionally pathogenic avian flu (HPAI) A (H5N1) infection happens principally in winged creatures and is profoundly infectious among them. HPAI Asian H5N1 is particularly lethal for poultry. The infection was first distinguished in 1996 in geese in China. Asian H5N1 was first identified in quite a while in 1997 during a poultry flare-up in Hong Kong and has since been distinguished in poultry and wild winged creatures in excess of 50 nations in Africa, Asia, Europe, and the Middle East. Six nations are viewed as endemic for Asian HPAI H5N1 infection in poultry (Bangladesh, China, Egypt, India, Indonesia, and Vietnam).

Since its broad reappearance in 2003, uncommon, irregular human contaminations with this infection have been accounted for in Asia and later in Africa, Europe, and the Middle East. Human contaminations with Asian H5N1 infections have been related with serious malady and passing. Most human contaminations with avian flu infections, including HPAI Asian H5N1 wellbeing readiness measures at whatever point an infection with pandemic potential is recognized. Since Asian H5N1 keeps on flowing and has been answerable for various human contaminations, Asian H5 readiness endeavors have been broad. Asian H5N1 immunization is being amassed for pandemic readiness by the United States government. It could be utilized if a HPAI H5N1 infection starts transmitting effectively and proficiently from individual to individual.

Epidemiology of avian Influenza:

Avian flu is an exceptionally infectious viral ailment, described by an extraordinary dissemination in numerous wild water bird store populaces, with periodical presentation into the residential poultry division. Artificial intelligence infections have been the wellspring of crushing monetary misfortunes in the poultry business in the course of the most recent three decades and have gotten a significant veterinary and general wellbeing worry because of their zoonotic potential. Flare-ups brought about by profoundly pathogenic avian flu (HPAI) infections have caused genuine creature wellbeing emergencies around the world, for example, the high case casualty rates in poultry, the control gauges that are applied (gigantic pre-emptive winnowing or inoculation) and the results of infection recognition on the worldwide poultry produce exchange.

Methodology

The avian influenza outbreaks data from 2008-2012 was collected from open free data sources and other seroprevalence data was collected and descriptive statistics were carried out along with clusters identification. A heat map was plotted using open source software to find the hot spots during 2008-2010 outbreaks in three states West Bengal, Assam and Tripura. Since 2006 to 2012, 14 Indian states were affected with H5N1 AI outbreaks. Most of the H5N1 AI outbreaks were restricted to Eastern and North Eastern states of India. Among the affected states, maximum number of outbreaks occurred in west Bengal & in Murshidabad district.

Findings

Totally forty six districts were affected. Case Fatality rate (CFR), morbidity rates & mortality rates ranged from 37.2%-100%, 0.15-93.05%, 0.15-92.4%. H5N1 prevalence ranged from 0.21% to 13.53%. The overall prevalence was 1.68%. From the heat map, 3 distinct primary clusters and few secondary clusters were found in outbreaks of Poultry. Majority of the outbreaks occurred in 2008 involving three eastern and north eastern states leading to huge loss. Outbreaks occurred in all months except in June. Ten outbreaks reported from poultry farms, five from wild bird species and others from backyard poultry.

Conclusions and significance:

Outbreaks were more common during winter season with low temperature, low wind speed and low solar irradiance enhancing survivability of virus in environment. Phylogenetic analysis of HA region of H5N1 outbreak isolates reveals that clade 2.2 viruses were circulating from 2006 onwards and clade 2.3.3 viruses during 2011. Apart from H5N1 Viruses, others like H5N8, H9N2, H4N6, H11N1, H9N3, H2N2, H3N2 viruses were isolated from different bird species/ducks from different places in India. There were outbreaks in crows in various parts of country in 2011 onwards signifying public health concern since they live in closer environment of people. Isolation from wild water/migratory birds indicates reservoir nature without symptoms, may act source of infection for other species.

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