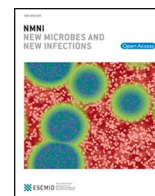




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# New Microbes and New Infections

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## Letter to the Editor

### Emerging threats in public health: H5N1 transmission from dairy cattle to humans

Dear Editor

The recent case of the first known human infection with the Highly Pathogenic Avian Influenza A(H5N1) virus in a Texas dairy farm worker represents a significant juncture in our understanding of the transmission dynamics and potential threats posed by this lethal virus [1]. This case describes a dairy farm worker presenting with conjunctivitis characterized by subconjunctival hemorrhage, yet devoid of the severe respiratory distress typically associated with H5N1(1). This atypical manifestation prompts a reassessment of our expectations regarding the clinical presentation of H5N1 infections, particularly in novel transmission scenarios. This case serves as a reminder of the need for healthcare providers, particularly in rural and agricultural settings, to have access to advanced diagnostic technologies [1].

The unconventional transmission vector is concerning. Traditionally, H5N1 has been associated with poultry [2]. However, this case suggests transmission through contact with infected dairy cattle, introducing a new vector that demands our attention. This novel transmission route shows the adaptive nature of H5N1 and its capacity to exploit various hosts, which could complicate control efforts and necessitate a broadening of current surveillance systems to include a more diverse range of potential animal vectors.

The genetic analysis revealing close relations between the virus in the human case and those found in dairy cattle and local wild birds indicates an intricate interplay between domestic animals and wildlife in the epidemiology of H5N1. This finding is pivotal, as it suggests that our current surveillance and control efforts may be too narrowly focused. Comprehensive genetic sequencing and analysis should become standard practice in the investigation of zoonotic spillovers, providing crucial data that can inform public health strategies and interventions.

This case carries significant implications for the field of public health. It indicates the necessity for comprehensive surveillance systems that encompass not only poultry and wild birds but also other domestic animals and wildlife. Such systems should integrate advanced molecular diagnostics to swiftly detect and characterize viruses. The risk to agricultural workers exposed to potentially infected animals is palpable. This case demonstrates the urgent need for stringent biosecurity measures, including the use of personal protective equipment (PPE) and the implementation of strict hygiene protocols on farms [3]. Educational programs targeting farm workers could significantly mitigate the risk of zoonotic disease transmission by enhancing awareness and compliance with safety measures. Given the pandemic potential of H5N1, there is a critical need for global collaboration in surveillance, research, and resource allocation to enhance preparedness and response capabilities. This includes fostering partnerships between agricultural, wildlife, and public health sectors to develop a unified approach to zoonotic disease prevention and control [4].

The detection of HPAI A(H5N1) in a dairy farm worker is a clarion

call to the global health community. It compels us to reconsider our current understanding of how such viruses spread and manifest in human populations. This case not only adds to the body of evidence regarding the transmission dynamics of H5N1 but also sets a precedent for how we might approach emerging infectious diseases in the future. In light of these findings, it is imperative that we take immediate action to enhance our surveillance systems, refine our diagnostic capabilities, and strengthen our public health infrastructures. By doing so, we can better protect those at the frontline of our food systems and, by extension, the broader public from the ever-present threat of emerging zoonoses.

#### CRediT authorship contribution statement

**Muhammed Shabil:** Conceptualization, Writing – original draft. **Mahalaqua Nazli Khatib:** Resources, Writing – review & editing. **Shilpa Gaidhane:** Data curation, Writing – review & editing. **Quazi Syed Zahiruddin:** Writing – review & editing. **Sarvesh Rustagi:** Conceptualization, Supervision. **Prakasini Satapathy:** Writing – original draft. **Ranjit Sah:** Methodology, Writing – review & editing.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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