

One Health on the Ground: Experiences in Avian Influenza Containment at Gondia, Maharashtra

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Gondia, located in the northeastern border region of Maharashtra, shares its eastern boundary with Chhattisgarh and its northern boundary with Madhya Pradesh. Geographically positioned at the heart of India, Gondia spans an area of 5,859 square kilometers, with 2,833 square kilometers covered by forests. The district holds significant ecological importance due to the presence of two protected areas: Navegaon Bandh National Park and Nagzira Wildlife Sanctuary. Gondia is also renowned for its abundance of lakes and ponds, earning it the title of the “Lakes District of Maharashtra.”

Many migrating birds arrive in India in September and depart by the end of March. Active and targeted surveillance of migratory birds and poultry consists of clinical surveillance (clinical signs of AI at the flock level), virological surveillance (cloacal and oropharyngeal swabs), and serological surveillance.

Since September 2020, all veterinary departments have been actively looking for unusual mortality in poultry, wild birds (crows), migratory birds, and live bird market areas in the Gondia district. The respective area veterinarian collected data on poultry birds and farm locations and facilitated meetings with poultry farm owners. The rapid response teams (RRTs) were prepared. The Pune Commissioner's Office organized training for veterinary staff to ensure all veterinarians were fully informed about the revised action plan for avian influenza—a proactive initiative enhancing preparedness and providing a coordinated response to potential outbreaks.

During active surveillance, in early 2021, a poultry farm in Tedha, Gondia, Maharashtra, experienced unusual bird mortality. The District Deputy Commissioner and District Animal Husbandry Officer of Gondia visited the site with the

in-charge veterinarian and ensured the timely dispatch of samples. The samples from the affected birds were forwarded by the Regional Research Diagnostic Laboratory (RRDL) in Nagpur to the National Institute of High-Security Animal Diseases (NIHSAD) in Bhopal. The results confirmed the presence of the highly pathogenic avian influenza (AI) virus, H5N1, which posed a significant threat to animal and public health. This outbreak necessitated a multi-sectoral response rooted in the One Health approach, emphasizing collaborative efforts between various government departments to mitigate the crisis effectively.

Initial Response and Containment Measures

Upon confirmation of the H5N1 outbreak, the District Collector of Gondia promptly declared the affected farm and its surroundings an infected zone as per “The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009.” The area within one kilometer of the site of confirmed AI was designated as the “Infected Zone,” while the area within 10 kilometers became the “Surveillance Zone.” This official notification facilitated the implementation of strict biosecurity measures to prevent the virus from spreading further. To ensure a coordinated response, the Collector appealed to all relevant government departments within his jurisdiction to join emergency operations. An absolute ban on the movement of poultry, the closure of poultry and egg markets/shops, and restrictions on the movement of people were enforced through notifications.

The RRT from the Department of Animal Husbandry, Gondia, was immediately mobilized to the outbreak site. Their primary task was culling of infected and potentially exposed birds to contain the virus. The RRT consisted of veterinarians and supporting staff, who worked tirelessly to cull 8,922

broiler birds. Alongside this, 1,800 kg of feed and 145 eggs were also destroyed. The disposal of carcasses and other potentially infected materials was carried out with utmost care. The construction department provided JCB machines for digging pits for the burial of infected materials. The Forest Department allocated land for these disposal activities, ensuring the area's isolation from public access. The disposal pits were marked with warnings, stating, "Don't dig and open till dated one year," in the regional language (Marathi) to prevent accidental exposure.

Cross-Sectoral Collaboration

The containment operation exemplified the One Health approach, integrating efforts across various departments:

Law Enforcement: The police department maintained public order during the culling process, ensuring that the operation proceeded without interruptions or disturbances.

Public Health: The health department provided medical aid and routine health check-ups for the RRT members, who were at potential risk of exposure to the virus. This included prophylactic antiviral medications and vaccinations to safeguard their health.

Infrastructure Support: The construction department contributed essential machinery for digging disposal pits, while the Forest Department identified suitable land for carcass burial, ensuring environmental safety.

Compensation and Rehabilitation: The revenue department facilitated financial compensation to affected poultry farmers, adhering to government guidelines. However, the financial losses incurred by farmers highlighted the need for policy-level reforms to ensure adequate and timely remuneration.

Sanitation protocols were rigorously followed to ensure thorough disinfection of the area. Cleaning was carried out using jet pumps and 2% hypochlorite solution to reduce the virus load in the litter. Bleaching powder and lime were sprinkled on shed floors, and concrete areas were whitewashed with lime. Sheds were fumigated with potassium permanganate (KMnO₄) and formalin, while equipment was treated with a 2% sodium hypochlorite solution for 48 hours. Feathers, litter, feed, gunny bags, and egg trays were burned, and cages and other large metal structures were heat-treated with a flame gun. Water reservoirs

and feed tanks were disinfected thoroughly to prevent further contamination.

Post-Outbreak Surveillance and Recovery

After the outbreak was contained, thorough post-surveillance activities were carried out in the areas surrounding the infected zone. Farmers were allowed to restart poultry production and marketing 90 days after receiving a sanitation certificate. New eggs, chicks, and/or birds could only be procured from areas known to be free from AI. The "Surveillance Zone" (1-10 km from the epicenter) involved collecting serum and cloacal/oropharyngeal swab samples from poultry in both commercial and backyard setups. Four rounds of samples were collected as per guidelines and sent to NIHSAD, Bhopal, on a fortnightly basis. Fortunately, all samples tested negative, and repopulation of poultry was permitted three months after the sanitation certificate was issued. While the outbreak was managed successfully, the economic impact on farmers was profound. The loss of poultry and the cost of containment placed a significant financial burden on the affected community. Although compensation was provided, the experience underscored the inadequacy of current remuneration frameworks in addressing the true extent of economic losses faced by farmers during such outbreaks.

Lessons Learned and Policy Recommendations

The Gondia avian influenza outbreak highlighted the efficacy of the One Health approach in managing zoonotic diseases. Timely collaboration between diverse government departments ensured swift containment and minimized the risk of further spread. However, the experience also pointed to areas needing improvement:

Strengthening Remuneration Policies: The policy reforms to provide fair and timely compensation to affected farmers would alleviate their immediate financial distress and encourage compliance with disease containment measures.

Enhanced Surveillance and Early Warning Systems: Robust surveillance mechanisms can help detect outbreaks at an earlier stage, allowing for quicker intervention.

Capacity Building: Training programs for RRTs and other stakeholders can enhance preparedness and ensure a more efficient response to future outbreaks.

The Gondia outbreak demonstrates how a One Health approach can effectively address complex health issues at the junction of human, animal, and environmental health. While the immediate threat was curtailed, the economic and emotional toll on the

affected farmers must drive policymakers to adopt comprehensive measures to support the poultry industry in the long term. Only through such efforts can the resilience of the agricultural sector and public health systems be strengthened against future crises.

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