

Failure to isolate sick chickens: A preventable driver of Newcastle disease spread in smallholder poultry farms in Banadir, Somalia

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Abstract

Newcastle disease (ND) remains a major cause of mortality, economic loss, and food insecurity in smallholder poultry systems across Africa. This article examines the failure to isolate clinically sick chickens as a preventable driver of ND transmission in Banadir, Somalia. Drawing on evidence from African village poultry farms and live bird markets, it highlights how mixed-age flocks, free-range management, shared feeding and watering equipment, poor waste disposal, uncontrolled bird movement, and delayed recognition of disease signs increase opportunities for virus spread. The risk is further amplified by live bird trade, inadequate quarantine of newly introduced birds, weak biosecurity practices, limited access to veterinary services and vaccines, and insufficient farmer knowledge. In Banadir's resource-constrained poultry systems, a single infected bird can repeatedly expose susceptible flockmates through direct contact and environmental contamination. The consequences of ND extend beyond flock losses, threatening household nutrition, income generation, and resilience among low-income and women-dependent households. The article recommends immediate isolation of sick birds, quarantine of newly purchased poultry, restriction of sick-bird movement and sale, routine cleaning and safe carcass disposal, vaccination, rapid outbreak reporting, community-based surveillance, and strengthened extension services. Consistent implementation of these low-cost measures can reduce ND transmission and improve the sustainability of smallholder poultry production in Banadir.

Main Text

Newcastle disease (ND) is one of the most economically devastating infectious diseases affecting poultry and remains a major constraint on village and smallholder production systems across Africa (Hu et al., 2022). Virulent Newcastle disease virus can produce severe systemic disease and high flock mortality, with reported mortality in African village poultry sometimes reaching 70–100% (Hu et al., 2022).

In Somalia, where poultry contributes to household nutrition and cash income under resource-constrained conditions, inadequate isolation of sick birds deserves greater attention as an overlooked but preventable driver of persistence and spread. Where locally specific studies are scarce, evidence from East African and broader African smallholder systems provides a relevant basis for preventive action (Hu et al., 2022).

Failure to separate clinically ill chickens accelerates ND transmission because infectious poultry diseases are commonly spread from sick or dead birds and their secretions and excretions (Grace et al., 2024). Isolation is therefore a core smallholder biosecurity measure, alongside traffic control and sanitation, yet it is often absent or inconsistently practiced (Grace et al., 2024).

Evidence from Nigeria identifies lack of quarantine of sick birds, mixed-species rearing, free-range management, poor waste disposal, and insufficient biosecurity as factors that can promote renewed outbreaks (Obioma A et al., 2024). In Sokoto, poor handling of sick birds, failure to isolate sick or new

birds, sale of sick birds, multi-age management, and inadequate disinfection were all associated with high-risk poultry settings, especially in live bird markets(Garba & Mungadi, 2023).

These observations are highly relevant to Banadir, where smallholder poultry systems commonly include mixed-age flocks, unrestricted movement of birds, shared feeders and drinkers, communal scavenging, and delayed recognition of clinical signs. Such conditions increase contact rates and contamination opportunities, allowing one clinically sick bird to expose susceptible flockmates repeatedly. Across African village systems, free-ranging chickens comeingle with other domestic fowl and wild birds, making implementation of strict biosecurity difficult(Ouma et al., 2023).

Even apparently healthy birds can introduce infection, which is why quarantine of incoming stock from unknown sources is recommended(Grace et al., 2024).Live bird markets further magnify the consequences of poor isolation. In a Tanzania market study, 23% of sampled local chickens were PCR-positive for NDV, and infection odds increased when birds remained in the market for two or more days(Tsaxra et al., 2024).

The same market had dense mixed-species enclosures, limited biosecurity, and visibly ill birds, while traders reported long transit times in mixed enclosures without regard to sickness or vaccination status(Tsaxra et al., 2024).

Kenyan surveillance similarly found widespread NDV in backyard farms and live bird markets, with virulent virus detections concentrated more heavily in markets, supporting the role of poultry trade in dispersal(Kariithi et al., 2021) regionally, phylogeographic analyses show transboundary transmission in Eastern Africa, underscoring how local failures in farm-level biosecurity can contribute to wider spread (Amoia et al., 2024).

The consequences extend beyond flock health. Smallholder poultry supports household nutrition, income generation, and rural resilience across Africa(Tsaxra et al., 2024)ND outbreaks therefore undermine food security and livelihoods, especially where women and low-income households depend on poultry as an accessible asset(Ouma et al., 2023).Control is further weakened by limited veterinary extension, poor access to vaccines, cold-chain constraints, and insufficient farmer knowledge(Ouma et al., 2023)(Ouma et al., 2023).

Knowledge matters: in Kenya, greater ND vaccine knowledge markedly increased the likelihood of vaccine uptake, while greater distance to vendors reduced uptake(Waweru et al., 2023).Several low-cost measures are immediately justified. Farmers should isolate sick birds at first recognition of respiratory, digestive, or neurologic signs; avoid selling or moving visibly ill birds; and quarantine newly acquired birds before flock introduction(Grace et al., 2024).

Shared feeders, drinkers, carcass disposal sites, and equipment should be cleaned and managed to reduce environmental contamination(Garba & Mungadi, 2023) These measures should be reinforced by

routine vaccination, rapid reporting of suspected outbreaks, community-based surveillance, and stronger extension services tailored to low-input systems(Hu et al., 2022).

Failure to isolate sick chickens in Banadir is not a minor husbandry oversight; it is a preventable pathway for Newcastle disease transmission. Coordinated action by veterinarians, livestock authorities, researchers, extension personnel, development partners, and poultry keepers is needed to embed isolation, basic biosecurity, vaccination, and local surveillance into everyday flock management. Reducing ND spread in smallholder poultry farms in Banadir will depend not only on better tools, but on consistent use of the simplest protective practice: separating sick birds before they infect the rest.

Declarations

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Ethical Approval

This study did not involve any human or animal subjects, and thus, did not require review by an Institutional Review Board (IRB).

Author Contributions Statement

M.A.H. conceived the study, conducted the literature review, analyzed the evidence, and drafted the manuscript. A.M.F. contributed to the study design, data interpretation, and critical revision. S.N.M. assisted with literature collection, reference management, and manuscript editing. S.M.A. contributed to data interpretation, language editing, and manuscript review. A.T.T. supervised the study, provided methodological guidance, and critically reviewed the manuscript. All authors read and approved the final manuscript.

Data Availability

No new datasets were generated or analyzed during the current study. All information used in this manuscript was obtained from publicly available sources cited in the reference list.

Conflicts of Interest

None

Clinical Trial Number

Not applicable.

Ethics Approval and Consent to Participate

Not applicable. This study did not involve human participants, human data, human tissue, or animals; therefore, ethics approval and informed consent were not required.

Consent to Publish

Not applicable.

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