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Letter to the Editor

Newcastle disease outbreak in the state of Rio Grande do Sul, Brazil 2024: Is there any impact on Jordan as one of the major importers of Brazilian poultry?

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Dear Editor,

Newcastle disease (ND) is a highly infectious viral illness that affects birds, both the wild and domestic poultry ones worldwide. ND is caused by Newcastle Disease Virus (NDV), namely, Avian Paramyxovirus-1 (APMV-1). Three main strains of NDV with different level of virulency can result in three forms of the disease, including, lentogenic strain (least virulent) which causes mild illness, mesogenic strain (moderately virulent) which causes moderate illness, and the velogenic strain (highly virulent) which results in a severe form of disease with high mortality rate [1]. The virus can live for several weeks in a warm and humid environment on feathers, manure and other inanimate objects.

The primary source of NDV is infected or carrier birds, both domestic and wild ones. Infected or carrier birds shed the virus through their respiratory secretions, feces, and other bodily fluids. Virus-laden respiratory aerosols and ingestion of viral particles present in feces are common pathways of transmission to susceptible birds. Additionally, the virus can also spread through contaminated objects or materials [2,3]. This includes contaminated feed, water, equipment, clothing, and shoes that can carry the virus from infected to susceptible birds as well as across farms and regions. See Fig. 1. Following infection, the symptoms appear in two to 12 days.

Some NDV attack the respiratory system, while others attack the digestive or nervous systems. The symptoms are closely similar to avian influenza; therefore, laboratory confirmation is required to reach a definitive diagnosis. Clinical signs of ND among birds may be respiratory (e.g., sneezing, coughing, nasal discharge, gasping), digestive (e.g., diarrhoea, decrease feed), neurological (e.g., paralysis in legs and wings, twisted neck, tremors, ataxia), reproductive (e.g., drop in egg production, eggs abnormalities), and sudden death [1]. The consequences of the infection may vary depending on various factors such as the immune status of the birds, environmental stress, strain virulency, viral load, concurrent infection with other pathogens, as well as the vaccination status of the birds.

The severe form of ND is reportable to the World Organization for Animal Health (WOAH). ND is considered a minor zoonosis in which viral transmission to humans can cause mild and self-limiting conjunctivitis. Nevertheless, the disease is a threat to commercial poultry. On 17 July 2024, Brazil has declared the outbreak of ND in a chicken farm in Rio Grande do Sul state (the third largest exporter of chickens in Brazil), after the death of 7000 birds in the same poultry farm [4]. The 2024 ND outbreak represents the first major occurrence since the last outbreak in 2006. Brazil is considered the world's top chicken exporter with around 430,000 tons of poultry products are exported every month, and the announcement of ND in Rio Grande do Sul state forced the Brazilian authorities to immediately and temporarily halt chicken exportation to many countries, including Jordan.

Jordan, a middle-income country in the Eastern Mediterranean Region (EMR) is one of major importers of Brazilian poultry in the middle east. Jordan imports approximately 80,000 tons of chicken annually, 90% of which comes from Brazil. However, the country will not be affected by halting the importation of Brazilian chickens, as 85% of the Jordanian market depends on local chicken production, while around 15% is imported as a frozen chicken [5]. Historically, ND was reported in Jordan in 2006, and 17000 chickens were affected. In 2018, dead and live poultry were found in a store suffering from ND, mainly with digestive symptoms. All the poultry inside that store, weighing around 300 kg, were destroyed.

Looking at ND from a public health lens, the disease as previously mentioned, is not considered harmful to humans. Nevertheless, the disease may impose a significant threat to poultry industry; thus, impacting food security and safety. Stringent and effective biosecurity measures are pivotal to mitigate the risk of NDV spread and transmission. Prophylactic vaccination, minimizing environmental stress on birds, ensuring well-ventilated birds houses, clean feed and water supplies, along with maintaining high-level of infection prevention measures in the transporting vehicles and among the farmers/personnel are essential risk mitigation strategies [1,2]. Once ND is confirmed in a poultry farm, strict management and surveillance protocols should be implemented, including proper disposal of dead birds, isolation/quarantine of healthy birds from infected ones, strict control on poultry farm access, as well as disinfection of farms premises.

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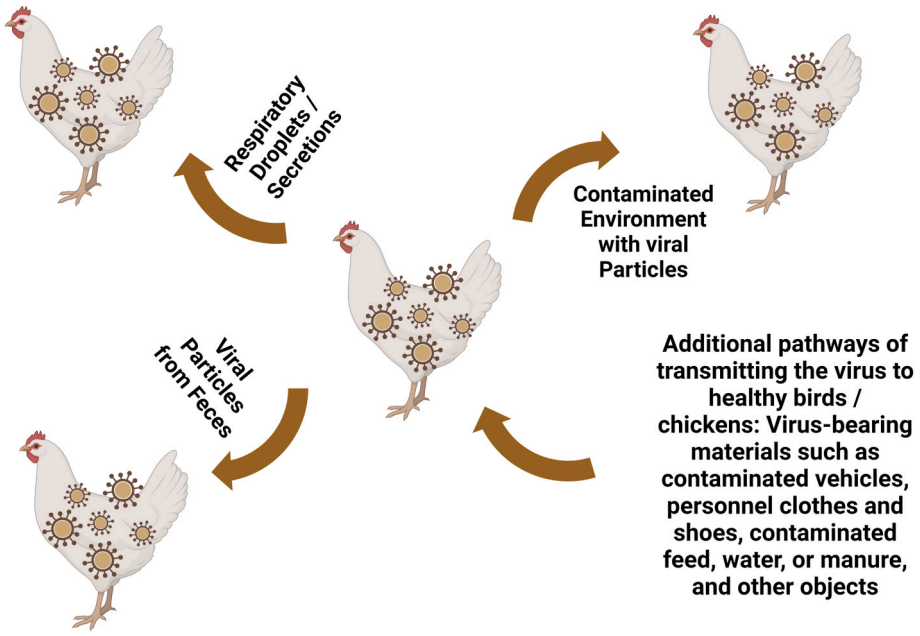

Fig. 1. Transmission Routes of Newcastle Disease Virus (NDV). The figure was created using BioRender.com.

CRediT authorship contribution statement

Ala'a B. Al-Tammemi: Conceptualization, Data curation, Software, Supervision, Visualization, Writing – original draft, Writing – review & editing. **Mus'ab Banat:** Conceptualization, Data curation, Writing – original draft, 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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Fig. 1 was created using BioRender.com.

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