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Prevalence and Economic Implications of Infectious Bursal Disease (Gumboro Disease) in Kwara State, Nigeria

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Abstract – **Infectious Bursal Disease (IBD) is a viral infection, affecting the immune system of poultry, highly contagious and characterized by destruction of the lymphoid organs (bursal of fabricious). Worldwide in distribution, occurring in all major poultry producing areas. Clinical disease occurs mainly in Chicken although Turkey, Ducks, Guinea fowls and Ostriches may be infected.**

The study was carried out between January to June 2012 in Kwara State. Due to high prevalence of Gumboro disease in Nigeria it has become necessary to attempt to quantify the economic impact of Gumboro disease, so that it's economic losses could be appreciated and for quick decision to be made on how to prevent and control the disease. Direct economic losses are linked to specific mortality and depend on the dose and virulence of the strain of IBD virus, age, breed of poultry and the presence or absence of passive immunity, while the indirect impact of Gumboro disease are linked to virus – induced immune-suppression and/ or potential interaction between Infectious bursal disease virus and other viruses, bacteria and parasites, causing retarded growth.

The study revealed that 462,200 exotic poultry birds were kept in Kwara State, 53.12% layers, 40.28% broiler and 6.6% cockerel. About 51.15% poultry bird were kept on deep litter system, 43.58% on battery cage system whereas 5.27% used combined systems. It was observed that 74.7% used imported Gumboro disease vaccine while 22.5% used local vaccine produced by the National Veterinary Research Institute, Vom whereas 2.8% did not border about vaccination. About 88.3% of the farms sampled had experienced Gumboro disease one time or the other.

The negative impact of Gumboro disease can be minimized by good planning, effective vaccination and sound biosecurity measures. Based on high economic losses from Gumboro disease as revealed through this study, it would be important to plan and execute appropriate preventive strategies against the disease.

Keywords – **Infectious Bursal Disease, Economic Implication, Prevalence, Kwara State.**

I. INTRODUCTION

Infectious Bursal Disease (IBD) is caused by double stranded RNA virus, stable, non enveloped measuring 55-65nm in diameter, of family Birnaviridae, first described as a specific disease by Cosgrove 1962 in the town of Gumboro in U S A (Ojo et al, 1973, Musa et al, 2012).

Highly contagious affecting young birds (mainly chicken) but could affect other avian species (Adewuyi et al, 1990). The disease is rapidly fatal in susceptible non–immune bird (OIE, 2008). IBD occurs at any time of the year (Owoade and Durojaiye, 1995).

Immune system of poultry are affected, characterized by destruction of the lymphoid organ especially bursal of fabricious (De-wit *et al*, 2001). In Nigeria, it was first reported by Ojo et al, (1973) in chicks of 2-7weeks old. It was believed that the infection came from importation of day old-chicks, it is now endemic in the country. Mode of transmission is mainly through direct contact and contaminated material. The present study was to determine the prevalence of IBD in kwara state, to quantify the economic losses (material and social) due to Gumboro disease in monetary terms, for prompt action to be taken on how to effectively prevent and control the disease, to determine the effect of economic losses on the morale of poultry farmers in the state and to determine the level of adoption of vaccination as a preventive measures.

II. MATERIAL AND METHODS

Study Area

Kwara state is located in the NorthCentral geo-political zone of the country with Ilorin as the capital city. It lies on latitude 8°, 31'N and longitude 4°, 35'E. It Shares boundaries with Oyo, Ekiti, Kogi, Niger and Osun States. The 2006 national census report indicates that human population in kwara State was 2, 371,089. The study was carried out between January to December 2012. Preliminary investigation was made to identify and locate registered farms in the state. Farmers were interviewed using well structured questionnaires. The questionnaire was designed to gather information on various practices in farms with regard to IBD vaccination and it's outbreak in such farms. An individual questionnaire was conducted within six months of the field work so as to assess the IBD vaccination history and to collect data on husbandry management on the farms. Those interviewed, produced farm record book as proof of their claims. Most of those that granted us interview were old time farmers who had a lot of experience on the field. Personal observation and interrogation were made on each farms visited on IBD. Ten private veterinary clinics and two government owned state veterinary clinics were visited, to collect appropriate records such as vaccination returns and details of outbreaks on IBD.

III. RESULT

Records from the state Veterinary Department and findings on the field has revealed through the

questionnaire indicated that there are 462,200 exotic poultry kept in kwara state as at December 2012, 53.12% were layer, 40.28% broiler and 6.6% cockerel. On the management adopted, 51.15% kept on deep litter, 43.58% on battery cage while 5.27% used both systems

74.7% of the farms in kwara state used imported vaccine, 22.5% used local vaccine (NVRI) while 2.8% of the farms did not border about vaccination and the highest mortality rate of 93% was recorded in such instances. In this study 88.3% of farms sampled had experienced IBD one time or the other.

Table 1: Economic losses due to Gumboro disease between Jan-Dec 2012 in kwara, Nigeria.

Age of affected bird	Mortality	Estimated cost per bird	Total
2-4weeks	14,546	#250	#3,636,500
4-6weeks	45,850	#365	#6,735,250
6-8weeks	13,225	#580	#7,670,500
8-10weeks	7,263	#720	#5,229,360
10-12weeks	1,585	#810	#1,283,850
Total	82,469		#24,555,460

Direct losses due to mortality of 82,469(17.84%) poultry estimated about 24,555,460 million naira per year, untimely death of five poultry farmers as claimed by respondent in the state

Indirect losses due to Immunosuppression, secondary bacteria infection and vaccination failure led to reduction in productivity (Ahmed and Akhter, 2003). The Imported vaccine was readily available and cheaper (Musa et al, 2010). One hundred and five people lost their job due to partial or total collapse of some farms within the state as revealed by the questionnaire.

Experienced farmers carried out vaccination by themselves inorder to reduce cost of production (Dashe et al , 2009). It was observed that poor biosecurity measures contributed to the magnitude and spread of IBD in the state (Younus, 1994).

Severity of infection depend on immune status of bird, strain of virus, age of affected bird and management (Islam and Samad, 2004). IBD appears common in young poultry of 3-8 weeks old especially in domestic fowl.

IV. Conclusion

IBD outbreaks contributed to low productivity, partial or total collapse of some farms in kwara state.

The level of adoption of vaccination against IBD was very high in the study area though many farms still suffer from IBD.

Good planning, effective vaccination and sound biosecurity measures were necessary to reduce the negative impact of IBD.

Vaccine must be handled and administered only by veterinarian.

Farmer should minimize all stress factors during the brooding period such as poor ventilation and extreme heat.

Since most farmers used imported vaccine, Government must strictly monitor the imported vaccine to ensure compliance with standard.

NVRI should be empowered to produce enough vaccine to discourage the use of imported vaccine.

NOTE; Conflict of Interest. The author declare that there is no conflict of interest.

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