

# Epidemiology of Gumboro Disease

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&

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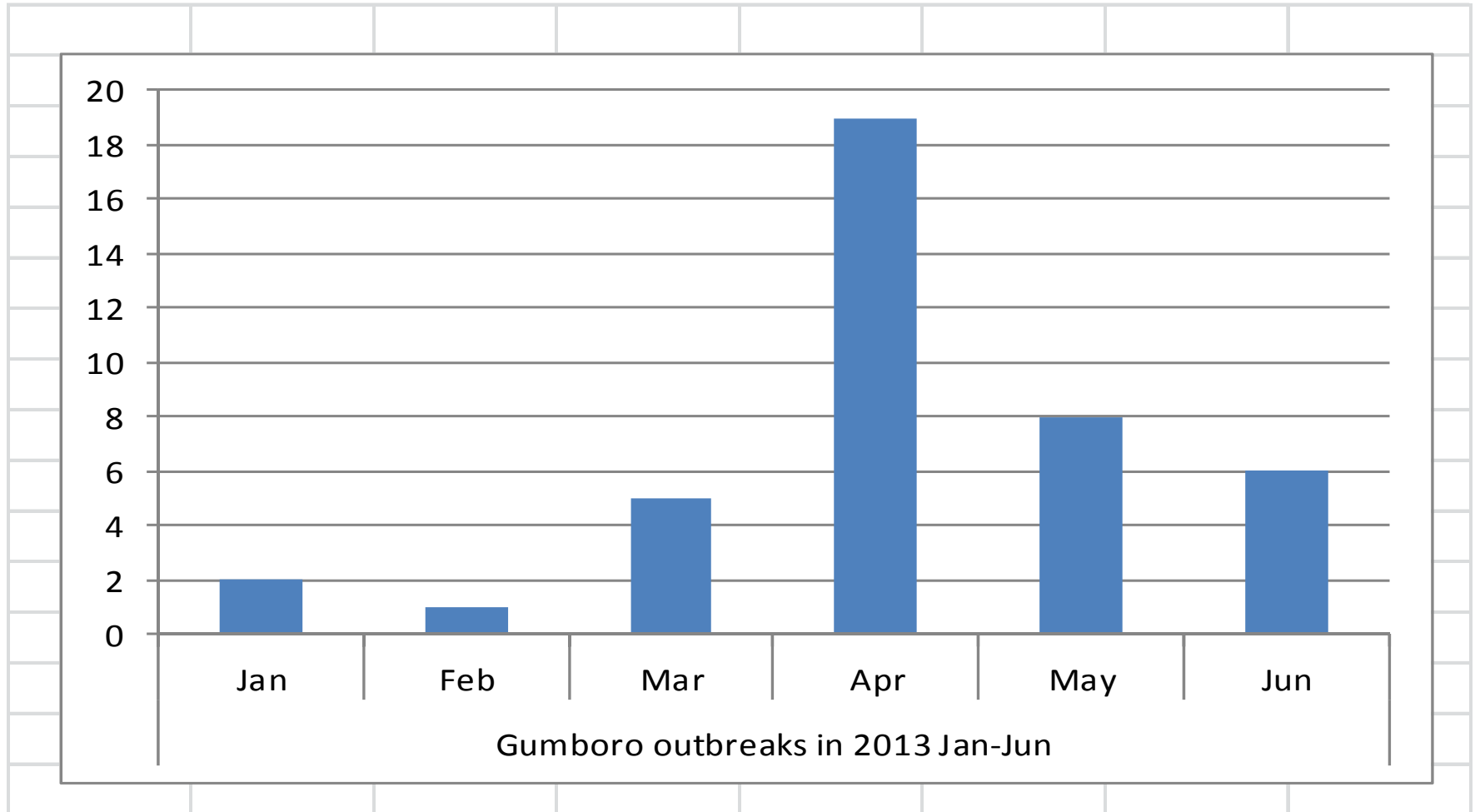
# Definition

- Infectious bursal disease is a viral infection, affecting the immune system of poultry.
- The disease is highly contagious, affects young chickens, and is characterized by the destruction of the lymphoid organs, and in particular the bursa of Fabricius, where B lymphocytes mature and differentiate.
- The target cell of the virus is the B lymphocyte in an immature stage, and the infection, when not fatal, causes an immunosuppression, in most cases temporary, the degree of which is often difficult to determine.

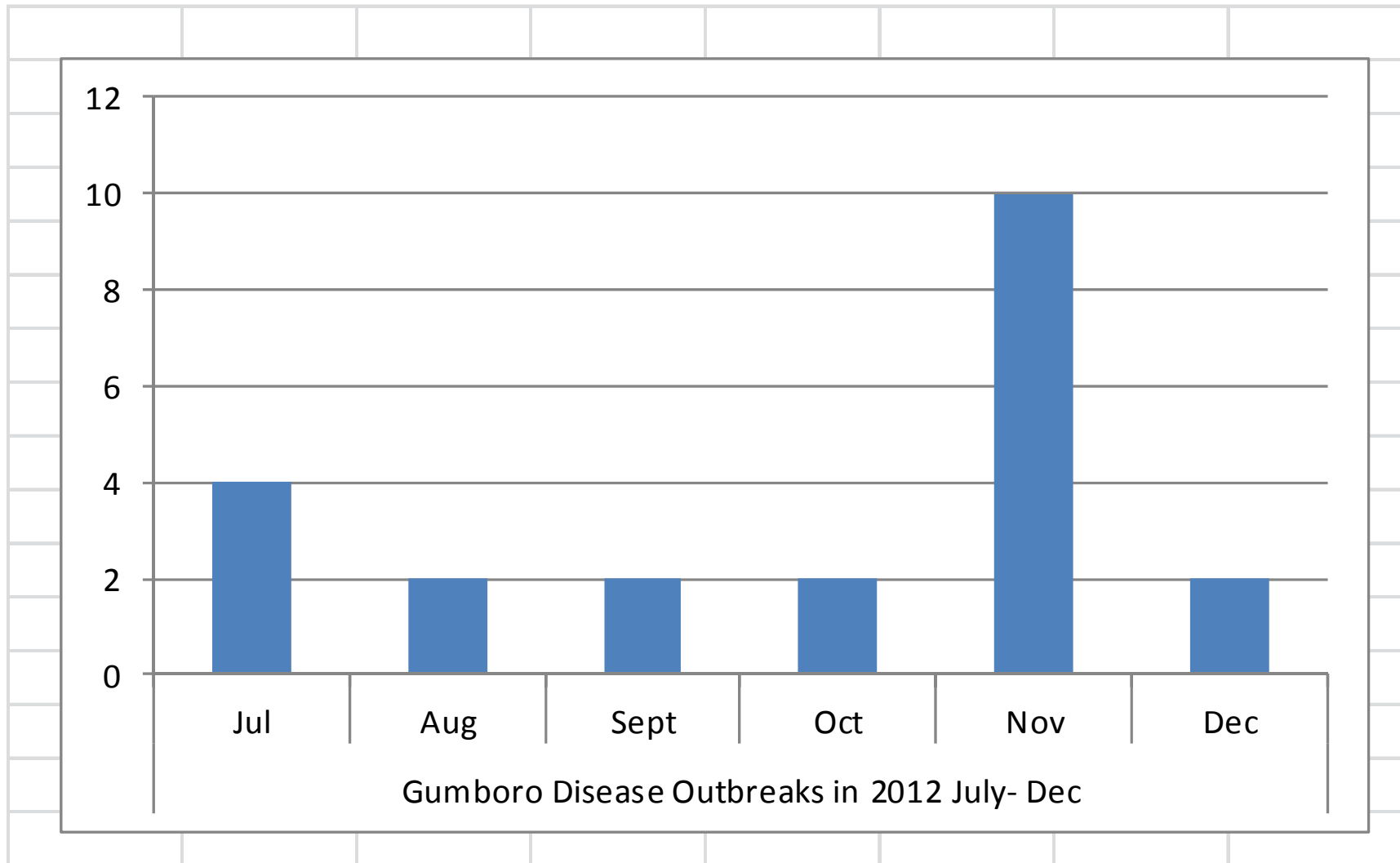
# No. of outbreaks in Ghana

- July to Dec 2012 witnessed 22 outbreaks mainly reported from 3 regions out of 10
- January to June 2013, 41 outbreaks were reported from the same three regions which are the main poultry producing regions.

# Gumboro Disease Outbreaks



# Gumboro Disease Outbreaks



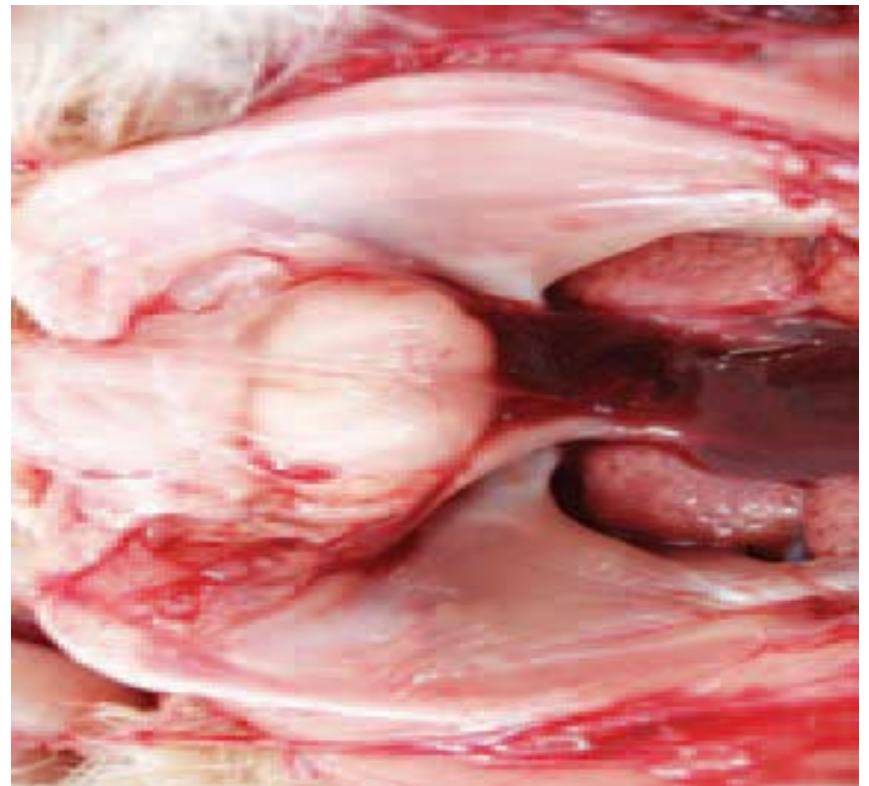
The feathers around the vent are usually stained with faeces containing plenty of urates.



Ruffled feathers, especially in the region of the head and the neck are present.

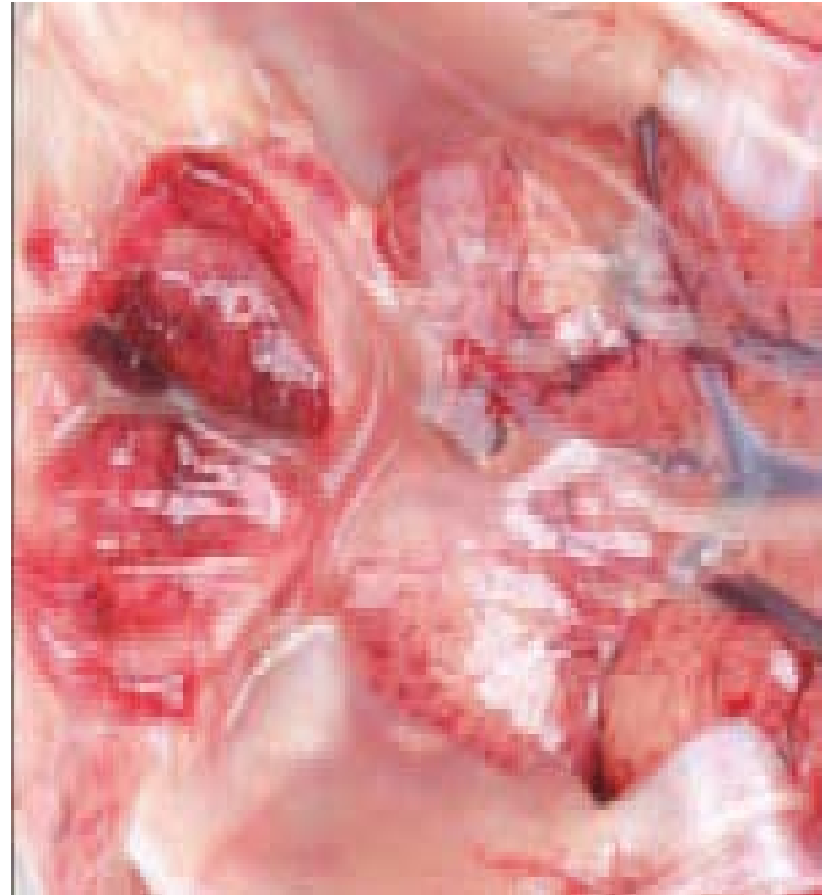


Haemorrhages in the pectoral, thigh and abdominal muscles.





IBD virus has a lymphocidic effect



Various stages of serous haemorrhagic to severe haemorrhagic inflammation.



# Immunosuppression

- The destruction of immature B lymphocytes in the bursa creates an immunosuppression, which is more severe in younger birds.
- In addition to the impact on production and role in the development of secondary infections, this affects the immune response of the chicken to subsequent vaccinations which are essential in all types of intensive poultry production.

# Host range

- Only chickens (*Gallus gallus*) develop IBD after infection
- Other species like turkeys, Pekin ducks are asymptomatic carriers

# Transmission

- - Direct: by faeces.
- - The lesser mealworm (*Alphitobus diaperinus*) has been shown to carry the virus. Because of the resistant nature of the IBD virus, it is easily transmitted mechanically among the farms by people, equipment and vehicles.
- Infected birds excrete the virus in faeces as early as 48 h after infection, and may transmit the disease by contact over a sixteen-day period

# Susceptibility factors

- The age of maximum susceptibility is between three and six weeks, corresponding to the period of maximum bursa development, during which the acute clinical signs are observed.
- Infections occurring prior to the age of three weeks are generally subclinical and immunosuppressive.
- Clinical cases may be observed up to the age of fifteen to twenty weeks

# A survey on IBD

- A survey conducted in Ghana, showed highest occurrence of the disease between March and April coinciding with the Easter season.
- Day old chicks imported into the country succumbed more easily than those produced locally.
- Chicks vaccinated twice were more likely to be protected than those vaccinated once.

# Prevention and Control of IBD

- An effective IBD prevention and control program must involve an effective breeder vaccination program, an effective biosecurity program, and an effective broiler vaccination program.
- Immunization of breeders is an important part of the IBD control program. Antibodies produced by the hen are passed through the egg to the broiler chick.



# Prevention and Control (cont'd)

- The development and enforcement of a comprehensive biosecurity program is the most important factor in limiting losses due to IBD.
- Phenolic and formaldehyde compounds have been shown to be effective for disinfection of contaminated premises

# VACCINATIONS

- A third factor to consider in the IBD prevention and control program is vaccination of the broilers to prevent clinical IBD. Three categories of vaccines, based on their pathogenicity, have been described: 1) mild, 2) intermediate, and 3) virulent.

# VACCINATIONS (CONT'D)

- The intermediate type IBD vaccines are most commonly used.
- These vaccines can stimulate the broiler to produce antibodies earlier than the mild-type vaccines, without significant damage to the BF as may occur with the virulent type vaccines.
- (source: Gary D. Butcher and Richard D. Miles)

# Pictures

- Source of pictures is CEVA

***Thank you for listening***

