

Very virulent infectious bursal disease (vvIBDV)



Outcomes of surveillance and monitoring activities in Australia

What is IBDV?

Infectious bursal disease virus (IBDV) is a highly contagious immunosuppressive virus that damages the bursa of Fabricius, which is located in the cloaca of the chicken and is primarily responsible for the maturation of white blood cells involved in antibody production. Upon infection, IBDV initially causes swelling and enlargement of the bursa which is followed by bursal damage due to the destruction of these antibody producing cells by the virus. This results in suppression of the chicken's immune response, making them more vulnerable to contracting other infections. There is no treatment for IBDV infections, however, the impact of disease can be minimised through vaccination.

The spread of IBDV occurs via contact with faeces from an infected chicken and may be spread between farms via the movement of chickens, people, equipment, feed, machinery and litter. Infected chickens can continue to shed the virus in their faeces for up to two weeks after an infection.

Observable clinical signs of IBDV in chickens may include ruffled feathers, depression, hunched posture, reduced activity, dehydration and diarrhea. Clinical signs can be highly variable depending on the particular strain of IBDV involved. Australian strains typically induce subclinical to mild clinical signs in chickens, however very virulent IBDV (vvIBDV) found overseas can induce significant mortalities in meat chickens (3% to 25%) and layers (5% to 60%). These mortalities are usually observed in chickens 3-4 weeks of age, however chickens up to 20 weeks of age can be infected with vvIBDV. In countries such as the USA, backyard chickens are now believed to be the main reservoir for vvIBDV. New exotic strains of IBDV continue to be detected around the world, some of which only cause severe immunosuppression and no mortalities. Hence any changes in flock performance should be carefully assessed to rule out the involvement of IBDV. Preliminary diagnosis of IBDV can be made based on observable clinical signs and the presence of swelling or gross lesions in the bursa. Laboratory testing is however required for definitive identification of IBDV.

Where is IBDV in Australia?

In Australia, certain strains of IBDV are endemic, meaning they exist amongst chicken populations within Australia. Endemic strains of IBDV have been detected in most parts of Australia. Two genetically different types of IBDV exist in Australia including the early Australian classical strains (genogroup A7) and the Australian antigenic variants (genogroup A8). Australian strains are genetically distinct from those observed overseas (genotypes A1 to A6), including vvIBDV assigned to genogroup A3. For many years, Australian antigenic variants were only ever detected in states such as Victoria (Vic) and South Australia (SA), while early Australian classical strains dominated in other states such as New South Wales (NSW), Western Australia (WA) and Queensland (Qld). More recently however, antigenic variants from both SA and Vic have been detected in certain regions of NSW, while variants from Vic have been detected in Tasmania.



Image courtesy Australian Chicken Meat Federation



Infectious bursal disease virus (IBDV) is a highly contagious immunosuppressive virus that damages the bursa of Fabricius, located in the cloaca of the chicken

Genetic analysis of strains circulating within Australia has confirmed that no IBDV strains have been introduced from other countries, however ongoing monitoring is needed to protect the industry from such exotic IBDV strains and prevent their impact on poultry production.

A recent study monitoring endemic IBDV strains in Australia found that, of the 272 submissions obtained from commercial poultry farms, 219 tested positive for endemic IBDV and none tested positive for exotic strains including wIBDV. Of the 12 endemic strains tested in a chicken pathogenicity trial, none were attributed to causing death and all chickens made a full recovery. Overall, variant strains typically induced clinical signs in most chickens and reduced weight gain more than Australian classical strains. For example, chickens infected with SA variants gained approximately 20% less weight than the uninfected controls, compared to 12% observed in chickens infected with classical strains from Qld. A number of exceptions were however identified.

Despite no overseas strains being identified on Australian farms, this research confirmed that Australian strains of IBDV are continuing to evolve and new mutations are being detected which may give viruses a selective advantage in the field. An example of this is the rapidly spreading SA variant with the S328 mutation (serine amino acid residue at position 328 of the viral VP2 protein), which was originally identified in South Australia in 2018 and now dominates in the state. It has also since crossed the border, being detected on one farm within Victoria.

Why IBDV preparedness is important

IBDV preparedness is important to safeguard the Australian poultry industry against the more severe strains of the virus. By rapidly detecting new mutations within Australia IBDV, as well as the introduction of exotic strains from overseas, it is possible to minimise the spread of such strains. Delays in the detection and diagnosis of IBDV could be catastrophic for the industry, as it will result in decreased flock performance and increased mortalities on Australian poultry farms. Outbreaks of IBDV will also be economically taxing due to the loss of birds, major disruptions to production and the need for increased vaccination than is currently practiced in Australia.

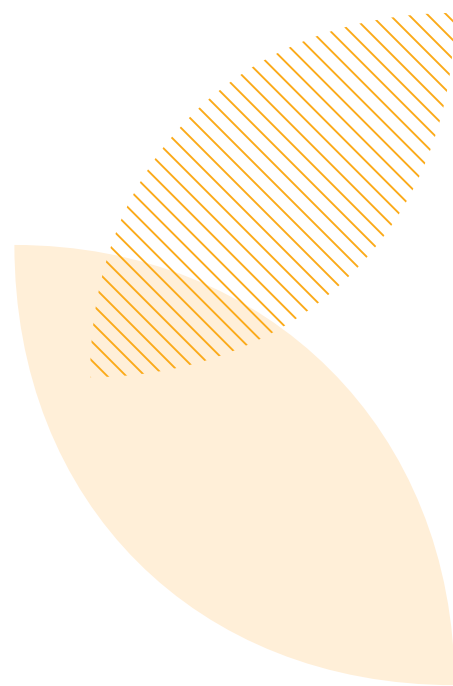
To address the risk of IBDV strains spreading within and between states, the industry will continue to improve detection and diagnosis of IBDV by working on the following:

1. Increased surveillance, particularly in areas suspected to have IBDV strains with new genetic changes.
2. Improved biosecurity measures to minimise spread within and across state borders.
3. Continual monitoring of IBDV strains and their movement within and between states.
4. Continual improvement of detection methods for IBDV to ensure that responses to new strains are rapid.



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How can producers be IBDV prepared?

Producers can reduce the risk of IBDV entering their flocks and prevent the spread of variant strains between farms by improving on-farm biosecurity measures. This includes:

- vaccination of breeder chickens with a live virus at 8-12 weeks of age and a follow up vaccination just prior to point of lay
- isolating chickens who are displaying symptoms of IBDV
- using visitor logs to keep a record of visitors, workers and staff entering the sheds
- thorough cleaning of sheds and equipment such as vehicles, crates, trailers, bins, buckets and wheelbarrows
- keeping records of feed and water consumption, mortality and movement of birds to aid in the identification of IBDV and help trace an outbreak
- ensuring staff and workers on site are trained, wear clean clothing and footwear and regularly wash their hands
- ensuring that dead birds are disposed of correctly
- following guidelines for the treatment of water and feed.

Further information on biosecurity practices and resources, such as a visitor log, can be found in the [National-Farm-Biosecurity-Manual-for-Chicken-Growers_May2020.pdf](#) (farmbiosecurity.com.au).

What to do if you suspect IBDV

- Exotic strains of the IBDV virus, including vvIBDV, are notifiable in Australia. If you suspect IBDV on your farm, shut off access to the property and contact a veterinarian who can assist with early diagnosis.
- If an outbreak of an exotic strain of IBDV were to occur in Australia, the AUSVETPLAN will be followed to control the outbreak. This plan can be found in the Infectious bursal disease response strategy on the [Informing EAD Responses - AUSVETPLAN - Animal Health Australia](#) website.

More information

- [Emergency Animal Disease Bulletin No. 124](#) - DAFF (agriculture.gov.au)
- [Infectious Bursal Disease in Poultry](#) - Poultry - MSD Veterinary Manual (msdvetmanual.com)

Related projects

- PRJ-008715: Surveillance and pathotyping of Australian IBDV
[Download the report](#)
- PRJ-010978: Increasing Australia's preparedness for vvIBDV
[Download the project summary](#)
- PRO-015885: Development of improved diagnostics and pathotyping methods for IBDV in Australia

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