Epidemiology of Beak and Feather Disease Virus (BFDV) in Parrots

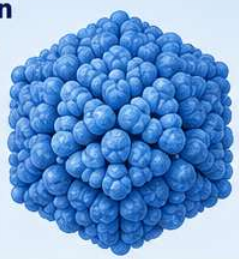
Transmission, infection outcomes and role of persistently infected (PI) birds

Revised by Evert Jor, DVM

BFDV virion

Non-enveloped icosahedral ssDNA virus (*Circoviridae*)

Diameter: ~16–20 nm



Susceptible parrots

Naïve birds of all psittacine species (can be infected at any age)



Horizontal transmission

- Feather dust and dander
- Direct contact (allopreening, beak contact, mating)
- Contaminated environment (perches, food/water bowls, cages, nest boxes)
- Fomites (clothing, equipment)
- Possible aerosol spread in close housing

Environmental contamination

Virus shed in high amounts in feather dust, dander, feces, crop secretions and skin debris



Infection

Virus enters via respiratory tract, oral route or skin lesions.

Acute infection (young birds)



- Often in nestlings/juveniles
- Systemic infection
- High viral replication
- Feather dystrophy, beak lesions
- Immunosuppression
- High mortality (especially in young birds)

Subclinical infection (adults)



- Mild or no clinical signs
- Transient infection in some birds
- Virus may be cleared or progress to persistent infection

Persistent infection (PI) (adults and surviving juveniles)



- Lifelong infection
- No or minimal clinical signs
- Continuous low to moderate viral replication
- Intermittent to high virus shedding (especially in feather dust)
- Major reservoir for maintenance and spread of BFDV

Vertical transmission



Transovarial transmission (infected hen → eggs)

- Virus detected in eggs, embryos and hatchlings
- Chicks may hatch infected
- May result in early death, disease or PI birds

Transmission between species

BFDV can infect a wide range of psittacine species (macaws, cockatoos, African greys, conures, budgerigars, etc.) and may spread via mixed housing and shared environments.



Continuous shedding from PI birds

Maintains environmental contamination and ongoing transmission within flocks, aviaries and the wild.

Key epidemiological points

- BFDV is a non-enveloped, icosahedral ssDNA circovirus.
- Transmitted horizontally (feather dust, direct contact, fomites) and vertically (transovarial).
- Young birds often develop severe disease and high mortality.
- Many adults become persistently infected (PI) and act as long-term reservoirs.
- PI birds shed virus, often without clinical signs, and are key drivers of prevalence.
- Virus is environmentally stable and can persist in dust and dried material.
- Infections occur in captive and wild parrot populations.
- Biosecurity, quarantine, testing and removal/management of PI birds are essential to reduce spread.