BRSV : ANTICIPATING WINTER WAVES

A PRAGMATIC OVERVIEW TO PREPARE FOR THE COLD SEASON

Bovine Respiratory Syncytial Virus (BRSV) is a single-stranded virus belonging to the Pneumoviridae family[1,2]. It was renamed Bovine orthopneumovirus in 2016 and Orthopneumovirus bovis in 2022[1]. It is one of the main pathogens involved in **Bovine Respiratory Disease** (BRD) and causes **significant economic losses in the livestock industry**.

A SEASONAL DISEASE

BRSV is found **worldwide**[3] and is particularly prevalent in **temperate regions**. In Europe, between 40% and 80% of cattle (depending on region and population studied) are believed to carry antibodies against BRSV.
Infection can predispose cattle to **secondary bacterial infections** by organisms such as *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni*, or *Mycoplasma bovis*[4]. The virus is highly contagious and can survive for some time in the environment (cold and humidity).

BRSV mainly circulates in late **autumn** and **winter**[5], with a marked peak between November and February in most **temperate regions** (France, Northern Europe, North America).

Why this period?

Closed housing
Reduced ventilation & accumulation of viral aerosols.

Grouped animals
Close contact facilitates transmission.

Cold & humidity
Increased virus survival in the environment.

Thermal stress
Decreased immunity.

TRANSMISSION AND SYMPTOMS: A CHALLENGE FOR THE LIVESTOCK INDUSTRY

BRSV is transmitted through **aerosol droplets**, **direct contact with an infected animal**, or **indirectly via contaminated surfaces**[6,7]. Infected animals may shed the virus even before the first symptoms appear.

Clinical signs often occur 7 to 10 days after a stressful event, such as animal transport[4].

BRSV affects the respiratory system, particularly the **bronchioles** and **alveoli**, causing:

- Coughing, nasal discharge
- Fever, sometimes high
- Respiratory distress (dyspnea, shortness of breath)
- Loss of appetite, lethargy
- Frequent bacterial co-infections - worsening condition and respiratory distress

BRSV can lead to very severe forms of disease, particularly in winter, and can cause high mortality in some herds.

DIAGNOSTIC

Several diagnostic methods exist:

- **Immunofluorescence** can be performed on respiratory secretions. It requires a high viral load and good sample quality for reliable interpretation[4].
- **Serology** (ELISA test) on blood can be useful for herd investigations but does not confirm an active infection[8].
- **Gene amplification** (**PCR**[4,9] or **LAMP**) is a preferred option.
  It offers **high sensitivity**[10] and **rapid, simple identification of the pathogen**.
- Post-mortem, immunohistochemistry (IHC) on formalin-fixed lung tissue can be performed to confirm the cause of death[4].

OUR SOLUTION

Rhéa® tests are **molecular biology** tests that **directly detect the pathogen's DNA/RNA** and can therefore be used from the very early stages of infection, even **before symptoms are detectable**.

Their sensitivity is very close to that of PCR, but results are obtained in just **30 minutes**.

There is no specific antiviral treatment, so management focuses on:

- Treating bacterial co-infections (appropriate antibiotic use)
- Reducing inflammation (anti-inflammatory drugs)
- Improving respiratory comfort (ventilation, stress reduction, energy support)

PREVENTION: PRACTICAL RECOMMENDATIONS FOR VETERINARIANS

Bovine respiratory diseases, such as those caused by BRSV, remain a constant challenge for cattle health. Vaccination is the cornerstone of prevention, but other effective strategies can also be recommended by veterinarians to their clients.

1 Vaccination

Of calves and/or cows (to improve colostral immunity).

Three main types of vaccines are used against BRSV:

- **Inactivated vaccines** (injectable)
  Often used in herd vaccination protocols (cows and calves)[11].
- Live attenuated vaccines (intranasal)
  Ideal for young calves, but provide shorter immunity than inactivated vaccines[12].
- **Combined vaccines** (live or inactivated)
  Include multiple BRD pathogens such as BHV-1, PI3, or BVDV[13].

2 Environmental management

Good ventilation, stress reduction, and careful management of animal mixing.

3 Biosecurity

Quarantine and control of animal introductions.

WANT TO LEARN MORE?
Consult the full bibliography on the website.

ENALEES
Le Nouvel Art du diagnostic