



A LITTLE
BOOST
MAKES A BIG
DIFFERENCE



BRD is a leading cause of morbidity and mortality in young calves and growing cattle, with devastating economic consequences¹



Farmers across Europe agree that bovine respiratory disease (BRD) complex pathogens are a top threat to productivity and a priority for vaccination²

BRD is one of the most prevalent diseases affecting cattle worldwide¹ and results from an interaction of numerous factors, including:

Environmental, psychological and physical stress

Host immunity

Multiple viral and bacterial pathogens

Vaccination, alongside nutrition and housing strategies, are essential methods for controlling respiratory disease¹.

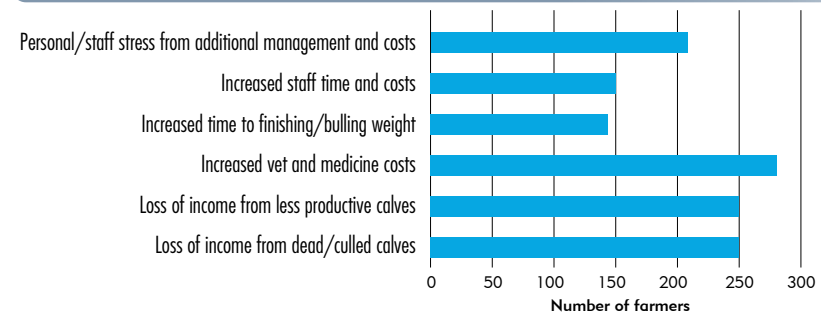
Respiratory disease during the neonatal period resulted in 16.5 kg reductions in weaning weight ($p < 0.01$)³

Heifers with a history of BRD showed decreased survival through first lactation, key for recovering investment in rearing heifers⁴

Despite this, BRD remains a leading reason for antibiotic use⁵

Farmers require efficacious vaccines with minimal side effects to help them protect against respiratory disease, while complying with industry requirements to reduce antibiotic use⁵.

Calfmatters survey 2019 results⁶ – Impact of pneumonia



Share the **BOOST** effect with your farmers



The **BOVALTO** range has been developed to provide specific, individual advantages to ensure broad protection against BRD



BOVALTO® is the **ONLY BRD VACCINE RANGE** which provides **ALL** of these benefits:

- ✓ Efficacy proven by challenge^{7,8}
- ✓ Duration of immunity proven by challenge:
 - 🐮 12 weeks for **BOVALTO Respi Intranasal**¹
 - 🐮 6 months for **BOVALTO Respi injectables**²

Each vaccine in the **BOVALTO** range provides specific advantages for the control of BRD

Together they provide a broad, flexible approach to immune protection



With **BOVALTO**, your farmers can protect their calves right through to maturity with an approach that suits them.

- ✓ Intranasal efficacy against BRSV and PI3 unaffected by MDAs, providing the optimal start to immune protection against BRD⁹
- ✓ A **PRIME-BOOST** capability: Developed to enable sequential use of identical PI3 and RSV antigens in different forms for rapid, robust immunity^{10,11}

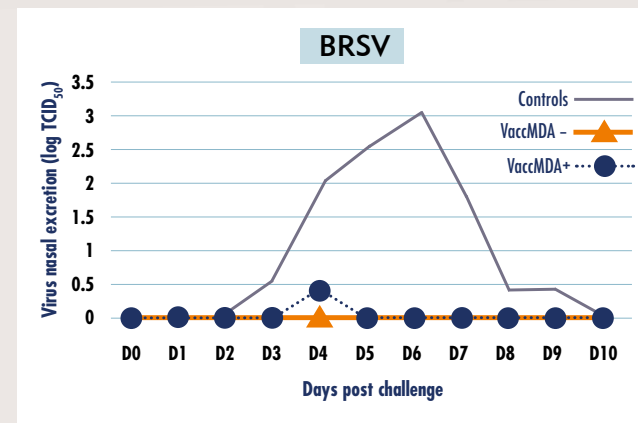
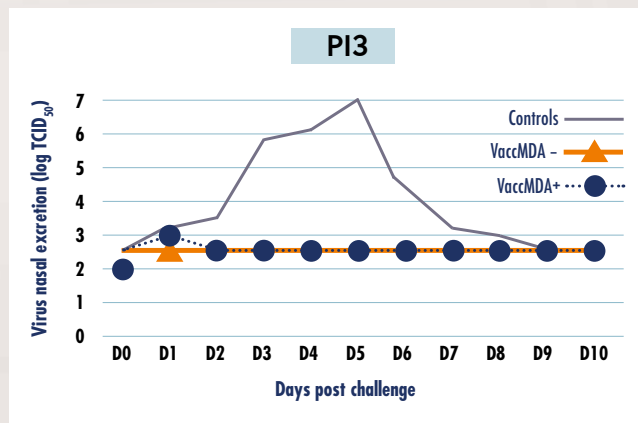


BOVALTO Respi Intranasal is the only intranasal BRSV and PI3 vaccine whose efficacy is unaffected by maternally derived antibodies

Maternal immunity is known to impact the priming of immunological responses and degree of clinical protection induced by vaccination¹⁰.

Live intranasal vaccines have been developed to overcome maternal antibody interference by triggering mucosal immunity, as a more effective way to prevent respiratory infections in young calves¹².

Efficacy of BOVALTO Intranasal is unaffected by maternally derived antibodies^{8,9}



Adapted from Metcalfe *et al.* (2020)⁹

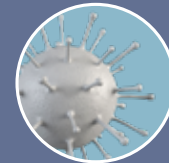
PRIME your calves' immunity with **BOVALTO Intranasal**, the only intranasal vaccination whose efficacy is unaffected by maternally derived antibodies⁸

BOVALTO Intranasal's specially designed administration nozzle creates a fine spray, which ensures optimal coverage of mucosal surface area for maximal absorption of antigen with comfort and ease.

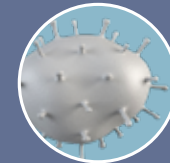
BOVALTO Respi injectables – Protection against BRD pathogens proven by challenge⁷

BOVALTO injectables provide proven protection against up to four of the key viral and bacterial pathogens responsible for BRD¹.

BOVALTO injectables have a 6 month duration of immunity, proven by challenge, for all components⁷.



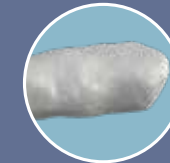
PARAINFLUENZA
3 (PI3)



RESPIRATORY
SYNCYTIAL VIRUS
(RSV)

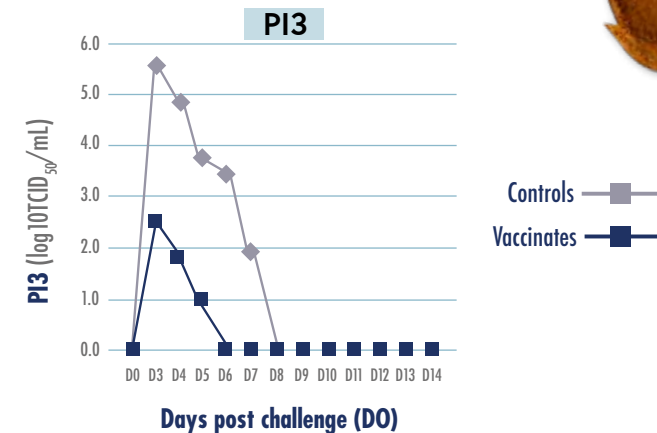
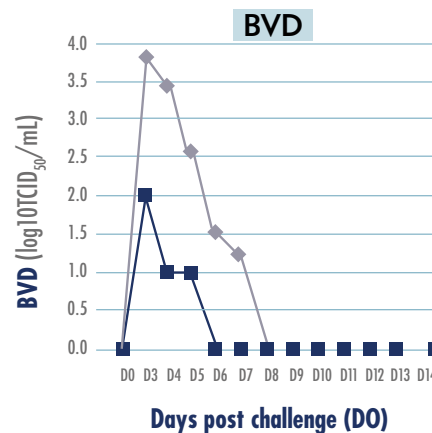
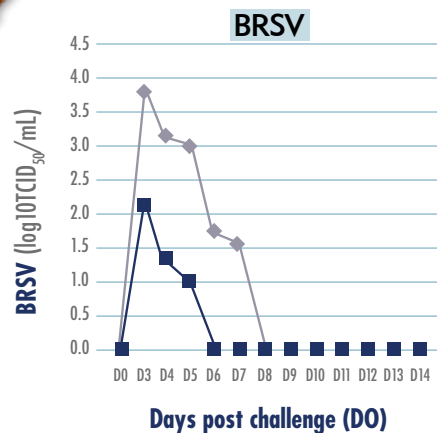


BOVINE VIRAL
DIARRHOEA VIRUS
(BVDV)
(WITHIN BOVALTO RESPI 4)



MANNHEIMIA
HAEMOLYTICA

Challenge trials showed significant reduction of excreted viral quantity and duration of excretion, a key factor in preventing commensal bacteria from becoming pathogenic⁷



Adapted from Philippe-Reversat *et al.* (2017)⁷

BOVALTO Respi injectables have been designed to target both viral and bacterial pathogens, including *Mannheimia haemolytica*

Mannheimia haemolytica is one of the most significant and frequently isolated bacterial pathogens^{13,14}. As a commensal organism of the upper respiratory tract and nasopharynx, it is an opportunistic pathogen, able to colonise the lower respiratory tract causing pneumonia¹⁵.

Induction of a response to leukotoxin through vaccination is key to effective protection against *M. haemolytica*¹⁶.

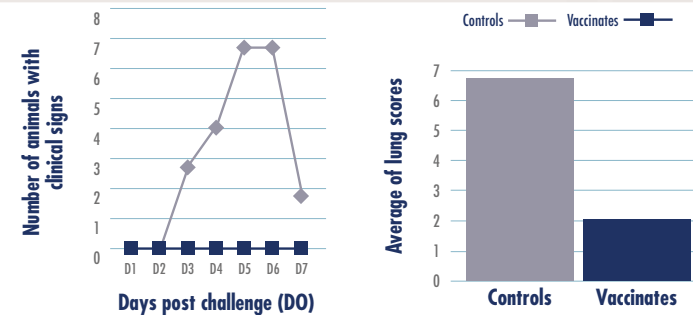
BOVALTO injectables contain verified levels of *M. haemolytica* leukotoxin¹⁷.

Use of serotype A1 whole bacterin maximises expression of a range of well conserved antigens to induce an effective vaccine response^{15,16}.

BOVALTO Respi 3 is identical to BOVALTO Respi 4, without BVDV, allowing the vaccination schedule to be tailored to a farm's BVD status.

***M. haemolytica* bacterin is grown in low-glucose, iron deprived conditions to maximise the expression of immunodominant antigens including leukotoxin and iron-regulated outer membrane proteins. These antigens are well conserved across *M. haemolytica* strains^{15,16}**

BOVALTO Injectables provide proven, heterologous protection against *M. haemolytica*.



Adapted from Philippe-Reversat *et al.* (2017)⁷

*The vaccination against *M. haemolytica* may be key in the fight against BRD, as a recent study showed that beef calves protected by BOVALTO injectable required significantly fewer treatments, had lower overall antibiotic consumption and had a trend towards higher mean weight gain than those protected with a competitor product, which did not contain *M. haemolytica*¹⁸.*

BOVALTO *PRIME-BOOST* – Custom-built with the latest advances in human and animal immunisation

Recent advances in immunology have shown the benefits of jump-starting the immune system through the sequential administration of the same antigen in different forms. This is known as a prime-boost approach¹¹.

By focusing on certain key antigens, it is possible to elicit high quality immune responses¹⁹.

Greater levels of immunity are established by administering a live followed by a killed form of the same antigen, which provides synergistic enhancement of immunity to the target pathogen^{10,11}.

BOVALTO *BOOST*

Using a vaccine range containing relevant strains, specially formulated to provide a *PRIME-BOOST*, provides you with the confidence that your cattle are receiving high quality protection against the latest pathogens.

THE LATEST PROTECTION BOOSTED WITH BOVALTO

The BOVALTO vaccines have been custom-built to deliver the *BOVALTO BOOST*

PRIME
the immune system
with **BOVALTO
Respi Intranasal**,
which contains
live strains




BOOST
the immune response
with **BOVALTO Respi
injectables** containing
inactivated strains of
the same antigens




The BOVALTO range provides a flexible protocol, synergistically combining early young calf protection with a proven extended duration of immunity.

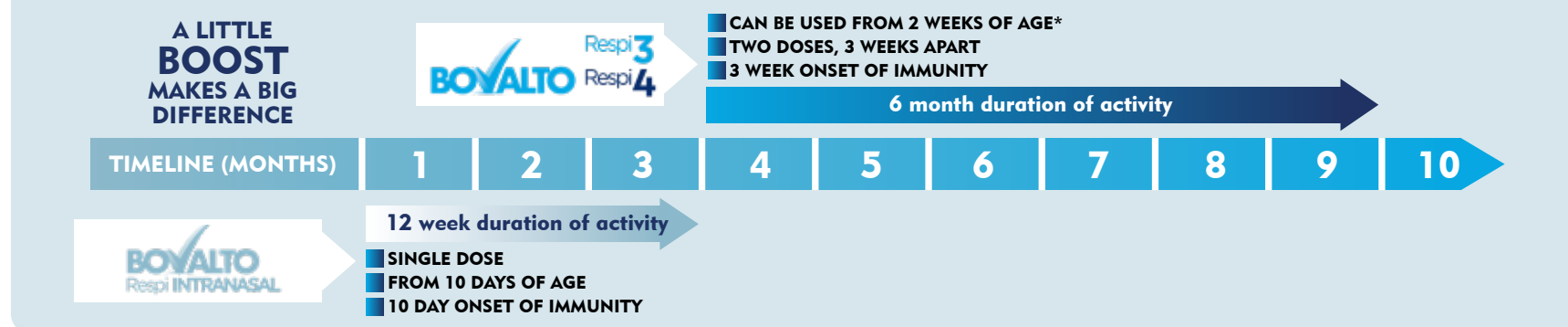
BRD affects cattle from early life right through to maturity, with changing management practices driving earlier vaccination.

The BOVALTO range provides flexibility, allowing vets and their farmers to tailor their own BRD solution^{8,20,21}.

 **PRIME** the immune system against key primary viral pathogens with a BOVALTO Intranasal program to provide 12 weeks' immunity without interference by MDAs¹

 **BOOST** the immune protection for a proven 6 months' protection against viral pathogens, and induce protection against *M. haemolytica* +/- BVDV with a primary course of BOVALTO injectables^{20,21}.

VACCINATION PROTOCOL



Each vaccine in the BOVALTO range provides specific advantages for the control of BRD. Together they provide a broad, flexible approach to immune protection^{8,20,21}.

*From 2 weeks of age in calves from non-immune dams. For calves from immune dams or where the immune status of the dam is unknown, the vaccine scheme should be adapted at the discretion of the veterinarian.

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BOVALTO BOOST

THE BOVALTO RESPI RANGE





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21. Summary of Product Characteristics, Bovalto® Respi 4, Aug 2020

Bovalto® Respi Intranasal, nasal spray, lyophilisate and solvent for suspension contains Bovine parainfluenza 3 virus (PI3V), modified live virus, strain Bio 23/A 10^{5.0} – 10^{7.5} TCID₅₀, and Bovine respiratory syncytial virus (BRSV), modified live virus, strain Bio 24/A 10^{4.0} – 10^{6.0} TCID₅₀. Bovalto® Respi 3 Suspension for Injection and Bovalto® Respi 4 Suspension for Injection contain inactivated bovine respiratory syncytial virus, strain BIO-24, inactivated bovine parainfluenza 3 virus, strain BIO-23 and inactivated Mannheimia haemolytica, serotype A1 strain DSM 5283. Bovalto®

Respi 4 also contains inactivated bovine viral diarrhoea virus, strain BIO-25. UK: POM-V IE: POM (E). Further information available in the SPCs or from Boehringer Ingelheim Animal Health UK Ltd, RG12 8YS, UK. Tel: 01344 746957. IE Tel: 01 291 3985 (all queries). Email: vetenquiries@boehringer-ingelheim.com. Bovalto® is a registered trademark of Boehringer Ingelheim Animal Health, France. ©2021 Boehringer Ingelheim Animal Health UK Ltd. All rights reserved. Date of preparation: Nov 2021. BOV-0197-2021. Use Medicines Responsibly.

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#CALFMATTERS

#CattleFirst



BRD PROTECTION DELIVERING A **BOOST** TO YOU AND YOUR HERDS

BOVALTO