BRD POTENTIAL IMPACT ON DAIRY HERD PRODUCTION

The last CalfEd bulletin discussed the need to detect and treat BRD as early as possible, to prevent the long-term consequences that lung damage can have on the health and productivity of young dairy heifers. Scoring groups of calves regularly, throughout the risk periods, ensures early signs of BRD are picked up as soon as they appear and treatment protocols can be quickly delivered to affected calves.

This bulletin highlights the impact untreated BRD can have on both short and longer-term production measures and how the negative effects of BRD can continue into adulthood for many dairy heifers.

BRD scoring system for pre-weaned dairy calves

Clinical sign	Score if normal	Score if abnormal (any severity)
Eye discharge	0 	2  or  or 
Nasal discharge	0 	4  or  or 
Ear droop or head tilt	0 	5  or  or 
Cough	0 No cough	2 Spontaneous cough
Breathing	0 Normal	2 Rapid or difficult breathing
Temperature	0 <39.2°C	2 ≥39.2°C

Add scores for all clinical signs, if total score is ≥ 5, calf may be positive for BRD

UCDAVIS VETERINARY MEDICINE International Animal Welfare Training Institute

Scoring system adapted from the University of California, Davis.

THE IMPACT ON MORTALITY AND CULLING RATES

The immediate, detrimental impact of BRD on calves is well known by most farmers, but often the effects of the disease continue to affect older heifers:

- In 2016, the AHDB's fallen stock report showed that 30% of calves examined under six months of age and 21% of those aged between six months and two years had evidence of BRD[1].
- A study of 613 heifers, showed that those with severe BRD associated lung damage at weaning were more likely to be culled between 350 days of life and first calving than those without lung damage[2].

BRD, if not prevented or well-managed, can have a significant impact on the life-expectancy of calves and their future in the herd. Not only is this a significant economic concern for farmers but has negative welfare implications as well.



THE IMPACT ON GROWTH

BRD can negatively impact the growth of dairy heifers for many months after the initial disease as a result of chronic lung damage.

An additional **15 days** may be required for heifers affected by BRD to reach the same weight as their unaffected counter-parts[3].

This is because BRD can affect food intake and the associated high temperature can accelerate loss of muscle, so calves affected with BRD can weigh as much as **10 kg less, six weeks post-mixing**, compared to unaffected calves[4].

THE IMPACT ON REPRODUCTIVE PERFORMANCE AND CALVING

The lung damage caused by BRD, which is more severe when not effectively treated, means many affected dairy heifers will have decreased growth rates and mature body weights , which can have an impact on a number of measures of reproductive performance:

CONCEPTION RATES - Dairy heifers with lung consolidation (caused by BRD) which was diagnosed at 60 days of age, had conception rates of 52.5% at first AI, whereas heifers without lung consolidation achieved 62%. The presence of lung consolidation therefore corresponded with a 10% decrease in conception rate to first AI[2].

AGE AT FIRST CALVING - The age at which a heifer first calves has a significant impact on her lifetime productivity[5].
Heifers affected with BRD in the first 3 months of life can be expected to calve **3 months later** than heifers without BRD[6] and those that had BRD as older calves (when in group housing) were much more likely to calve after 25 months of age[7].

PROBLEMS AT CALVING - Heifers affected with BRD before 90 days-of-age were almost **two and a half times more likely to encounter problems during their first calving** compared with heifers that did not contract BRD[6].

2 WEEKS - 6 MONTHS

DISEASE
DISCOMFORT & MORTALITY

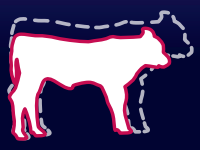


6 MONTHS - 12 MONTHS



26%
REMOVED FROM THE HERD (BEING CULLED OR DIED)

-14.3KG
DECREASED GROWTH



12 MONTHS - 24 MONTHS

-10%
IN PREGNANCY RATE AT 1ST AI



INCREASED RISK OF CULLING BY 4.7x

DELAYED AGE AT 1ST CALVING
+3 months

FROM 24 MONTHS

x2.4
HIGHER RISK OF DYSTOCIA AT 1ST CALVING

DECREASED MILK YIELD -525KG FOR THE 1ST LACTATION

THE IMPACT ON MILK PRODUCTION

In 2018, 215 female calves were enrolled in a study which followed them from birth through to the end of their first lactation and it revealed that lung damage (consolidation) occurring in the first eight weeks of life caused an **average reduction in the first 305 day milk yield of 525 kg**[8].



It is vital that all calves are regularly scored for signs of BRD. When early signs are noticed, a treatment protocol, developed in conjunction with a vet, should be put in place as soon as possible to prevent longer-term production losses in dairy herds.

Non-steroidal anti-inflammatory treatments are recommended for all calves, alongside appropriate antibiotic therapy, to reduce the fever, promote food intake, help reduce lung damage and maintain weight gain for productive adult dairy cattle.

References:

1. AHDB 2016 Fallen Stock report. **2.** Teixeira, A.G.V., McArt, J. a. A., Bicalho, R.C., 2017. Thoracic ultrasound assessment of lung consolidation at weaning in Holstein dairy heifers: Reproductive performance and survival. J. Dairy Sci. 100, 2985–2991. https://doi.org/10.3168/jds.2016-12016. **3.** Donovan, G.A., Dohoo, I.R., Montgomery, D.M., Bennett, F.L., 1998. Calf and disease factors affecting growth in female Holstein calves in Florida, USA. Preventive Veterinary Medicine 33, 1–10. https://doi.org/10.1016/S0167-5877(97)00059-7. **4.** Stanton A.L. et al (2010). The effect of treatment with long-acting antibiotic at postweaning movement on respiratory disease and on growth in commercial dairy calves. Journal of Dairy Science. 93 :574–581 **5.** Cozler, Y.L., Lollivier, V., Lacasse, P., Disenhaus, C., 2008. Rearing strategy and optimizing first calving targets in dairy heifers: a review. Animal : an international journal of animal bioscience 2, 1393–1404. **6.** Warnick, L.D., H.N. Erb & M.E. White, 1994. The association of calfhood morbidity with first-lactation calving age and dystocia in New York Holstein herds. Kenya Veterinarian 18: 177-179. **7.** Stanton A.L., Kelton, D.F., LeBlanc, S.J., Wormuth, J., Leslie, K.E., 2012. The effect of respiratory disease and a preventative antibiotic treatment on growth, survival, age at first calving, and milk production of dairy heifers. Journal of Dairy Science 95, 4950–4960. https://doi.org/10.3168/jds.2011-5067. **8.** Dunn, T.R., et al. 2018. The effect of lung consolidation, as determined by ultrasonography, on first-lactation milk production in Holstein dairy calves. Journal of Dairy Science 101,5404–5410. https://doi.org/10.3168/jds.2017-13870.

Ceva Animal Health Ltd, Unit 3, Anglo Office Park, White Lion Road, Amersham, Bucks HP7 9FB Tel: 01494 781510 **www.ceva.co.uk**