

# Save Cattle and Profits with Lung Protection Therapy

## Lung Protection Therapy is enhanced lung protection

- BRD can cause irreversible lesions in the lungs which affect both the growth of calves and their carcass quality<sup>3-5</sup>
- Lung Protection Therapy (LPT) is a treatment strategy designed to preserve lung function in one step
  - Treats infections due to common BRD pathogens
  - Rapidly reduces inflammation
  - Optimizes oxygen transfer across the lungs<sup>7</sup>
- LPT provides a visibly faster recovery by rapidly reducing fever
- Preserving the lung function of calves may reduce the economic losses associated with BRD<sup>17</sup>

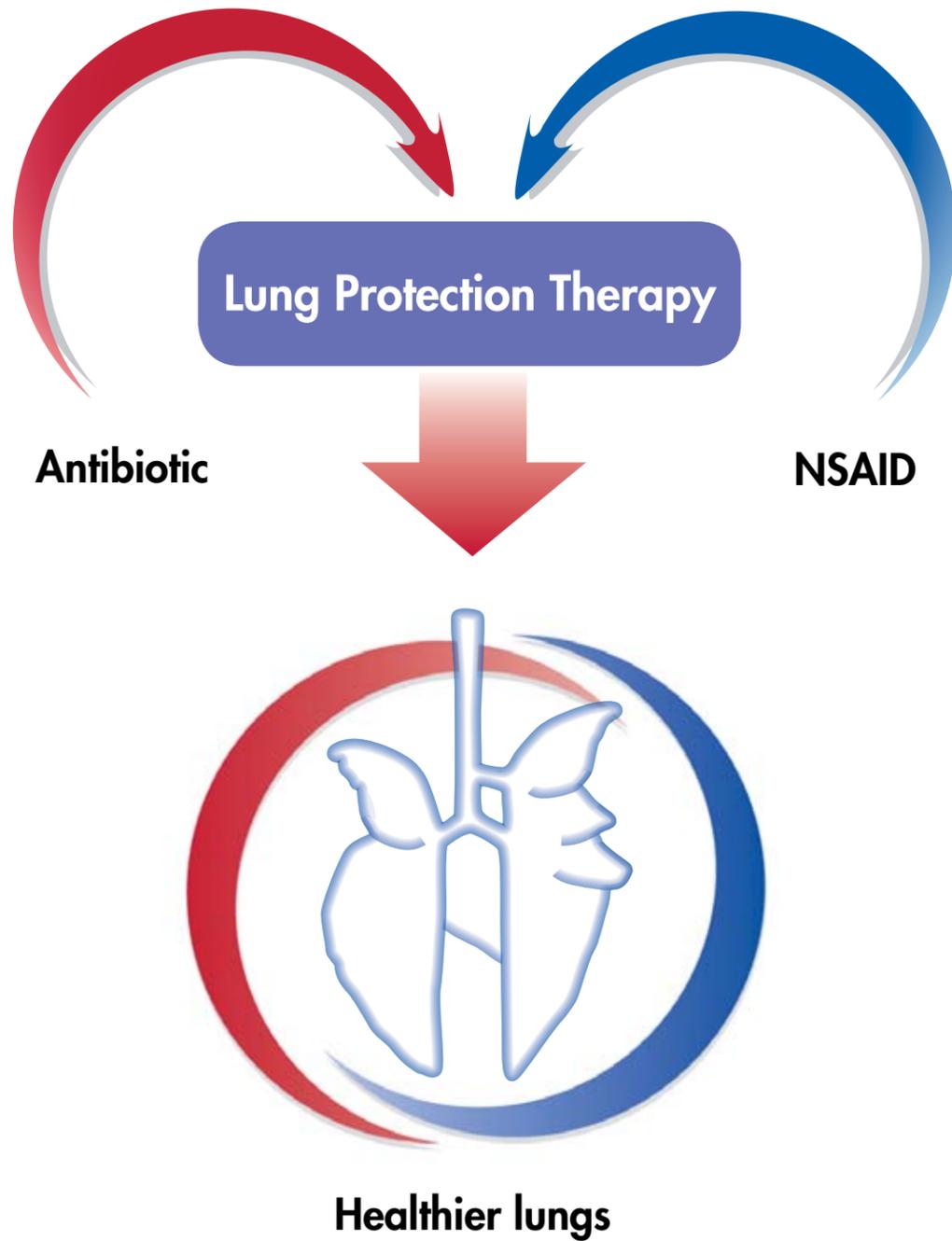
**LPT combines both antibiotic and NSAID in the treatment of BRD**

**Use LPT in BRD**



**Do you have both sides of BRD covered?**

## The principle of Enhanced Lung Protection in action

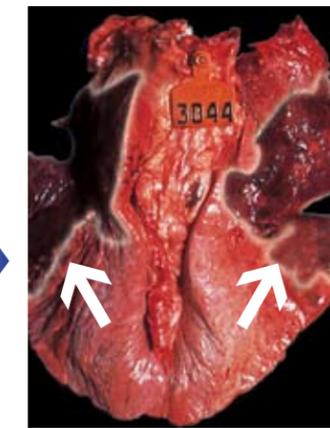


## Bovine Respiratory Disease directly affects your profitability

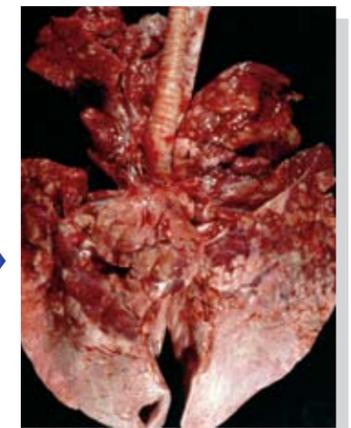
- BRD is the most important cause of economic losses for the cattle industry<sup>1</sup> — losses estimated as high as \$3 billion annually<sup>2</sup>
  - Morbidity and mortality<sup>1</sup>
  - Reduced growth performance<sup>1</sup>
  - More days on feed<sup>3,4</sup>
  - Reduced beef quality<sup>5</sup>
  - Medical and manpower costs<sup>1,3</sup>
- Once the lungs of cattle are infected, inflammation and bacterial toxins cause lesions to develop in the lungs<sup>6,7</sup>



Healthy lungs



Effects of pneumonia



Irreversible damage

- Lesions develop quickly and may cause irreversible damage to the lungs<sup>6</sup>

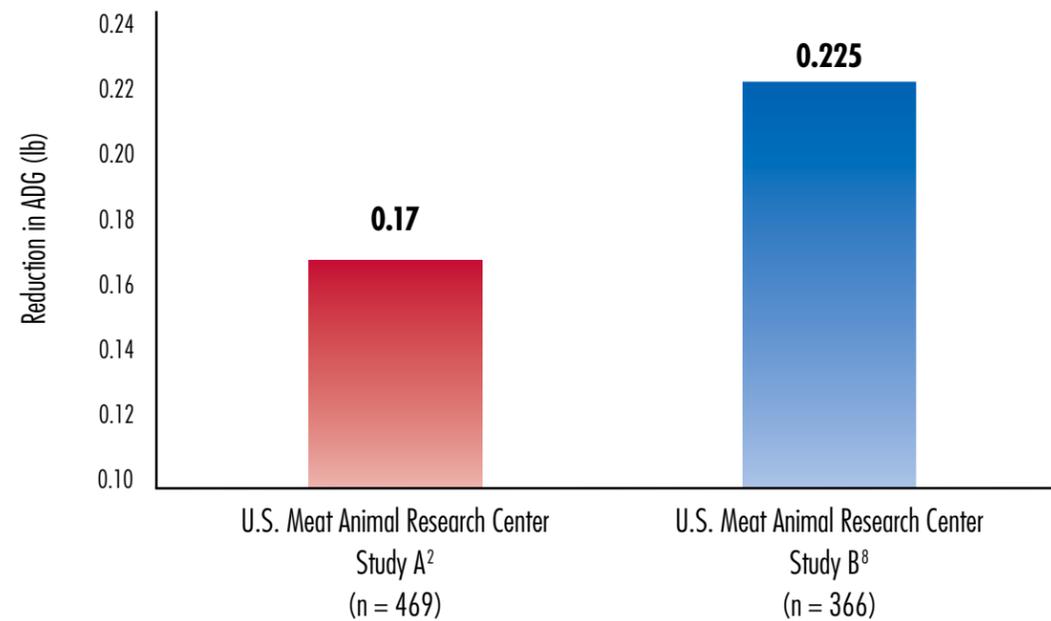
Preserve and protect



## The lung lesions of BRD affect growth performance

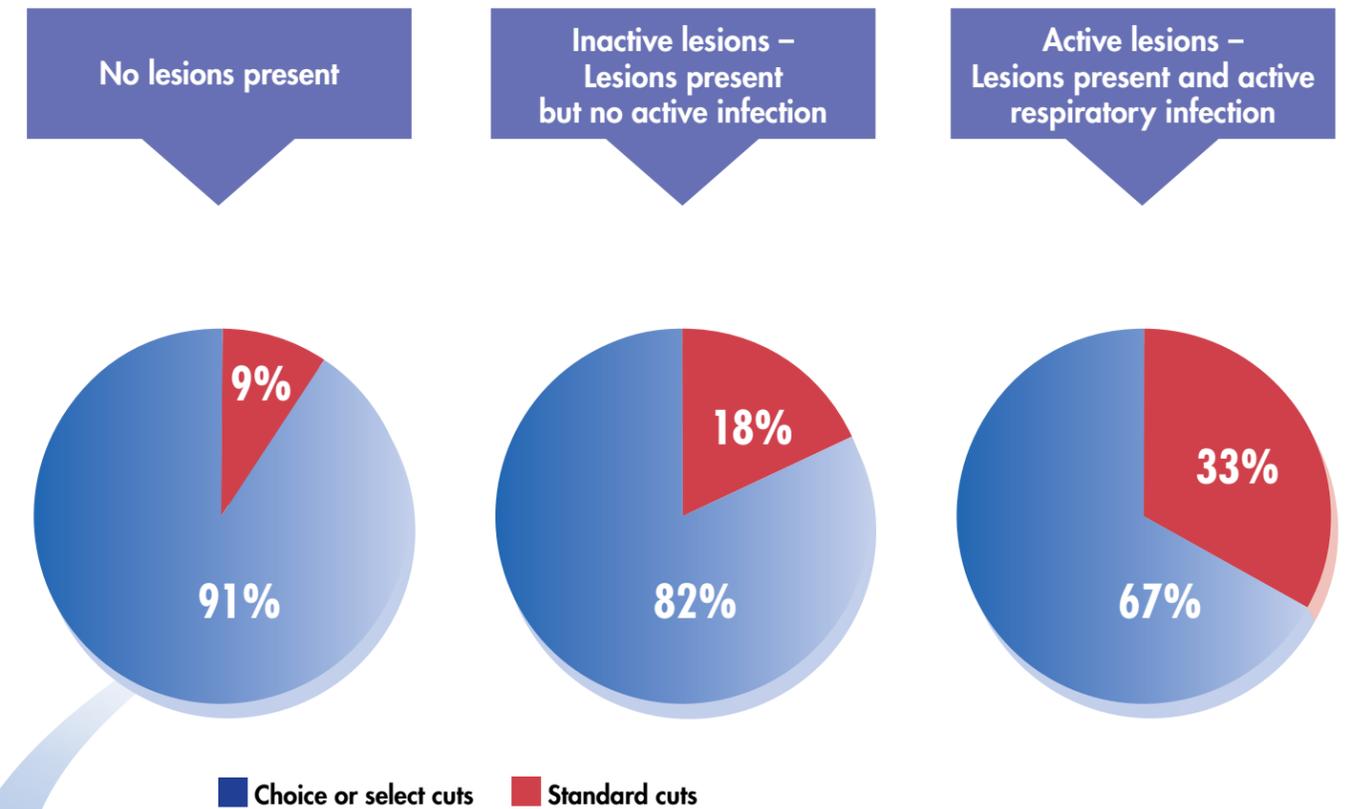
- The presence of lesions in the lungs at slaughter have been directly linked to the growth performance of calves
  - Reduction in average daily gain (ADG)<sup>4,5</sup>
  - Reduction in weight at slaughter ( $p=0.001$ )<sup>5</sup>
  - Reduction in dressing percentage ( $p=0.021$ )<sup>5</sup>

The presence of lung lesions was associated with a significant reduction in ADG



## The lung lesions of BRD affect quality grade

- The presence of lesions in the lungs at slaughter is associated with a reduction in carcass quality<sup>5</sup>
  - Less tender beef ( $p=0.05$ )<sup>5</sup>
  - Less marbling — less juiciness and flavor ( $p=0.009$ )<sup>4</sup>
  - Fewer high-quality cuts<sup>5</sup>— choice–select spread estimated at approximately \$12 average for 2007<sup>9</sup>



n=204 steer calves. Lung lesions were present in 33% of all lungs at slaughter. Adapted from Gardner *et al.*<sup>5</sup>

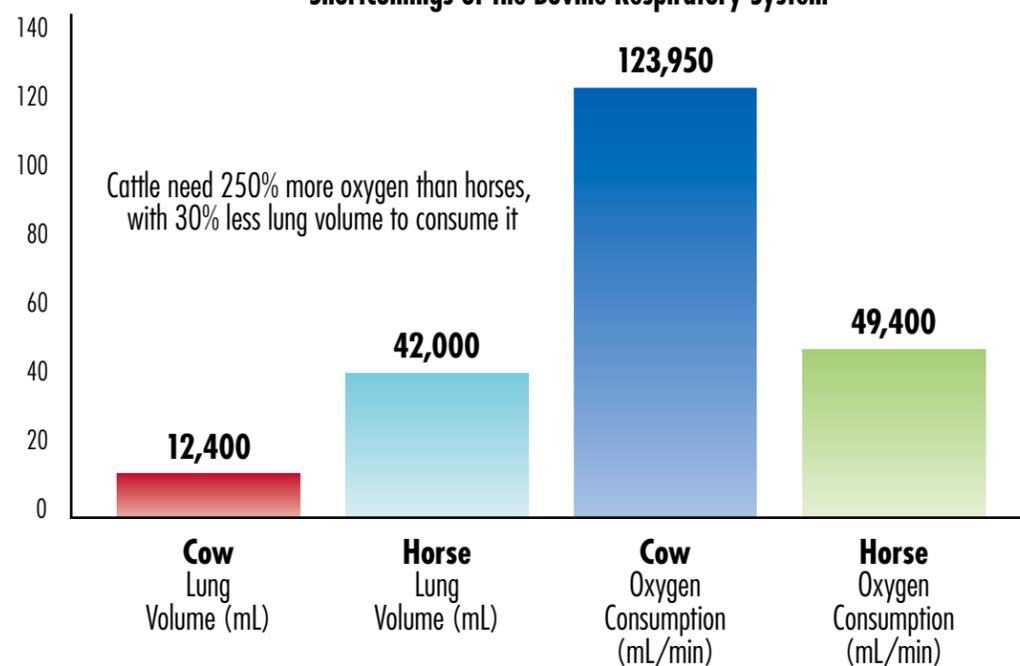
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# Why protection from lung damage is essential

- Physiologically, cattle are particularly prone to the development of BRD and lung lesions<sup>10</sup>

Shortcomings of the Bovine Respiratory System



## Effects of BRD

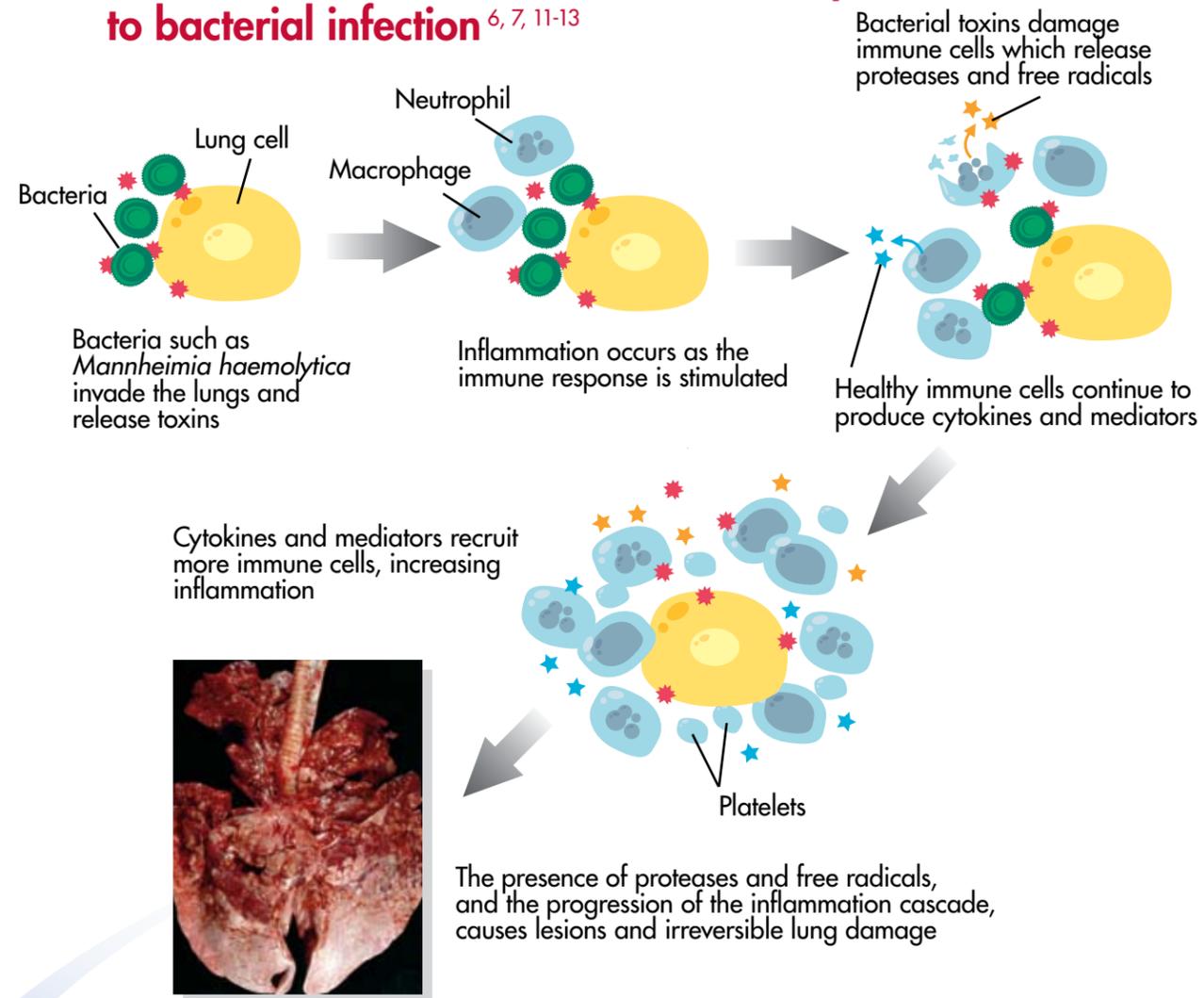
- The damage from these lesions can be irreversible<sup>7</sup>
- Even when clinical symptoms are not present during the infection, irreversible lesions can still develop<sup>3,4</sup>

## Irreversible damage

- Cattle's lungs are so undersized, compared to their oxygen needs, that the animals cannot afford to sacrifice even a small portion of lung to lesions

# Why antibiotics alone are not enough

## Lesions are the result of the immune response to bacterial infection<sup>6,7,11-13</sup>



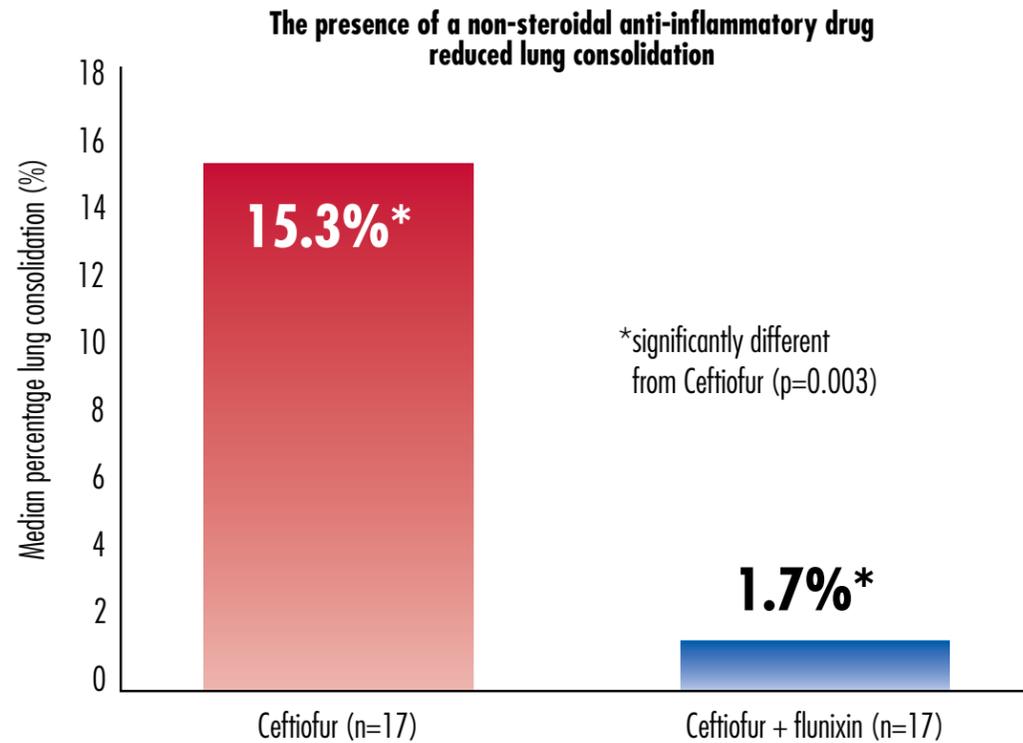
- The immune response may be more damaging than the infection itself
- In a study of 469 calves, treatment for BRD with antibiotics alone did not prevent significant production losses<sup>3</sup>
- Irreversible lung damage may be avoided by simultaneous control of bacterial infection and local inflammation<sup>7</sup>

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# Effectively controlling the inflammatory response

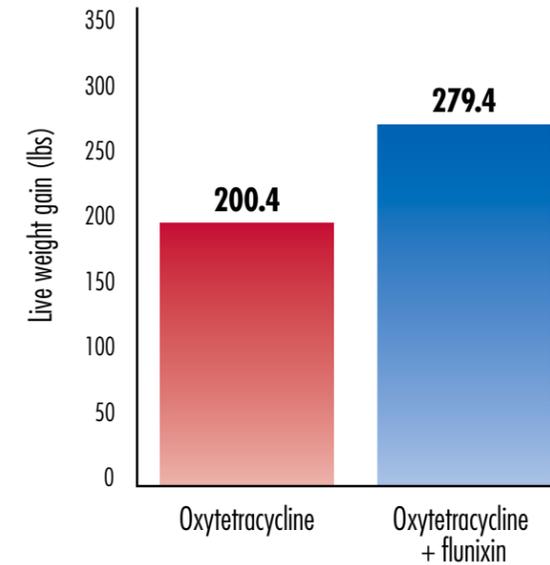
- NSAIDs reduce lung consolidation and enhance response to antibiotic treatment<sup>14</sup>



Randomised study of 66 calves with a temperature of at least 104°F at inclusion. Ceftiofur dose 1.1mg/kg i.m., flunixin dose 2.2mg/kg i.v. Total percentage lung consolidation calculates as 0.1 (lobe 1+2, cranial and caudal segments of left cranial lobe) + 0.27 (lobe 3, left caudal lobe) + 0.05 (lobe 4 accessory lobe) + 0.3 lobe 5, right caudal lobe) + 0.08 (lobe 6, right middle lobe) + 0.2 (lobes 7 and 8, cranial and caudal segments of right cranial lobe). Adapted from Lockwood *et al.*<sup>14</sup>

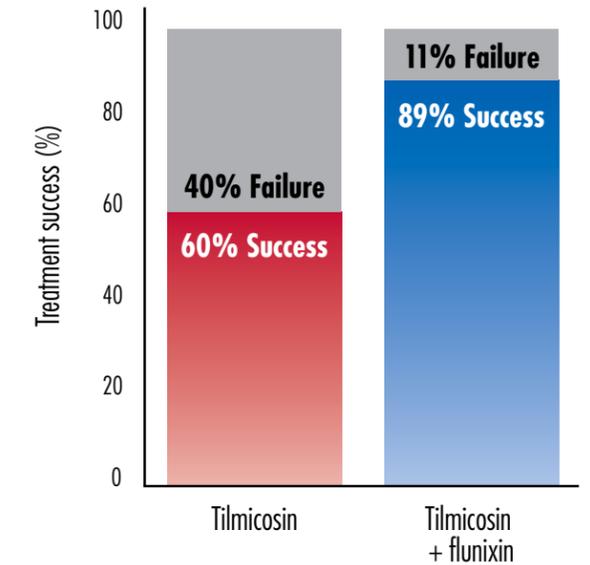
- Unlike corticosteroids, NSAIDs can exhibit an antipyretic response without suppressing the ability of the immune system to fight off viral and bacterial infections
- NSAIDs begin protecting the lungs within seconds after IV administration and continue to be therapeutic for two days

## Presence of a non-steroidal anti-inflammatory drug improved performance even in severe cases of BRD



Housed calves with acute pneumonia; 150-day feeding period. Average difference in live weight gain between treatment groups was 41.8 pounds.<sup>15</sup>

## Presence of non-steroidal anti-inflammatory drug increased treatment success and decreased treatment failure and relapse rates



Randomized study of 96 stocker calves assigned to one of 16 grass lots, with six calves per lot.<sup>16</sup>

- The optimal therapeutic strategy is, therefore, the combination of an antibiotic and an NSAID<sup>7</sup> to provide enhanced lung protection and a visibly fast recovery

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#### References:

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