INFO SHEET

Veterinary Services

United States Department of Agriculture

Animal and Plant Health Inspection Service

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Treatment of Respiratory Disease in U.S. Feedlots

Bovine respiratory disease complex (BRD), also known as shipping fever or bronchopneumonia, is the leading cause of illness and death in U.S. feedlots.

Recent research indicates that animals with evidence of lung disease visible at harvest had lower average daily weight gains while they were in feedlots than those animals that did not have visible lung damage.[1]

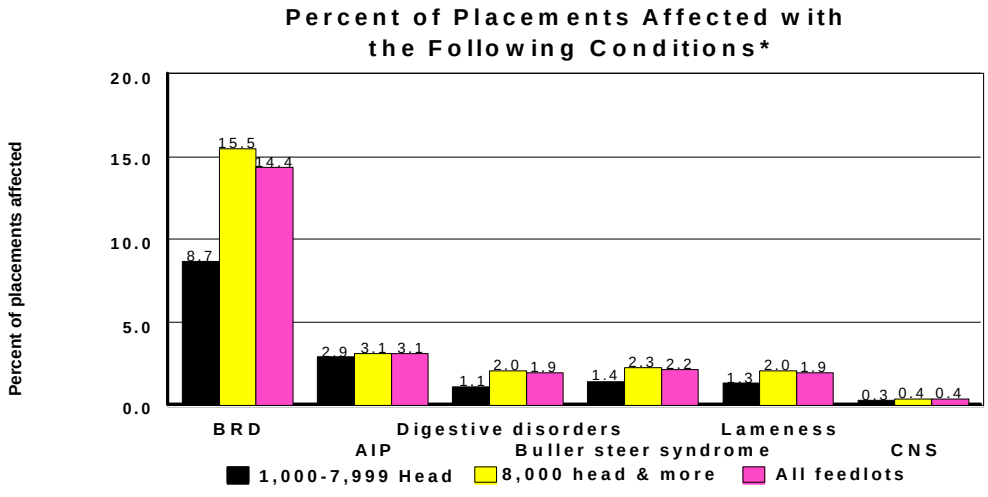
It is generally accepted that BRD results from an interaction of stress, immunity, and infectious pathogens. Ultimately, bacteria (usually *Mannhiemia hemolytica or Pasteurella multocida*) invade the lower respiratory system leading to bronchopneumonia, which manifests clinically as BRD.

Early administration of an effective antimicrobial at the appropriate dose is beneficial for the successful treatment of BRD-affected animals. When an outbreak of BRD is anticipated or present in a group of cattle, metaphylaxis (mass treatment) of the high-risk group with an antimicrobial can decrease BRD morbidity.

In the fall of 1999, the USDA's National Animal Health Monitoring System (NAHMS) conducted a study of feedlots with a 1,000-head-or-more capacity within the 12 top cattle feeding states.[2]

These feedlots represented 84.9 percent of U.S. feedlots in 1999 with 1,000-head-or-more capacity and contained 96.1 percent of the U.S. feedlot cattle inventory on January 1, 2000, on feedlots with a 1,000-head-or-more capacity.

Figure 1.



[1] Wittum et.al., J. Am. Vet. Med. Assoc., 209(4):814-8:1996; Gardner, et al., J. Anim.Sci., 77:3168-75:2000.

[2] Arizona, California, Colorado, Idaho, Iowa, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Washington.

Table 1. Percent of Feedlots by Product Typically Used to Treat Cattle for an Initial Course of BRD, by Feedlot Capacity.

Theraputic Product	Feedlot Capacity (Number of Head) 1,000-7,999	8,000 or more	All Feedlots
Injectable antibiotic	99.8	100.0	99.8
Oral antibiotic	31.1	16.5	27.0
Vitamin C injection	6.1	16	8.9
Vitamin B injection	31.8	30.3	31.4
Respiratory vaccine	31.5	64.1	40.6
Corticosteroid	20.4	27.1	22.3
Non-steroidal anti-inflammatory drug (NSAID)	37.7	47.6	40.5
Antihistamine	31.6	37.5	33.3
Anthelmintic (dewormer)	8.7	7.1	8.3
Probiotic paste	31.9	23.1	29.5
Oral electrolytes, fluids, drenches	20.2	33.4	23.9
Other product	1.3	1.8	1.5

Feedlots were grouped into two size categories based on animal capacity (1,000 to 8,000 head and 8,000 head or more). Data were weighted to be representative of the feedlot industry in the 12 participating states.

Almost all (97.6 percent) of feedlots had at least one animal develop BRD during the year ending June 30, 1999. Overall, producers reported 14.4 percent of all placements developed BRD while at feedlots, nearly five times the percentage of placements as the next most commonly reported disease, acute interstitial pneumonia (Figure 1).

The percentage of placements that developed BRD was higher on feedlots with 8,000-head-or-more capacity than on smaller capacity feedlots.

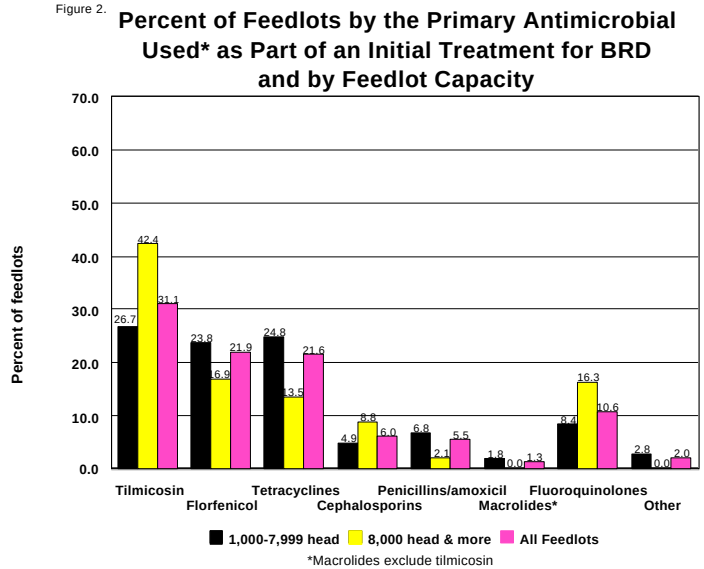
Nearly all (99.8 percent) feedlots included an injectable antibiotic as part of the therapeutic regimen for BRD (Table 1). The most common antimicrobials used by feedlots for the initial treatment of respiratory disease were tilmicosin, florfenicol, and tetracyclines.

The antimicrobials selected commonly differed between large and small feedlots (Figure 2). Large feedlots were more likely to choose tilmicosin and fluoroquinolones and less likely than small feedlots to use tetracyclines.

Table 1. shows other pharmaceuticals and supportive therapies (product types) used by many large and small feedlots as an initial course of treatment for BRD.

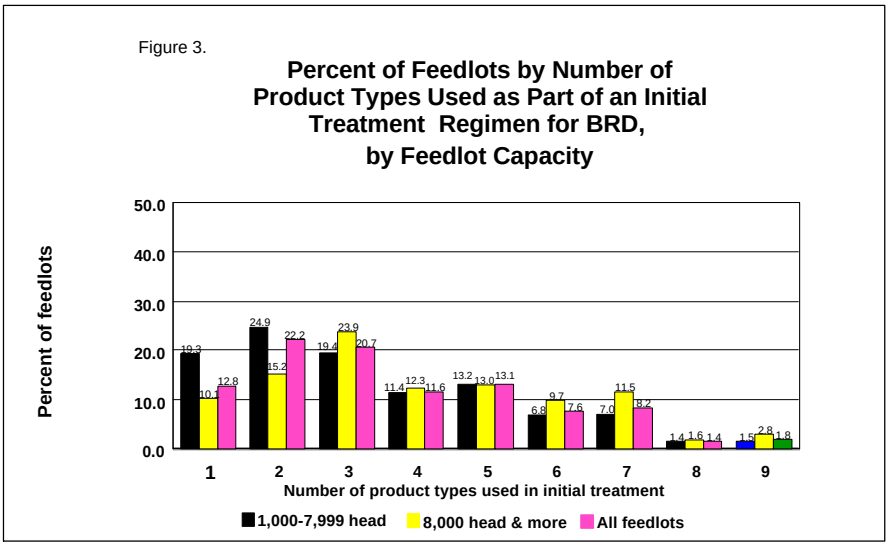
More than 25 percent of large feedlots also used a respiratory vaccine, a non-steroidal anti-inflammatory drug (NSAID), an antihistamine, oral electrolyte fluids or drenches, or a corticosteroid.

Figure 2.



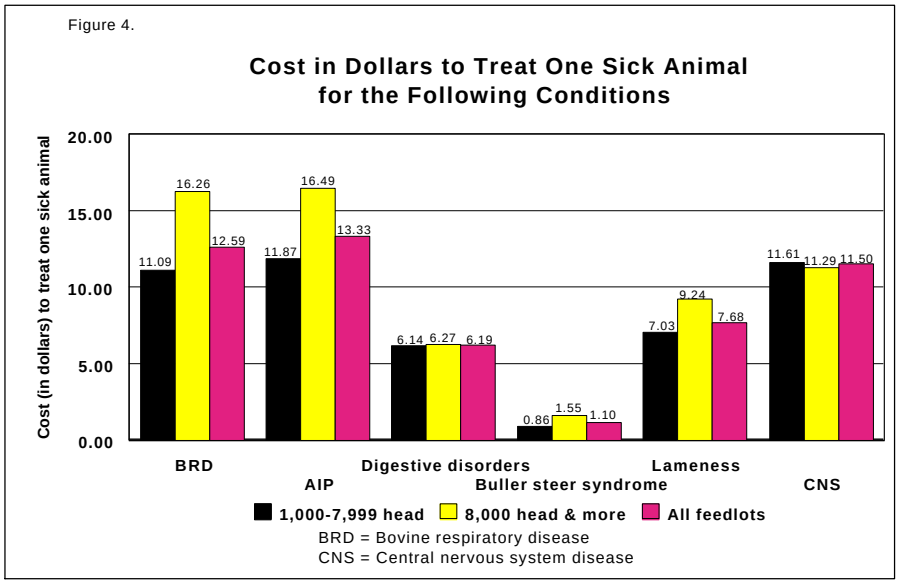
Roughly one-third of small feedlots used an NSAID, probiotic paste, vitamin B injection, an antihistamine, a respiratory vaccine, or an oral antimicrobial in addition to an injectable antimicrobial.

The number of product types typically used for the initial treatment of respiratory disease varied broadly. The use of two product types for the initial treatment of disease was most common among the feedlots overall, (22.2 percent, Figure 3).



Approximately 56 percent of feedlots used three or fewer product types, and 80.4 percent of feedlots used five or fewer product types. Approximately 13 percent used only one product type.

For those feedlots that typically included two product types in the initial treatment regimen of respiratory disease, the most common combinations included an injectable antimicrobial used with: an oral antimicrobial (29.0 percent of feedlots that used two product types), a respiratory vaccine (presumably against IBR; 20.8 percent), a NSAID (13.6 percent), and a probiotic paste (10.2 percent).



For those feedlots that typically included three product types in the initial treatment regimen of respiratory disease, the most common combinations used included an injectable antimicrobial used with: a respiratory vaccine and an anthelmintic (14.8 percent of feedlots that used three compounds), and an oral antimicrobial and a probiotic paste (11.9 percent).

No single combination of four or more product types was used by more than 10 percent of the feedlots that used five product types. The most common was an injectable antimicrobial used with a corticosteroid, non-steroidal anti-inflammatory drug, an antihistamine, and a probiotic paste (8.3 percent of feedlots that typically used five product types to treat respiratory disease).

Estimates of the typical cost incurred to treat one animal include costs such as pharmaceuticals, syringes, and needles, but do not include labor charges, veterinary fees, or indirect costs (Figure 4).

For those feedlots that used the most common combinations of two product types, reported costs to treat one animal were $8.80 (oral and injectable antimicrobials); $12.36 (vaccine and injectable antimicrobial); $11.73 (NSAID and injectable antimicrobial); and $11.64 (probiotic paste and injectable antimicrobial).

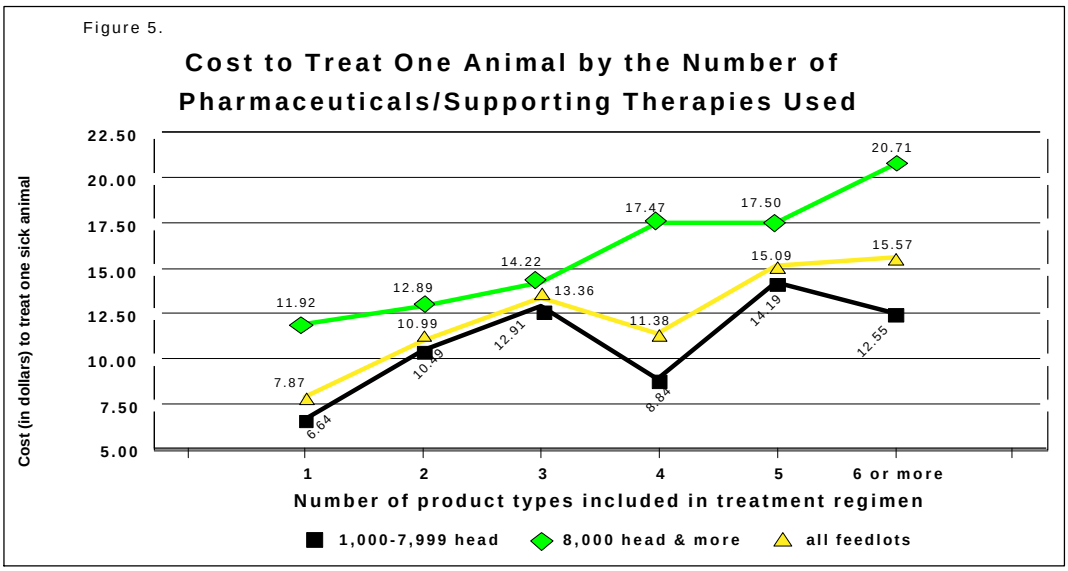
Care should be taken when interpreting these results, as there is a wide variation in cost both within and between product types. For example, feedlots using a respiratory vaccine may have chosen a more expensive injectable antibiotic than those administering an oral antimicrobial.

The cost incurred as part of the treatment for BRD was greater for large feedlots than small feedlots, regardless of the number of product types included in the regimen (Figure 5).

Almost all feedlots used an injectable antimicrobial when treating BRD. Most feedlots included at least two other product types in their BRD-treatment regimen.

While the cost to treat an animal with BRD increased as the number of product types used increased, the economic advantages or disadvantages of increasing the number of product types for the treatment of BRD cannot be evaluated because treatment success, case fatality rate, and chronicity data were not collected.

Therefore, it is unclear if administering pharmaceuticals and supportive therapies in addition to an injectable antimicrobial for BRD is advantageous.



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