

Respiratory Diseases of Feedlot Cattle in Central USA

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Summary

Cattle feedlots are concentrated in the central plains of the USA near areas of high grain production and slaughter plants. Cattle that are brought into these feedlots are generally young animals from six months to twelve months of age. Average morbidity rates are about 8% and mortality rates are under 1% during the feeding period.

Bovine Respiratory Disease (BRD), is the most common disease of feedlot cattle causing about 75% of the morbidity and over 50% of the mortality.

BRD is also known as "shipping fever" since it occurs soon after the cattle arrive in the feedlot and the stress from shipping is considered to be one of the major factors in producing the disease. Reducing the expense of this disease complex is considered to be very worthwhile. Many preventive steps can be taken to reduce the calves' exposure and minimize shipping stress.

Keywords: BRD, Shipping Fever, Feedlot Respiratory Disease.

Feedlots and Feedlot Cattle in Central USA

The author provides veterinary consulting service to midwestern USA feedlots which are the source for the following data. The one-time capacity of each feedlot ranges from 10,000 head to 115,000 head and the feeding period ranges from 120 days to 300 days depending on the size of the cattle received. Cattle in these feedlots usually average a daily weight gain of over 1.4 kgs. and are fed to a finished weight of 455 kgs. to 570 kgs.

Feeder cattle are received into the feedlots at different sizes and ages, i.e.: calves that have just been weaned at from 5 to 8 months of age and weighing from 180 kgs. to 300 kgs and yearlings from 230 kgs. to 360 kgs. They also arrive from a number of sources including direct from the ranch where they have been raised, from backgrounding operations where they have been started on feed and thus are acclimated to a feedlot en-

vironment, direct from pastures, and from auction markets. The size and thus the age as well as the source of the cattle, generally has a great influence on the health problems that cattle will experience at the feedlot. Young calves are more susceptible to disease since they have fewer opportunities to build protection to various pathogenic organisms. They also suffer the most in adjusting to dramatic ration changes. Handling stress is much more severe in the younger animal since any fluid loss due to shrink is usually of much greater magnitude in the freshly weaned calf.

These variables bring about classifying feeder cattle when they are received based on the amount of stress and the potential then they will have for increased incidence of BRD, as either high risk or low risk cattle. Classifying these animals on arrival acts as an aid in directing management procedures that might be necessary to minimize losses due to disease and also points out the preventive measures that probably were not adhered to with a particular set of cattle.

High Risk Cattle - freshly weaned calves; cattle that have been hauled for at least 20 hours; cattle that have been assembled at auction markets; and cattle that appear to be highly stressed when received at the feedlot.

Low Risk Cattle - yearling cattle from one source; cattle that are arriving from a backgrounding operation where they have been in a feedlot-like environment, and low stressed calves that have been weaned.

Incidence of BRD in Feedlot Cattle

Feedlot diseases cause major economic losses to the livestock industry. A one percent death loss costs \$5 to \$10 per head marketed and a 10% morbidity rate about \$2 per head marketed for medication costs alone. The sick animals do not perform as well in the feedlot and thus an additional cost for the poor performance can represent a considerable loss to cattle feeders that experience a high morbidity rate.

The incidence of feedlot diseases is quite consis-

tent at around 8% of the animals received and the mortality about 1% (Table 1). The morbidity of each of the six categories (Respiratory, Digestive, Skeletal, Urogenital, Central Nervous System, and Miscellaneous Diseases) is noted in Table II. Respiratory diseases consistently cause the major health problems. Table III shows that respiratory diseases account for over one-half of the losses while digestive diseases account for about one-third. The morbidity rate is highest during the first of the feeding period as can be noted in Table IV where nearly 70% occurs during the first 45 days in the feedlot. The mortality rate by days on feed in Table V shows that about 60% of the deaths occur after the cattle have been on feed for over 45 days. This is primarily due to the increased number of bloat and enterotoxemia cases that occur later in the feeding period.

Table 1. Incidence of Feedlot Diseases of Midwest Feedlots

YEAR	NO. OF FEEDLOTS	NO. RECEIVED	NO. TREATED	% OF RECEIVED	NO. DEAD	% OF RECEIVED
1979	5	151,321	13,398	9	2,025	1.34
1980	5	137,649	11,259	8	1,540	1.12
1981	9	205,681	19,303	9	2,161	1.05
1982	9	250,521	21,603	9	2,270	0.91
1983	10	256,451	18,418	7	2,548	0.99
1984	11	418,112	27,493	7	3,283	0.79
1985	11	372,175	26,674	7	2,420	0.65
1986	9	377,634	27,769	7	2,157	0.57
1987	9	439,324	41,042	9	3,382	0.77
1988	9	486,899	33,469	7	3,259	0.67
1989	10	718,756	39,164	5	5,202	0.72
1990	10	727,514	37,891	5	4,894	0.67
1991	10	818,208	65,481	8	7,618	0.93
1992	12	924,957	103,229	11	9,869	1.07
1993	11	761,014	60,126	8	7,862	1.03
1994	9	718,452	59,419	8	6,878	0.96
AVERAGE		7,766,668	605,738	8	67,368	0.85

Table 2. Morbidity of Feedlot Cattle (by system affected)

YEAR	NO. RECEIVED	NO. TREATED	% OF RECEIVED	PERCENTAGES					
				Resp	Dig	Skt	U/G	CNS	Misc
1986	377,634	27,769	7	71	4	17	4	0	3
1987	439,324	41,042	9	79	4	8	3	0	5
1988	486,899	33,469	7	67	5	6	5	0	17
1989	718,756	39,164	5	79	5	7	3	0	4
1990	727,514	37,891	5	76	6	8	4	0	6
1991	818,208	65,481	8	82	7	8	3	0	3
1992	924,957	103,229	11	79	3	10	2	0	6
1993	761,014	60,126	8	74	4	13	3	0	6
1994	718,452	59,419	8	72	5	12	4	0	6

Table 3. Mortality of Feedlot Cattle (by System affected)

YEAR	NO. RECEIVED	NO. TREATED	% OF RECEIVED	PERCENTAGES					
				Resp	Dig	Skt	U/G	CNS	Misc
1986	377,634	2,157	.57	56	22	4	4	1	13
1987	439,324	3,382	.77	67	14	4	4	2	10
1988	486,899	3,259	.67	65	18	4	3	2	7
1989	718,756	5,202	.72	56	29	4	4	2	6
1990	727,514	4,894	.67	51	31	6	4	1	7
1991	818,208	7,618	.93	58	29	6	4	1	6
1992	924,957	9,869	1.07	50	28	5	2	1	12
1993	761,014	7,862	1.03	52	30	9	3	1	6
1994	718,519	59,419	0.96	46	36	7	3	1	7

Table 4. Morbidity of Feedlot Cattle (by Days on Feed)

YEAR	NO. RECEIVED	NO. TREATED	% OF RECEIVED	PERCENTAGES		
				< 45 DAYS	45-90 DAYS	> 90 DAYS
1986	377,634	27,769	7	76	16	7
1987	439,324	41,042	9	80	13	6
1988	486,899	33,469	7	70	19	11
1989	718,756	39,164	5	68	22	10
1990	727,514	37,891	5	67	21	12
1991	818,208	65,481	8	70	19	11
1992	924,957	103,229	11	75	18	8
1993	761,014	60,126	8	67	19	14
1994	718,452	59,419	8	65	20	15

Table 5. Mortality of Feedlot Cattle (by Days on Feed and Deaths in the Pen)

YEAR	NO. DEAD	PERCENTAGES			DEAD IN PEN	
		< 45 DAYS	45-90 DAYS	> 90 DAYS	NO.	%
1986	2,157	49	29	22	966	45
1987	3,382	55	28	16	1,285	38
1988	3,259	41	30	28	1,508	46
1989	5,202	35	37	28	2,611	50
1990	4,894	37	32	30	2,734	56
1991	7,618	41	30	29	4,114	54
1992	9,869	46	29	24	4,766	48
1993	7,862	39	31	30	4,216	54
1994	6,878	34	30	36	4,011	58

BRD is most prevalent in cattle soon after they arrive at the feedlot. The disease is characterized by depression, inappetence, fever, cough, nasal discharge and dyspnea. Calves that present these symptoms are removed from their pen and taken to a hospital facility where they are treated. The cost of the treatments with antibiotics will average about \$12 to \$15 per head treated.

The etiology of BRD is multifactorial and generally believed to be an interaction between viruses, bacteria, *Mycoplasma*, and physical, psychological, physiological, and environmental stress factors. The primary lesions observed at necropsy include severe bronchopneumonia or fibrinous pneumonia.

Preventive Measures

In light of the methods currently being used to assemble large numbers of feeder cattle, transporting them for great distances to feedlots and exposing them to a number of respiratory pathogens, the likelihood of totally eliminating BRD in feedlot cattle in the USA seems quite unlikely. However, reducing the incidence of this disease through more careful handling and assembling the cattle is very realistic and is being practiced by many successful cattle feeders.

One of the first preventive measures is to concentrate on reducing the amount of stress placed on the cattle and this is most important in the younger, more

susceptible calf. Calves must be weaned and possibly placed through various market channels, but placing them in smaller pens with less exposure to other calves and also providing this care closer to the farm of origin is a very practical step. Then after the calf has had some time to build some protective antibodies and adjust to a new ration, it is in much better shape to withstand a long haul to the feedlot. This same procedure can apply to yearling cattle as well and has produced some dramatic reductions in health problems when they arrive at the feedlot.

Handling cattle carefully to minimize stress to the animals is another very worthwhile procedure. Bruises and injuries are very costly damages in that the affected animals are more reluctant to eat or drink and thus will be much more prone to infectious processes. Preconditioning animals, i.e., administering vaccines, weaning the calves and getting them used to concentrated rations and the feedlot environment, has proven to be a very successful method of minimizing losses to BRD.

Abstract

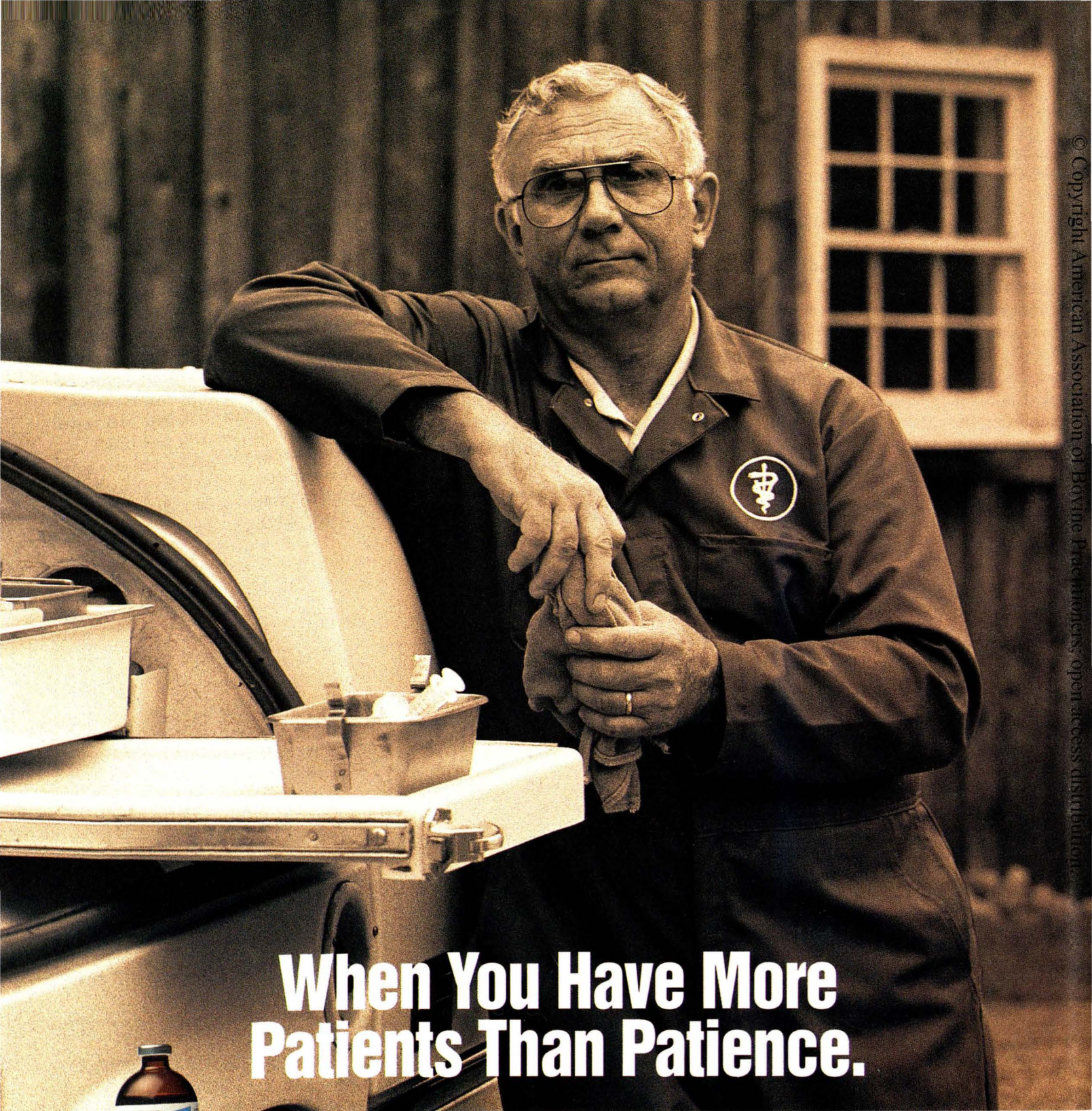
Bovine respiratory syncytial virus-infection (BRSV) in cattle of northern Germany

H.P. Heckert, P. Steinhagen, G. Appel and W. Hofmann

3rd Sci. Cong., Egyptian Society for Cattle Diseases, 3-5 Dec. 1995, Assiut, Egypt.

Infectious diseases of the respiratory system nowadays are the most important disturbances of bovine herd health in Germany. Besides enzootic bronchopneumonia, IBR (BHV-1-infection) and BVD-dependent bronchopneumonia and more infections caused by coronavirus and BRSV are registered. Symptoms, meth-

ods of diagnosis, therapy and prophylaxis are quite different from other diseases in the BRD-complex. Own investigations as well as clinical, virological and other results are demonstrated. Treatment and methods for eradication of the infection from the farms are discussed.



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Note to Physician: The cardiovascular system appears to be the target of toxicity. This antibiotic persists in tissues for several days. The cardiovascular system should be monitored closely and supportive treatment provided. Dobutamine partially offset the negative inotropic effects induced by Micotil in dogs. β -adrenergic antagonists, such as propranolol, exacerbated the negative inotropy of Micotil-induced tachycardia in dogs. Epinephrine potentiated lethality of Micotil in pigs.

For Subcutaneous Use in Cattle Only. Do Not Use in Automatically Powered Syringes.

Indications: Micotil is indicated for the treatment of bovine respiratory diseases (BRD) associated with *Pasteurella haemolytica*.

Description: Micotil is a solution of the antibiotic tilmicosin. Each mL contains 300 mg of tilmicosin base as tilmicosin phosphate in 25% propylene glycol, phosphoric acid as needed to adjust pH and water for injection, q.s. Tilmicosin phosphate is produced semi-synthetically and is in the macrolide class of antibiotics.

Actions: Activity — Tilmicosin has an *in vitro* antibacterial spectrum that is predominantly gram-positive with activity against certain gram-negative microorganisms. Activity against several mycoplasma species has also been detected.

Ninety-five percent of the *Pasteurella haemolytica* isolates were inhibited by 3.12 μ g/mL or less.

Microorganism	MIC (μ g/mL)
<i>Pasteurella haemolytica</i>	3.12
<i>Pasteurella multocida</i>	6.25
<i>Haemophilus somnus</i>	6.25
<i>Mycoplasma dispar</i>	0.097
<i>M. bovirhinis</i>	0.024
<i>M. bovoculi</i>	0.048

*The clinical significance of this *in vitro* data in cattle has not been demonstrated.

Directions — Inject Subcutaneously in Cattle Only. Administer a single subcutaneous dose of 10 mg/kg of body weight (1 mL/30 kg or 1.5 mL per 100 lbs). Do not inject more than 15 mL per injection site.

If no improvement is noted within 48 hours, the diagnosis should be reevaluated.

Injection under the skin behind the shoulders and over the ribs is suggested.

Note — Swelling at the subcutaneous site of injection may be observed but is transient and usually mild.

CONTRAINDICATION: Do not use in automatically powered syringes. Do not administer intravenously to cattle. Intravenous injection in cattle will be fatal. Do not administer to animals other than cattle. Injection of this antibiotic has been shown to be fatal in swine and non-human primates, and it may be fatal in horses.

CAUTION: Do Not Administer to Swine. Injection in Swine Has Been Shown to be Fatal.

WARNINGS: Animals intended for human consumption must not be slaughtered within 28 days of the last treatment. Do not use in female dairy cattle 20 months of age or older. Use of tilmicosin in this class of cattle may cause milk residues. Do not use in veal calves, calves under one (1) month of age, or calves being fed an all milk diet. Use in these classes of calves may cause violative tissue residues to remain beyond the withdrawal time.

CAUTION: The safety of tilmicosin has not been established in pregnant cattle and in animals used for breeding purposes. Intramuscular injection will cause a local reaction which may result in trim loss.

How Supplied: Micotil is supplied in 50 mL, 100 mL and 250 mL multi-dose amber glass bottles.

Storage: Store at room temperature, 86°F (30°C) or below. Protect from direct sunlight.

Literature revised April 8, 1994

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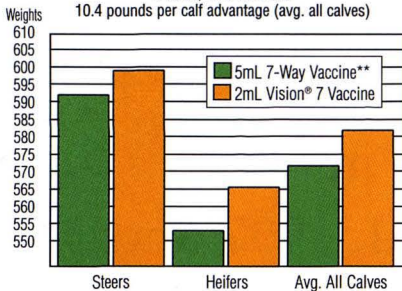
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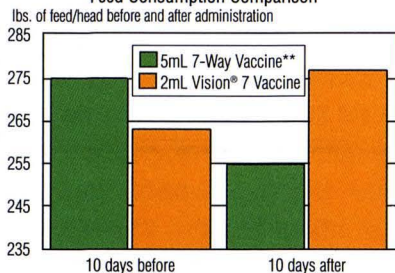


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