

Has Antimicrobial Usage Altered the Ecology of *Mycoplasma spp.* in Intensively Managed Production Units?

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Feedlot Health Management Services Ltd.

As part of the FHMS service model, individual animal records are collected on a variety of animal health and feedlot production parameters.

FHMS has developed dedicated software for the collection of these data

- FHARM® 1997-2007, iFHMS® 2008 to present

The searchable database is used as an aid in feedlot production, epidemiological investigation, and research



Post-Mortem Categorization

Complete PM examination and digital images for every animal that dies

Syndromic PM categories

- BRD
- Histophilosis
- Arthritis
- Metabolic Disease
- BVD/Enteritis
- Other Diseases



Post-Mortem Categorization

Within each PM category, there are specific diagnoses based on major pathological PM findings

- Within BRD, two diagnoses could represent *Mycoplasma bovis* (*M. bovis*)-related disease
 - CPM - Chronic Pneumonia that looks like *Mycoplasma*
 - PAR - Pneumonia and ARthritis
- Primary arthritis could also represent *M. bovis*-related disease

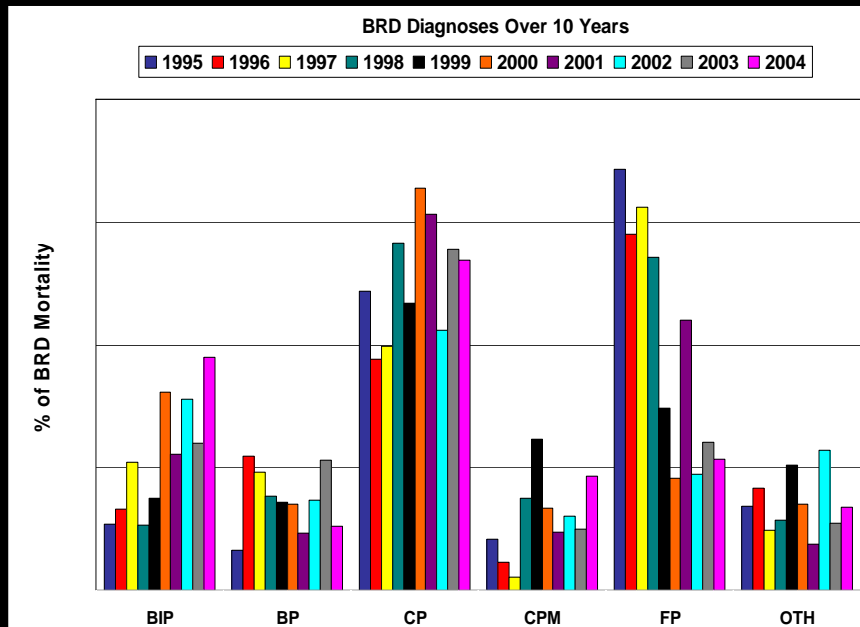


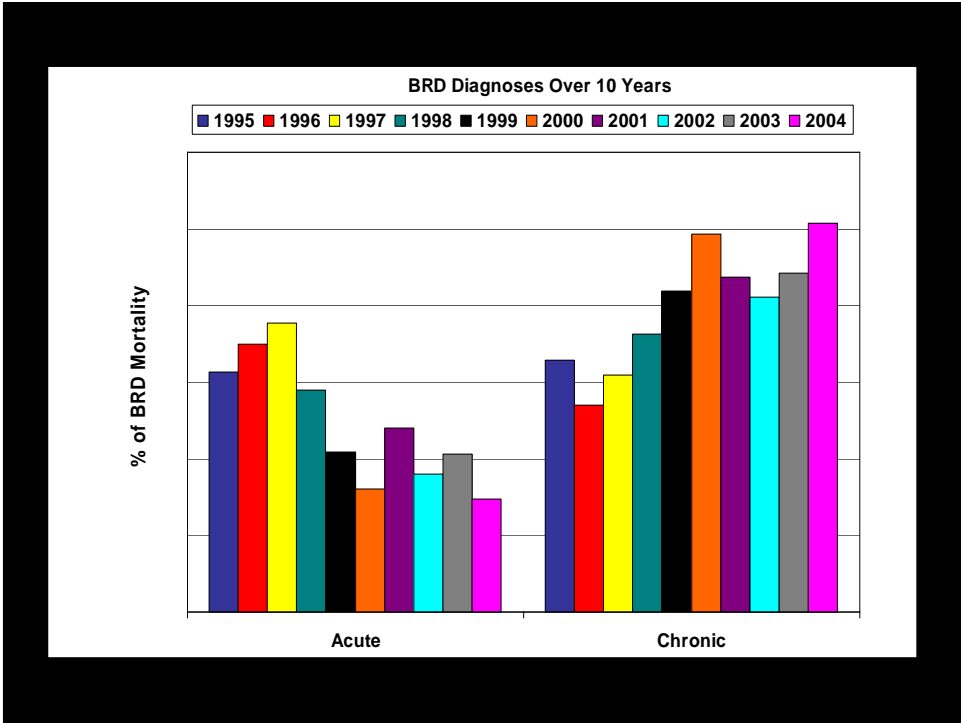
Digital Post-Mortem Picture Review - 2005

PM photos reviewed from a single feedlot over 10 years

2 days in each month were randomly selected for review

- Standardized diagnosis algorithm and set of diagnoses used
- Pictures from 2,520 animals reviewed





Conclusions

Over 10 years, various levels of CPM were observed

Over time, more chronic presentations at PM and less acute presentations at PM were observed

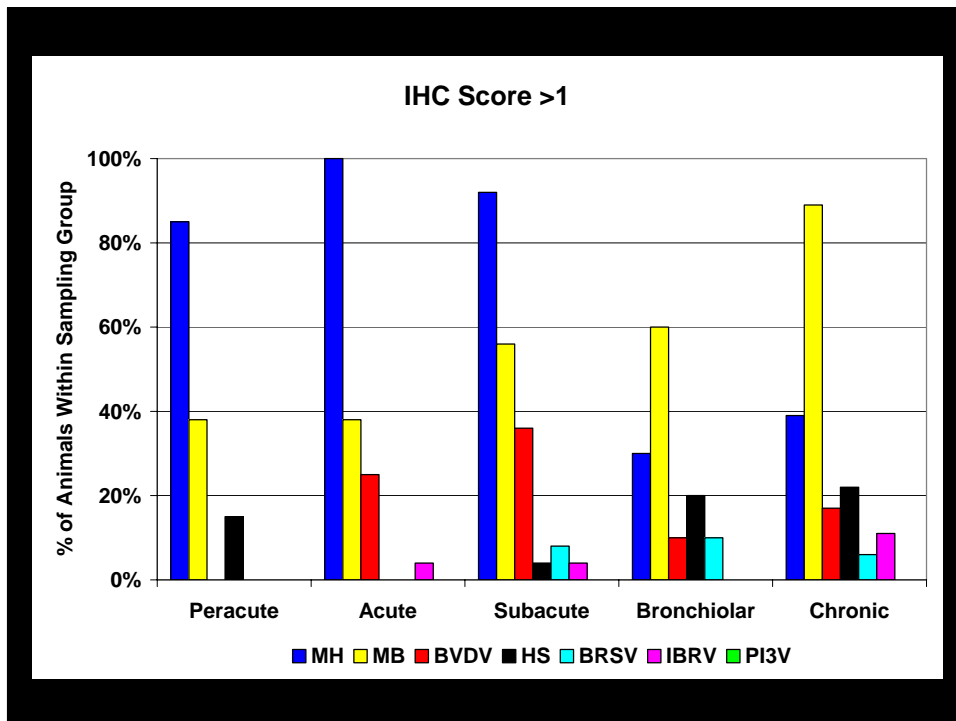


FHMS BRD Research - 2008 (CVJ, 49:473-481)

Targeted BRD fatalities were assessed based on gross, microscopic and microbiological examination

90 calves diagnosed with BRD at PM were separated into 5 sampling groups (peracute, acute, subacute, bronchiolar and chronic) based on gross lesions at necropsy

The prevalence of *M. bovis* (MB) in cattle within each sampling groups was estimated using IHC of PM tissues



Conclusions

M. bovis was identified with IHC in 90% of cases of BRD with chronic gross PM presentations

M. bovis was identified with IHC in 40% of cases of BRD with peracute and acute gross PM presentations



FHMS BRD Research - 2005

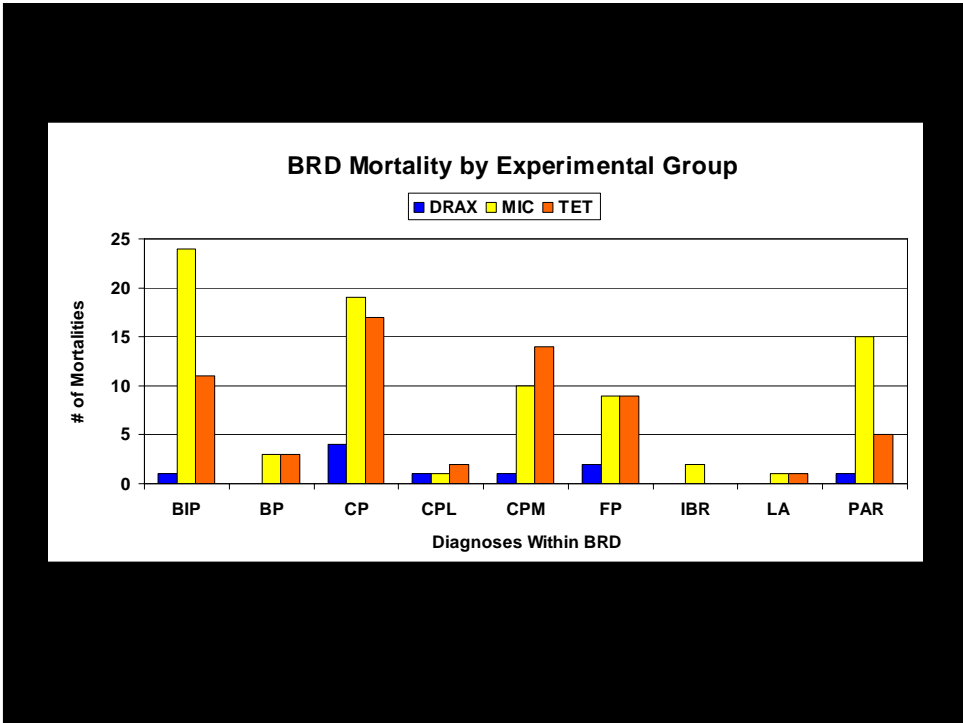
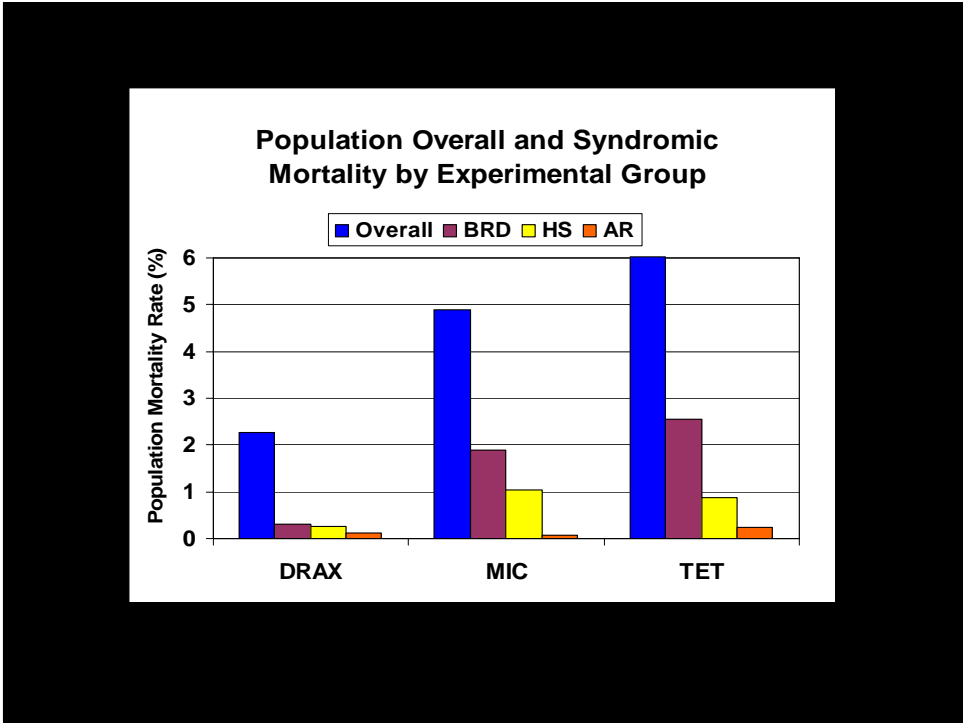
Crossbred feedlot calves (550 – 650 lb.) from auction markets in western Canada

Cattle were randomly allocated to receive one of the following as metaphylaxis at feedlot arrival:

- Draxxin® (Pfizer) 2.5 mg/kg BW
- Micotil® (Elanco) 10.0 mg/kg BW
- Tetradure® (Merial) 30.0 mg/kg BW

10 pens in each group - 330 animals/pen





Conclusions

Draxxin reduced the overall BRD mortality level and reduced the occurrence of individual BRD diagnoses, including CPM and PAR.



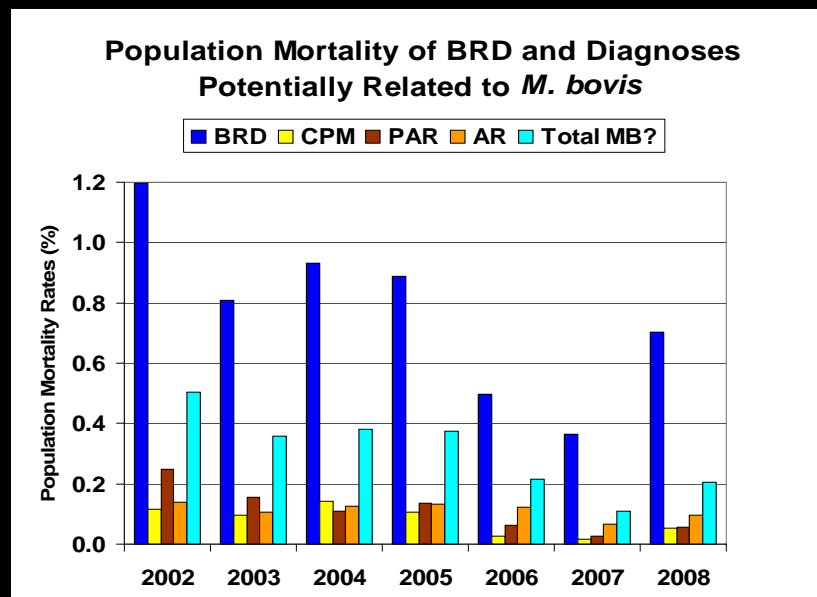
FHARM and iFHMS Database Review 2002-2008

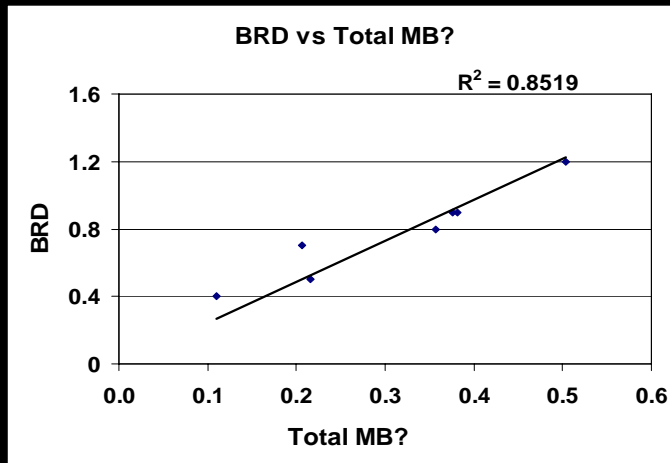
Data for calves placed between July 1-Dec 31 of each year in western Canadian feedlots were extracted

Summarized based on PM diagnoses that may potentially reflect *M. bovis* related disease



Potential <i>M. bovis</i> Contribution to Mortality					
Year	BRD Population	Diagnoses as an index (%) of BRD			Total MB?
	Mortality	CPM	PAR	AR	
2002	1.2	9.6	20.8	11.6	42.0
2003	0.8	11.7	19.4	13.1	44.2
2004	0.9	15.4	11.9	13.7	41.0
2005	0.9	12.0	15.4	15.0	42.4
2006	0.5	5.4	12.9	24.9	43.2
2007	0.4	4.4	7.1	18.4	29.9
2008	0.7	7.6	8.0	13.8	29.4





Conclusions

Population *M. bovis*-related mortality rates varied by year, but were generally lower in the last 3 years than in the 4 years previous to that

M. bovis-related mortality appears to represent 30-40% of BRD mortality, regardless of the overall BRD mortality level (0.4%-1.2%)



Overall Summary

M. bovis has likely always been a component of the BRD complex in western Canada



Overall Summary

Improved AM efficacy (prevention and treatment) and more sensitive pathogen detection methods make it appear that disease caused by *M. bovis* may be an emerging feedlot disease



Overall Summary

Quite simply, it may be that animals with BRD die with lesions that are attributable to *M. bovis* because other bacterial pathogens have been controlled by new generation AM with improved efficacy



Portrait of a man in a suit and glasses.

Portrait of a man in a suit and tie.

Portrait of a man in a suit and tie.

Portrait of a man in a suit and tie.

Portrait of a man in a suit and tie.

Portrait of a woman in a dark jacket and light shirt.

Portrait of a man in a suit and tie.

Portrait of a woman in a dark jacket and light shirt.

Portrait of a man in a yellow shirt.

Portrait of a man in a light-colored shirt and glasses.

Portrait of a man in a suit and tie.

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