




Mycoplasma bovis - BHV-1 synergy

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Organization**





Mycoplasma bovis

- ❖ **Bronchopneumonia in young calves**

- ❖ **Feedlot cattle**
 - Chronic pneumonia
 - Arthritis

**Infections in feedlot cattle responsible for
considerable losses to producers**






Epidemiology of M. bovis

- ❖ Ontario feedlots: 50% arriving animals had serum antibody to *M. haemolytica*, *M. bovis*, BVDV, BRSV, PIV3
- ❖ 40% animals sero-converted (*M. bovis*, *M. haemolytica* and BVDV) in first month of arrival to feedlots, synergism?
- ❖ Western Canada: *M. bovis* and BVDV most common pathogens in animals with chronic respiratory disease at time of necropsy






Management

- ❖ Antibiotic therapy not very effective
- ❖ Commercial vaccines prepared from few strains but no data on effectiveness
- ❖ Exposure to other pathogens such as *P. multocida*, *H. sommus*, BVDV, BHV-1 may play a role
- ❖ **Control of other pathogens may be warranted**





Need for model development

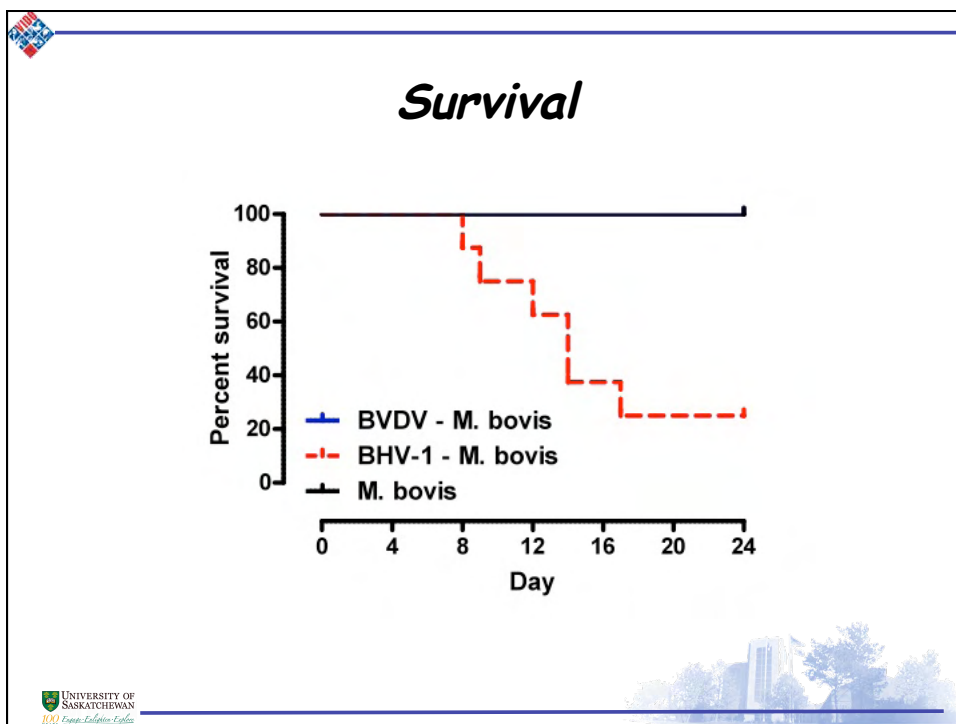
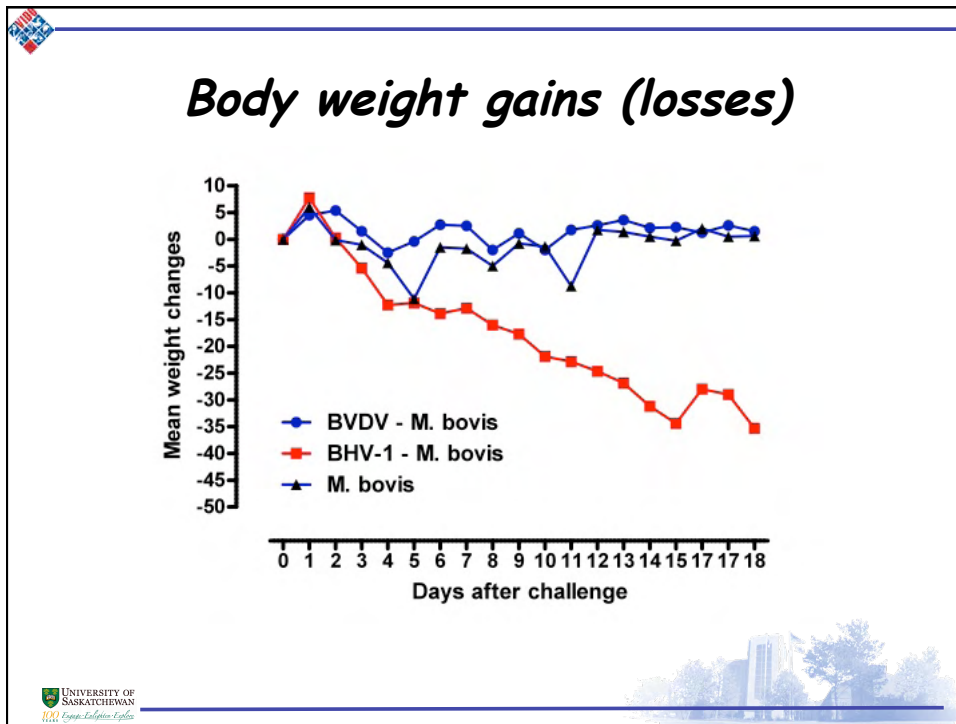
- ❖ Models for young cattle (3-16 week-old)
- ❖ *M. bovis* alone ... no disease in 5-8 month-old calves
- ❖ No model for vaccine testing in feedlot animals

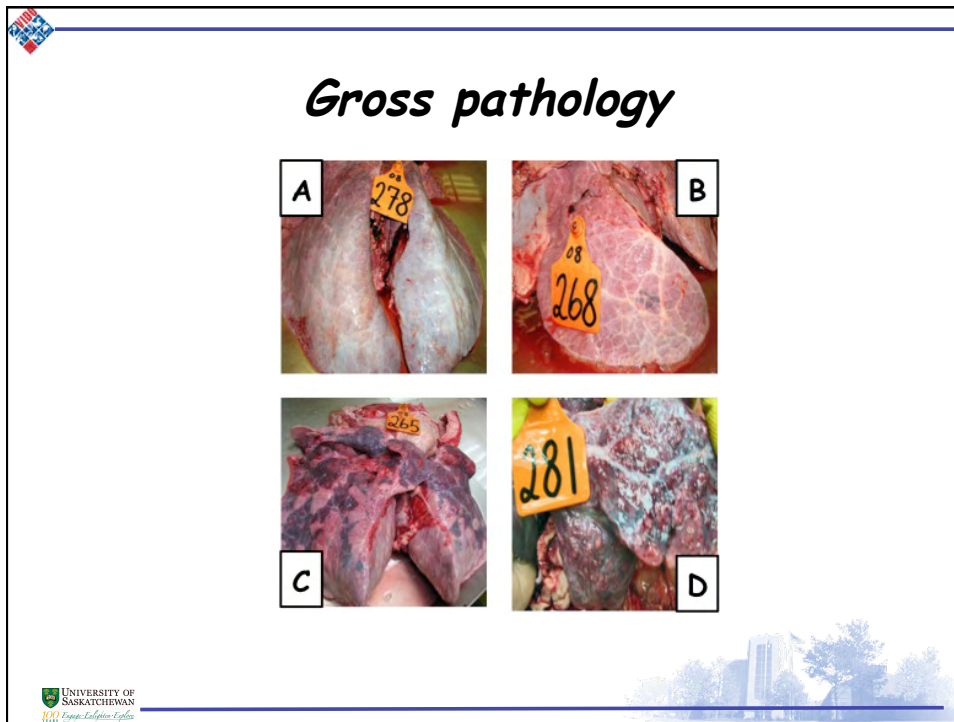


Challenge model - Why do it?

- ❖ Need to contemplate what happens in feedlots (many variables)
 - Animals transported from different places
 - Subject to stress conditions
 - Exposed to several respiratory pathogens
- ❖ Focused on two variables....
 - Previous exposure to BHV-1 or BVDV
 - BVDV - Evidence in literature
 - BHV-1 - Synergy with other bacterial pathogens i.e. *M. haemolytica*







Conclusions

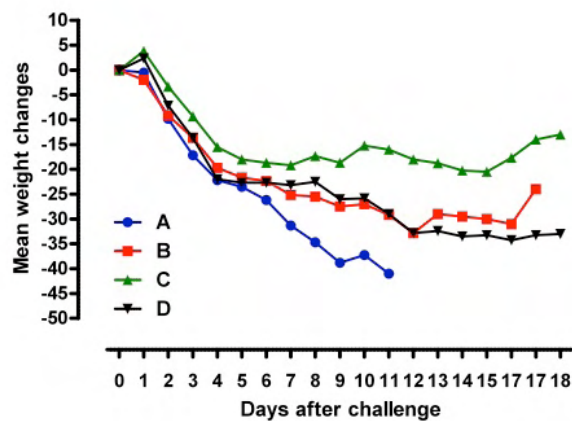
- ❖ Exposure to BVDV does not enhance *M. bovis* disease
- ❖ *M. bovis* alone does not cause disease in 5-8 month old animals
- ❖ **Only a previous exposure to BHV-1 causes *M. bovis* - related disease**

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Dose and route trial

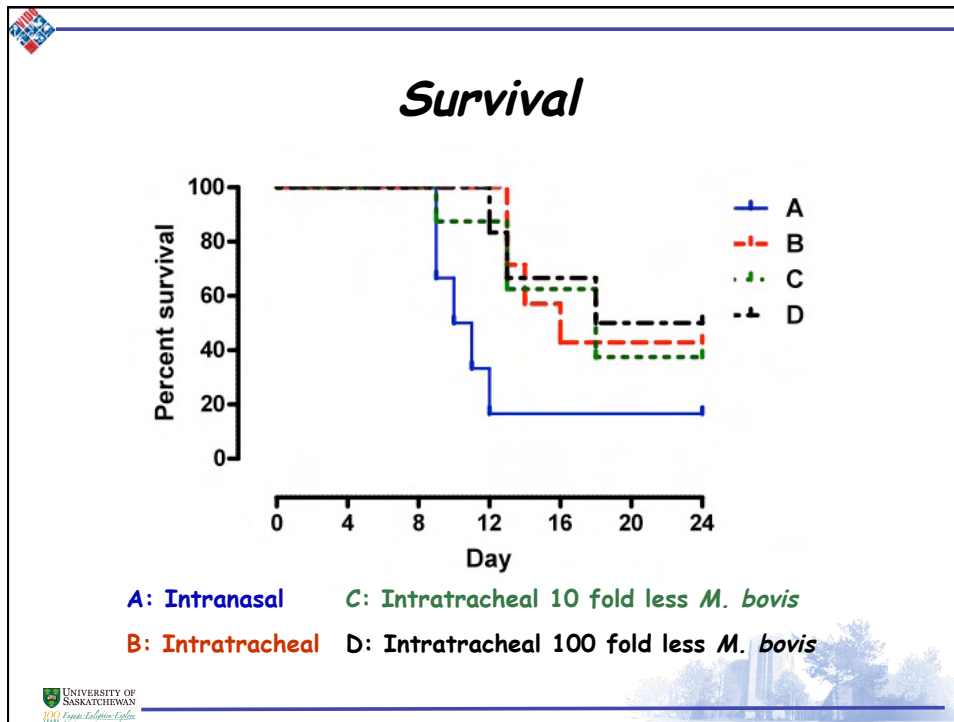
- ❖ Recreate natural transmission
 - Expose animals to BHV-1
 - Intra-nasal challenge with *M. bovis*
- ❖ Reduce *M. bovis* challenge dose by 100 fold

Body weight gains (losses)



A: Intranasal **C: Intratracheal 10 fold less *M. bovis***

B: Intratracheal **D: Intratracheal 100 fold less *M. bovis***



Conclusions

- ❖ Intranasal challenge with *M. bovis* of BHV-1 exposed animals causes disease
- ❖ No significant differences between high and low *M. bovis* challenge doses

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General Conclusions

- ❖ Previous exposure to BHV-1 results in animals more susceptible to *M. bovis*
- ❖ Model relevant to test experimental vaccines for feedlot animals
- ❖ Improved use of BHV-1 vaccines may reduce the risk of *M. bovis* infections
- ❖ **Vaccinate against BHV-1**

Thanks to:

- | | |
|--------------------------------|--------------------------|
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