## Materials and Methods

A systematic review of the literature was done to identify research articles comparing CI detected during the post-weaned phase in beef calves with LU. A hierarchical Bayesian latent-class meta-analysis that accounted for within- and between-study variability was used to calculate SeCI and SpCI. This meta-analysis also predicted SeCI and SpCI for future studies. Conditional independence between CI and LU was assumed, as these 2 tests are not based on similar biological principles.

## Results

Seven studies were identified for inclusion in the meta-analysis. Estimated pooled SeCI and SpCI were 0.27 (95% Bayesian credible interval: 0.1 to -0.65) and 0.92 (0.72 to 0.98), respectively, whereas estimated pooled SeLU and SpLU were 0.91 (0.82 to 0.99) and 0.67 (0.64 to 0.79). Predicted SeCI and SpCI for future studies were 0.27 (0.01 to 0.96) and 0.92 (0.14 to 1.00), respectively, indicating considerable heterogeneity among studies.

## Significance

Clinical inspection had poor sensitivity but high specificity for BRD diagnosis in feedlot. Substantial heterogeneity among studies highlighted the urgent need to better define a BRD case.

# Comparing estimates of treatment effect of antibiotics for BRD from randomized controlled trials with a network meta-analysis

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## Introduction

Bovine respiratory disease is the most economically important disease of feedlot cattle in North America. Choice of antibiotic is a critical factor for producers and veterinarians. We previously published a mixed-treatment comparison meta-analysis that combined evidence from published trials and published estimates of comparative efficacy for 12 antibiotics registered for use in the US. Some of the comparative efficacy estimates were based only on indirect evidence. Since the original review was published, new randomized controlled trials that provide direct evidence of comparative efficacy have been published. Here, we compare the estimates from the original model with the estimates from the studies. Such information will enable us to determine if indirect comparisons from meta-analysis are informative.

## Materials and Methods

The original search from the prior review was repeated, and found that 5 of the new studies met the criteria for inclusion in the updated review. Four of these studies provided new data on direct comparisons of active drugs. We compared the results of those trials with the results from the prior model.

## Results

The results from 1 study (performed in 2002) that compared ceftiofur pinna and enrofloxacin were inconsistent with the network and were excluded from the analysis. Three new direct comparison studies examined gamithromycin compared with tulathromycin, florfenicol, and tilmicosin. For the comparison of gamithromycin (referent) with tulathromycin, the original model predicted a risk ratio (RR) of re-treatment of 0.54 (95% credible interval=0.27 to 0.87) based only on indirect data. The subsequent randomized controlled trial revealed that the observed RR of re-treatment was 0.59 (95% confidence interval=0.45 to 0.78). The results of other comparisons were also similar. For the gamithromycin (referent) to florfenicol comparison, the observed randomized trial RR using indirect evidence was 1.17 (95% confidence interval=0.83 to 1.64) and the indirect estimate of RR from the prior model was 0.84 (95% credibility interval=0.48 to

1.3). The gamithromycin to tilmicosin (referent) observed RR from the randomized trial was 0.99 (95% confidence interval=0.67 to 1.47) and the indirect estimate of RR from the prior model was 1.09 (95% credible interval=0.64 to 1.79).

### Significance

The results suggested that indirect estimates from network meta-analyses provided reasonable estimates of RR when direct data were not available.

# Histological characteristics of ovarian follicular dysplasia observed through ultrasound in Florida beef herds

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### Introduction

A slaughterhouse study commissioned by Florida Cattleman's Association in 2007 identified ovarian follicular dysplasia (OFD) as a primary cause of infertility in Florida beef cows. Ovaries with OFD have progressive bilateral development of solid clustered follicles containing multiple Call-Exner bodies that originate in the rete ovarii and the hilar region and progress into the cortex to eventually form bilateral Sertoli-Type Granulosa Theca Cell tumors (GTCT). The objective of this study was to access the usefulness of ultrasound for on-farm diagnosis of OFD.

### Materials and Methods

Ultrasound images of the right and left ovaries from 390 cull cows and heifers representing 4 Florida ranches were made with 5 MHz linear probes (Aloka, Ibex). Then, 10 to 12 females/ranch were followed to slaughter the following day for collection of reproductive tracts. The fixed ovaries were measured, sectioned parasagittal through the hilus, photographed, and arranged in histology cassettes for complete examination of the cut surface. Large ovarian structures including corpus luteum, Graafian follicles, atretic follicles, dysplastic follicles, rete ovarii, dysplastic follicles, and tumors were counted and measured for each ovary. Ovaries with OFD were graded I to IV. Grade I OFD contained small individual dysplastic follicles with diameter less than 200 µm, mostly limited to the rete ovarii and medulla. Grade II OFD possessed dysplastic follicles greater than 200 µm diameter that were present in the medulla and cortex. Grade III OFD had extensive multi-sized dysplastic follicles scattered throughout the entire cortex of the ovary, and Grade IV OFD had Sertoli-Type GTCT. Grade II to IV often had dystrophic mineralization of dysplastic follicles. Gross morphology of fixed sagittal sections and ultrasound images were blindly compared against OFD grade in 40 individual ovaries.

### Results

Ovarian follicular dysplasia was identified at slaughter in 29/41 cows and 1/5 of heifers. The distribution of OFD for 30 affected females was Grade I 16/30, Grade II 9/30, Grade III 4/30 and Grade IV 1/30. Characteristics that could be detected by routine ultrasound included increased size and length, increased hyperechogenicity, and decreased number of fluid-filled follicles. Hyperechogenic shadows were evident in higher-grade OFD.

### Significance

The study demonstrated that Grade III and IV OFD can be observed by routine ultrasound, but Grade I and II may require higher-resolution ultrasound probes, imaging analysis software or Doppler ultrasound.