

**Poster Number:** 87

**Topic Area:** Bacterial Disease

**Title:** Lessons learned from a *Mycoplasma hyopneumoniae* infection in a naive sow herd

**Presenting Author:** Tom Gillespie, *Performance Health, PC*

**Corresponding Author:** Lance Mulberry, *KnowledgeVentures, LLC*

**Additional Author(s):**

### Background

An acute Mhp infection was investigated in a naive 4200 sow breed-to-wean site in the Midwest. The dynamics of Mhp infections are becoming better known by practitioners as improved diagnostic methods are utilized in determining infectious state of animals. Due to the improved diagnostic methods, a common management practice is to perform herd closure when pathogen elimination is desired. This site went through a typical herd closure process with a successful elimination of Mhp. Several economically important lessons became apparent.

### Methods

During week 3, 2017 the clinical sign of coughing in sows started in farrowing rooms with nursing piglets that were 12 to 18 days of age. Positive diagnosis of Mhp was confirmed week 4, 2017 by PCR on laryngeal swabs and ELISA antibody tests. Natural exposure was selected to infect the rest of the animals within the site, including the developing females in the gilt development unit (GDU). Exposure was complete week 24, 2017 when over 90% of the animals were positive to PCR by laryngeal swab and or ELISA antibody tests. Herd closure, the immune management period, started next. The completion of the 36-week herd closure was week 8, 2018 when the first negative piglets were born. Production records of 6 years were analyzed for comparing the three time periods – naïve, consisted of 107 weeks (up to week 3, 2017), infection, 56 weeks (week 4, 2017 till week 8, 2018), and post-infection, 157 weeks (week 9, 2018 till week 5, 2021).

### Results

The cost of disease included sow mortality (4.16% 8.33%, and 3.89%) and pre-weaning mortality (10.45%, 12.38%, and 12.06%) during the naïve, acute infection, and post-infection respectively. Further production losses included: Weight decrease (kg) in weaned weight/sow/year (166.3, 158.3, and 164.2) and pigs weaned/mated female/year (29.43, 28.35, and 28.28) in naïve, acute infection, and post-infection phases respectively. The disease cost of Mhp was \$6.82 per sow bred per week, due largely to the opportunity cost of fewer piglets available at weaning. Additional costs are sow replacement and feed cost from non-pregnant sows' post-service.

### Conclusions

Parity structure impacts the number of pigs weaned per week; therefore, slight changes impacts outputs reached. An additional concern was that herd closure contributed to long-term economic losses. Figure 1 illustrates the “ripple” effect that occurred in parity 0 and continued in each subsequent parity. Independently the economic impacts of Mhp and herd closure can be seen in Figure 2. An economic simulation model was created to test herd closure under numerous possible scenarios. Probability distributions were fit to parity specific performance metrics from the naïve herd using 2022 prices. The model created stochastic breeding groups where the parity composition matched the farm's actual breeding groups. This modeled the performance of a naïve herd being closed and the parity structure altered. Herd closure ultimately improved the parity structure by having younger breeding groups. This improvement in parity structure led to improved economic performance as seen in Figure 3. Therefore, a properly managed herd closure has no long-term economic concerns.