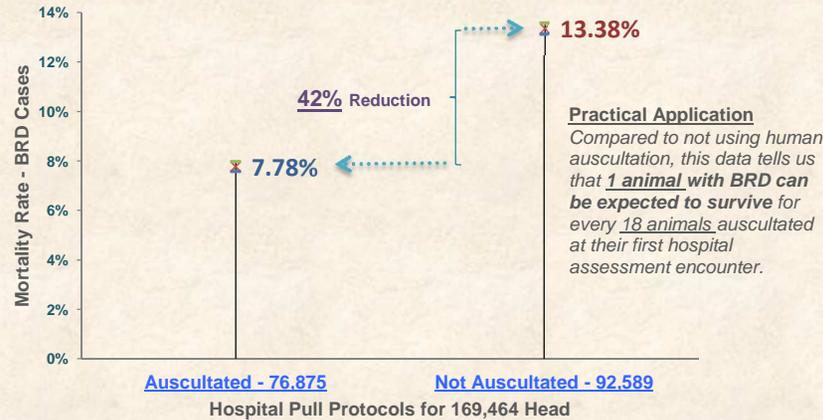


Comparison of BRD Protocols: Human Auscultation vs. No Auscultation.

Human Auscultation Protocol Reduces Morality Rates



Bovine Respiratory Disease Outcomes

Protocol	Survived	Died	Totals ▼
Auscultation	70,892	5,983	76,875
Non-Auscultation	80,211	12,387	92,598
Totals ►	151,103	18,370	169,473

Mortality Rate 95% Confidence Intervals

Protocol	Lower CI	Mean	Upper CI
Auscultated	7.59%	7.78%	7.98%
Non- Auscultated	13.16%	13.38%	13.60%
Number Needed to Treat ► Base on Auscultated Mortality Rates	16.64	17.87	19.31

What We Learn From This Analysis

Human auscultation has a big impact on mortality rates:

There is a *significant difference in mortality rates* for those animals pulled that were not auscultated compared to those that were auscultated (on their 1st pull into the hospital). After filtering for respiratory disease diagnosis only, it was found that the mortality rate for **non-auscultated animals was 13.38%** (12,387/92,589) and **7.78% for auscultated animals** (5,983/76,875). These results were determined from a total of 169,464 respiratory pulls. The overall mortality rate for respiratory pulled animals is 10.84% which is in line with industry reported rate levels.

A large, multi-feedyard, 2+ year assessment of data:

This is a comprehensive data set showing significant differences in outcomes based on auscultation. **We would expect: the animal risk levels, antibiotic type and use, origin of the animal and other factors to be effectively nullified given the time course and size of this data set.** This data set is comprised of 32 feedyards and 13,685 pens on 2,200,773 head with 169,464 hospital pulls for BRD.

Analysis by Aggregated Lot Data - Controlling Weight & Temperature Effects:

When the data were aggregated into lot averages, the auscultation difference was still present showing greater mortality rates in non-auscultated animals. Also, controlling for the effects of animal weight and temperature did not remove an auscultation main effect.

Application to Feedyard Management:

These results indicate a **Relative Risk Reduction of 42%**, $RRR = 1 - (0.778/13.38)$, and an **Absolute Risk Reduction of 5.6%** $ARR = (13.3\% - 7.78\%)$. This would indicate that **for every 18 animals auscultated at the 1st treatment encounter, you would expect to save one animal compared to not auscultating at all.** We determine this from the **Number Needed to Treat** calculation, $NNT = 1/ARR = (1/0.055956)$, which expresses how many treatments are needed to benefit 1 outcome.

The benefits of auscultation might reflect better disease management protocols or more attentiveness to the animal's presenting health status. Auscultation may be representative of an individualized animal treatment approach whereas non-auscultation represents a herd approach to disease management. **Regardless of the explanations, these are impressive results and they predict significant feedyard gains when incorporating auscultation into BRD assessment and treatment protocols.**