

Beef Sessions

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Pen riding and evaluation of cattle in pens to identify compromised individuals

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Abstract

There are a myriad of disease processes that can be diagnosed in feedyard cattle. Playing the odds, the signs of bovine respiratory disease are what pen riders are most often trained to look for. Bovine respiratory disease is responsible for the majority of feedyard morbidity and subsequent mortality. The approach to evaluation of cattle in the home pens to detect individuals early in the course of disease needs to be as efficient and as thorough as possible. Focusing on single clinical signs of BRD may not be the most feasible approach. Instead, the focus should be on more subtle behavioral changes to isolate individuals within the group that should be further examined for secondary clinical signs.

Key words: feedlot, feedyard, pen riding, BRD

Résumé

Il est possible de diagnostiquer une multitude de maladies chez les bovins de parc d'engraissement. Vu le risque élevé, les employés dans les enclos reçoivent une formation misant surtout sur la recherche de signes de maladies respiratoires. Le complexe respiratoire bovin est la grande cause de morbidité dans les parcs et de la mortalité qui en découle. L'évaluation des bovins dans les enclos afin de détecter les individus dès le début de la maladie doit se faire par une approche aussi efficace qu'approfondie. Mettre l'accent uniquement sur des signes cliniques du complexe respiratoire bovin n'est pas l'approche la plus réaliste. Au contraire, il serait mieux de détecter des changements comportementaux subtils pour isoler les individus dans le groupe qui devraient être examinés plus à fond pour des signes cliniques secondaires.

Introduction

Pen riding can be one of the most rewarding or frustrating endeavors in a commercial feedyard. Most

important, pen riding is the first step in the BRD case definition. A pen rider will spend a short number of seconds every 24 hours or so assessing the entire health and well-being of individual animals, hoping in that window of time there are subtle detectable behavioral or physical changes indicating the potential onset of disease before the disease process has progressed to the point where identification is obvious and straight forward, but response to treatment is questionable

Cattle are cattle, there is not much difference within the species. There is, however, a myriad of situations that need to be considered when evaluating cattle in a feedyard. One of the biggest would be maturity and immunocompetence. "Calves" or younger higher-risk cattle tend to generate higher morbidity. These cattle also tend to show more identifiable clinical signs sooner in the course of BRD than older, more mature cattle.

Previous experiences (Holstein calf ranch vs range vs irrigated pasture, contact with humans) will dictate what is "normal" behavior and response in cattle. This will also change as cattle become more familiar and accustomed to life in the feedyard.

Fractions or excitable cattle make evaluation for early signs of BRD much more difficult. This is a big reason why "settling" cattle following arrival has become a more common practice to help acclimate cattle to their new setting, and allowing for more timely identification of BRD by tempering fractious movement and response to human pressure.

It is important to evaluate cattle shortly after arrival for any compromised individuals or cattle showing obvious signs of a disease process, in particular BRD. There is a balancing act up front. It is important to allow cattle to recover from the effects of pre-transit events and trucking, such as fatigue, dehydration, and lack of feed, and at the same time try to monitor health while avoiding pulling too aggressively until cattle have had time to recover.

Time of year and weather also affect our approach. Summer afternoon heat makes it prudent to get pen riding done in the cooler morning hours. Cold, wet weather

may cause the majority of cattle to take a more “humped” back posture, which will take more time to elicit normal responses from cattle.

When ambient or environmental effects are causing changes in appearance or posture of cattle, pen riders will make comparative evaluations of the group to adjust their approach. For example, if there are several cattle in the pen with a runny nose, or several cattle panting in a pen, how does that compare to cattle in other pens or across the yard? It is necessary to determine what is “normal” given the effects of that particular day?

In high risk calves, “normal behavior” is best observed during the first feeding of the day if cattle are kept somewhat aggressive to feed. If there is appropriate bunk space for these cattle (approx. 1 to 2 feet (30 to 60 cm) per head), those moving to the bunk to eat are deemed “normal” and anything outside of this behavior is considered suspect for BRD. The strategy of evaluating shortly after feed delivery is a very efficient approach to pen riding.

Pen Riding

It is very difficult, and maybe impossible in some cases, to “teach” someone to be a pen rider. The task requires good observation skills and the time and experience to develop a baseline for appearance and behavior of normal cattle. There are, however, guidelines you can set that, if adhered to on a daily basis, will allow individuals to develop their skill level without suffering too much fall-out along the way, such as pen deads or late pulls. Some of the best pen riders are those that have good observational skills, even if they have never been in a feedyard before.

Pen deads and late pulls are the cardinal sins of pen riding. These are cattle that die from BRD without timely identification and treatment. This can be from a lack of experience, lack of focus, lack of riding the pen thoroughly, or not checking cattle often enough.

Taking an endeavor which is almost entirely subjective and trying to place objective guidelines around this activity can be difficult as well. In production or population medicine, success can lie in the consistencies of the daily routines. With this goal in mind the following are part of a checklist of the daily pen riding routine.

Scan the Entire Group Before Disturbing or Placing Enough Pressure to Cause Movement

In the feedyard we say “scan the entire pen before entering”, then go directly to any questionable cattle. Continue to focus on the questionable individual until that animal “tells” you there is nothing wrong. The quickest and most obvious normal response should be the head up in the alert position and eyes and ears focused in the direction of the pen rider. These cattle are

trying to determine the intent of the approaching evaluator. There is no lack for “clinical criteria” as there are a myriad of physical findings to look for; crusted muzzle, swollen eyes, popping knuckles, “sloshing” bellies, dusty back, drawn up, gaunt, heavy breathing/increased respiratory effort, and so on. There is not enough time in the day to evaluate cattle in large groups in a large operation to study each animal for these clinical signs. I was told once that if you are pulling “sick” cattle, you are probably pulling cattle too late. There is some truth to that. If individuals are found exhibiting obvious head-down posture and depression, the animal may be well into advanced bronchopneumonia. Depending on size or age, by the time we begin to see more obvious signs of BRD, a significant portion of the lung may already be affected. A more efficient approach to pen riding should be to focus on more subtle changes in disposition, posture, and response to the individual evaluating the cattle. This should be the first differentiator. This way cattle can be evaluated fairly quickly and efficiently as a group, then any individuals not posturing, moving or responding normally should be singled out for a closer look with increased scrutiny for some of the clinical criteria mentioned above (crusted muzzle, sunken eyes, etc...).

Get all Cattle Up and Force Movement if Necessary

It is important to get all cattle up and force them to move. Depending on how well cattle have been acclimated to the feedyard setting, this may or not take very much pressure. Although it is possible for more experienced pen riders to identify compromised cattle while lying down given the animals posture (head and neck out), these animals are more likely to be further into the course of BRD. It is much more difficult to detect early, subtle signs of BRD in recumbent cattle.

There are pen riders who sometimes claim that they do not really know what they are looking for, but they know a sick one when they see it. This is a most likely due to the fact that these individuals are so in tune to cattle behavior they know the instant an individual is not acting/responding normally. Again, by recognizing normal attitude, response, movement, and behavior, any deviation from normal allows the pen rider to determine which cattle need to be more highly scrutinized for more detailed clinical signs.

Aside from BRD, there are other conditions that may not be detectable while cattle are lying down, such as foot rot, injuries, lameness, bullers, swollen sheath/sheath prolapse, and mastitis, to name a few.

As pen riders gain experience, it may become just as efficient to evaluate cattle standing still as moving at a walk. This skill serves pen riders well while responsible for assessing health of newer arrivals that have not “settled” into their environment, or cattle that remain fairly nervous and fractious.

Pen *walkers* that evaluate Holsteins often prefer to see these cattle walking to look for subtle changes in gait or head position that might indicate the onset of BRD.

Moving Through the Cattle in a “Serpentine” or “Snake-like” Fashion

This strategy forces the pen rider to move more systematically through groups or pens of cattle, getting cattle up and moving as they make switchbacks through the pen. This also increases the amount of times pen riders will scan the group when not concentrating on individual animals. Cattle may take on a different appearance when pressured by the pen rider. This appearance will change when the pen rider is out of and away from that animal's flight zone. At this point more subtle changes in behavior or attitude indicative of early BRD may be more readily identified.

Check Water and Feed Sources Daily

With all the effort to micromanage the nutritional needs of cattle for maintenance and gain, it is not hard to forget that the single most important nutrient is water. Time should be taken in each pen to assess quantity and quality of feed and water. If a pen of cattle has been on feed for several days without significant health challenges or bulling activity, and all of a sudden the pen has several questionable appearing cattle, the first stops should be the water tank and the feed bunk.

Lack of sufficient timely access to water following a full meal for cattle on a finishing ration can cause a digestive upset. Cattle not fed in a timely manner, especially steers, can result in anxiety and transient bulling or riding activity.

Break up Groups of Cattle, Especially Those Congregated in Corners or Around Feed Bunks and Water Tanks

Often cattle will “hide” from pen riders when they feel pressured. It is not uncommon for a large group to have their collective attention focused on the pen rider (head up, eyes forward, ears up and out) and see 1 individual walking the opposite direction through the crowd. More than not, this individual is compromised. From a survival standpoint, it has been suggested that these animals are trying to find the center of the herd for protection. Cattle in these groups must be separated to allow the evaluator a sufficient vantage point for proper assessment of each individual within the group. With experience, pen riders begin to understand normal aggregation and behavior of cattle in feedlot pens, and that solitary individuals in corners or at water tanks should be pulled for further examination.

Look Over the Entire Pen Again Before Exiting

It is important to take one last look over the entire group once the cattle are all up, and determine if there

are cattle that need a second look. Because it will be approximately 24 hours before the cattle are ridden again, we need to feel confident in the health of the pen as a whole.

Use Some Type of Objective Criteria to Determine if Dealing with BRD or Some Other Cause of Depression

As mentioned earlier, the identification of compromised individuals is just the first step in case definition. An unfortunate consequence of years of conditioning in our industry has resulted in this being the only criteria; in many cases antibiotic treatment is based solely on what the pen rider decides to remove from the pen. As well, if pulls are deemed excessive, some operations may instigate more interventions such as a pen re-vaccination^a, mass treatment^b, or even a temp and treat^c.

At times some of these measures must be taken if the morbidity rate in high-risk calves is overwhelming the crew's ability to pull and doctor the cattle. In some instances, it is just as important to determine if impending BRD is causing the change in cattle or if we are seeing changes for other reasons. One of the most common would be the effects of feed transitioning^d. If this is the case, cattle pulled to the hospital will not appear significantly depressed, and will be less likely to be febrile. Currently rectal temperature and weight loss or gain are the only 2 feasible objective metrics for chute-side decision making as it relates to antibiotic therapy.

It can be very useful to track rectal temperature measurements of cattle in pens where morbidity is escalating—this will give us a better sense of how to manage the pen as a whole based on the interpretation of the reason for the compromised appearance of the cattle. Although rectal temperature is objective, the definition of febrile has become more arbitrary as this may vary from operation to operation depending on individual veterinary interpretation. Important to note is that the majority of the animal health products we use in cattle production, including anti-infectives, were developed and approved with models where a rectal temperature $\geq 104.0^{\circ}$ F (40° C) was deemed febrile. It is probably agreed that cattle with acute BRD will likely be febrile. A more recent report on stocker cattle¹ states rectal temperature of cattle with acute BRD will be likely $\geq 104.0^{\circ}$ F, and cattle with more chronic lesions showing clinical signs may not have a rectal temperature at or above 104.0° F. The animal suffering from chronic pneumonia may not have active pneumonia, but may be struggling from the lung damage from the previous bout of BRD.

If a pen rider encounters a pen that has several questionable cattle in it and it looks as if pulls will be excessive, it can be useful to see where we are, from a pen riding standpoint, by pulling a sample (5 to 10

head) of the worst looking cattle and see what rectal temperatures are when evaluated in the hospital. If a high majority ($\geq 90\%$) of the cattle have temperatures at or in excess of 104.0°F we may need to go back to the pen to clean it up. If a lesser amount (approximately 10 to 20%) of pulls do not have a rectal temperature $\geq 104.0^{\circ}\text{F}$, and an evaluation of the cattle later in the day does not reveal any significantly compromised individuals, we can repeat the process again the next day and then daily until the overall appearance of the cattle improves. In the meantime, it is important to investigate other factors that may be contributing to the appearance of the cattle (feed, water, working, processing, etc.).

Conclusion

Thorough, efficient pen riding involves the assessment of normal attitude, posture, and behavior of cattle to identify and isolate individuals from the group for further evaluation. Once individual animals have the pen riders' attention, the animal is then examined for more specific secondary signs suggesting the onset of BRD.

If pen riders are only pulling cattle showing obvious signs of BRD, additional training may be needed as these cattle will not respond optimally to antibiotic therapy. Conversely, cattle pulled to the hospital showing subtle or no clinical signs, but are febrile, indicates good overall pen riding technique. These cattle were likely showing signs of possible BRD onset when first observed in the home pen, but then managed to mask most of these signs while in transit to the hospital for evaluation.

Over the years there has been a host of alternatives proposed for getting amongst groups of cattle on foot or horseback to evaluate the animals for signs of disease.

In the authors opinion none have proven equitable. Recently there have been some systems involving RFID tags combined with systems tracking positioning and behavior, and subsequent analysis using algorithms to determine potentially sick animals based on behavior changes. These systems have shown some promise, but may be cost prohibitive in larger finishing operations. With time, appropriate manpower, and a consistent approach, it is realistic to expect no more than about 10% of the BRD deaths coming in the form of missed opportunities (pen deads and late pulls).

Endnotes

^aRevaccination – the practice of vaccine administration to groups of cattle breaking with BRD morbidity with the goal of enhancing immunity

^bMass treatment – the practice of administering antibiotics to groups of cattle that have shown morbidity high enough to suggest that the majority of the pen will eventually develop BRD

^cTemp and treat – the practice of measuring rectal temperature on all individuals in a group and administering antibiotic therapy to those deemed febrile

^dFeed transitioning – a change in feed delivered to cattle usually involving a feed ration with a higher level of grain/concentrate or starch

Reference

1. Nickell J. What is the importance of temperature when diagnosing sickness, in *Proceedings*. Department of Animal Sciences and Industry Kansas State University Beef Stocker Field Day 2008; 49-52.