

# HEALTH & HUSBANDRY

## Targeted treatment — innovations in health diagnostics

by Morgan Marley, Certified Angus Beef LLC

Cattle are great at camouflaging when they are sick. It's part of their survival instinct. But what if you could detect illness before a calf showed clinical signs?

That's just what animal scientist John Richeson is working on at West Texas A&M University. Presenting innovations in health diagnostics at the 2019 Feeding Quality Forum in Amarillo, Texas, he focused on what he said could be “the most complicated mammalian disease in the world.” BRD.

“Bovine respiratory disease (BRD) is very complicated because it's multifactorial,” Richeson said. “There are many viruses and bacteria involved.”

For years, many loads of cattle received at feedyards have been given metaphylaxis — a control treatment to prevent spread of disease. That means each animal in a group of high-risk calves gets an antimicrobial shot on arrival in hopes of controlling a BRD outbreak.

Richeson suggests a more targeted approach.

“We know that not every animal needs or benefits from that antimicrobial,” he said. “Targeted metaphylaxis is using certain metrics to try to predict whether an animal is going to be at greater risk for BRD, so we can make individual animal decisions chuteside very rapidly.”

### 6 risk factors

He outlined six things feeders can look for to identify high-risk calves at receiving.

1. Bulls vs. steers: Bulls are 3.32 times more prone to get BRD.
2. Existing ear tag: An ear tag is evidence that the animal has been handled at least once prior to arrival and may have been vaccinated, dewormed or preconditioned, making it less likely to get BRD.



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3. Body weight relative to cohorts: Lighter calves in a truckload have an increased risk of BRD.
4. Rectal temperature: Higher than 39.7° C (103.5° F) may indicate higher-risk individuals.
5. Lung auscultations: Listening to calves' lung sounds, manually or with technology.
6. Biomarker-assisted variables: Including blood tests for leukocyte (white blood cell) and other profiles or nasal swab analysis.

An epidemiological calculation suggests the average number to treat regarding metaphylaxis is about five.

“That means I have to give antimicrobial metaphylaxis to five animals going through my

processing chute to make a positive outcome in one animal,” Richeson said. Take a 100-head truckload and that is only 20 animals that would benefit from metaphylaxis. Which 20 animals is unknown.

Mass treatment has proven effective and economical for cattle feeders, but consumers have sent “clear signals” that they want antibiotic-free or at least reduced use of antimicrobials in beef production. Why not try



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to “give what the consumers are asking for?”

Richeson's research also uses diagnostic technology to determine which animals are sick by assessing their physical, eating/drinking and spatial behaviors.

“All of the technological options for BRD diagnosis have

the advantage of monitoring cattle continuously, 24 hours a day, seven days a week,” he said. It could be an

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Attendees of the Feeding Quality Forum in Amarillo, Texas, heard that a respiratory infection likely also affects marbling or fat deposition and probably reduces quality grade potential, regardless of adding more days on feed.

accelerometer in an ear tag, an ankle bracelet or feeding behavior system that's always on.

"Early results suggest technologies being tested right now are able to find cattle that are clinically ill, or before they are clinically ill, one to two days before the average pen rider," Richeson said.

One indication is the time spent ruminating, "a direct proxy for feed intake," because the more they eat, the more they ruminate. Sick animals are not much different than sick people — neither wants to eat when they don't feel good.

"We need a lot more research," Richeson said, "not only to understand effective algorithms and when the animal should be flagged by technology, but also to understand the return on investment."

If there is a return to be made, then early adopters could set the pace for the industry, especially those feedyards inclined to receive cattle at high-risk for BRD.

"The system has got to be simple," he said. "Simple really works in our feedlots. So anything that we implement has to be very easy to use, very rapid and cannot slow down processing or pen riding."

Some feedyards are beta testing technologies for companies, but whether that leads to adoption across the industry will depend on the return on investment and the value of diagnosing BRD early.

"Let's say the average is 50% morbidity in

high-risk cattle," Richeson said. "The 50% of healthy calves may have benefited from metaphylaxis in the chute, but there are 25% that would have been healthy regardless. So there are instant savings in drug costs to the producer by utilizing targeted metaphylaxis."

Quality grade at the packinghouse diminishes greatly if an animal gets sick just once. BRD-affected animals have highly activated immune systems, he explained. Any feed consumed is put toward the inflammatory response and resolving infection, whereas a healthy animal puts feed resources toward growth and producing a high-quality carcass.

"A pen of cattle that are affected with BRD are behind their healthy penmates," Richeson said. "We can feed those cattle longer and try to recoup that lost performance, but a respiratory infection likely also affects marbling or fat deposition and probably reduces the quality grade potential, regardless of adding more days on feed."

To do more for your cattle and maintain their high-quality genetic potential, consider management to minimize the need for their immune response.

Visit [www.feedingqualityforum.com](http://www.feedingqualityforum.com) for more information or to view all presentations. **I**

Editor's note: Morgan Marley is a producer communications specialist for Certified Angus Beef LLC.