

TIMELY TOPICS

By Robert Lynch

Cow-side diagnostics

Star Trek fans will remember Chief Medical Officers McCoy and Crusher waving their tricorders over ill and injured crew members to get instant medical information. Tests of that sophistication are not available on the dairy yet, but several cow-side diagnostic tests can help assess the health status of the herd.

Let's think of a cow-side diagnostic test as a health-related test for an individual cow that can be run on-farm with results available in minutes to hours. These tests allow a farmer to quickly collect a lot of diagnostic information right on the dairy and are typically used to confirm a diagnosis or to screen a group of animals. Some tests are better than others and no test is perfect. Some require a significant investment in equipment and are complicated to run. Let's leave those to the experts. To choose the correct diagnostic test, let's review a couple of terms:

- Sensitivity – highly sensitive tests rarely give a false negative, which make these tests well-suited to rule-out disease.
- Specificity – highly specific tests rarely give a false positive. If the test says the cow is positive, it's pretty certain she's truly positive.

Since a lot of on-farm data is created by diagnostic tests, work with the farm's veterinarian to develop a plan that best manages the information to improve herd health.

Use of rapid health information to manage the herd.

Let's explore some new, and some not-so-new cow-side diagnostic tests.

CMT: The California Mastitis Test (CMT) is an oldie-but-goody that detects DNA from ruptured somatic cell count (SCC) in milk. Once test solution from the concentrate bottle is mixed, quarters can be checked by mixing equal parts milk and CMT solution. The more it gels, the higher the SCC. Finding subclinical infections is a great way to improve milk quality. The downsides are it does not identify which bacteria may be the cause of infection, and cell counts need to reach

¼ to ½ million before gelling is obvious to most users. Generally a SCC threshold of 200,000 cells/ml indicates subclinical mastitis.

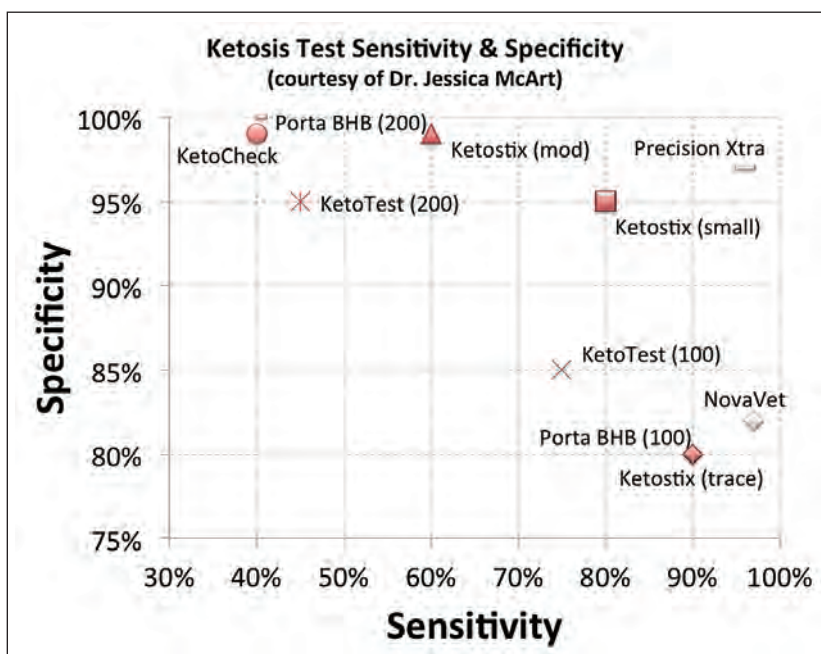
Other cow-side subclinical mastitis tests: Individual cow SCC information is great to manage milk quality. DHIA testing centers have offered this service for many years. Recently portable somatic cell counters and tests for other mastitis markers became available. These tools are more expensive than CMT but provide more accurate cell counts and better identify subclinical mastitis. Both CMT and cow-side SCC tests work well to find milk culture candidates.

Urine pH: Prefresh diets formulated with anionic salts to prevent hypocalcemia at calving need to be monitored. Checking prefresh cow urine pH indicates if cows are responding to the diet. An average urinary pH of 5.5-6.0 is a good goal, so choose paper with the appropriate range to detect that pH. Digital pH meters work well too, but be sure to calibrate on a regular basis.

Milk progesterone test strips: The ability to measure blood progesterone levels in cows as a way to evaluate where cows are in their estrous cycle has been available for many years. Research shows pretty good correlation between progesterone levels in blood and milk. Milk progesterone test strips are new to the dairy industry and now the work begins to figure out where they can be used to improve reproductive efficiency.

Serum protein: With a refractometer, special tubes, centrifuge (optional), and a few other basic supplies, antibody transfer can be monitored in young calves. The farm's veterinarian can run these tests or help create a standard operating procedure (SOP) and train those who will run the test. Make sure to calibrate the refractometer on a regular basis to ensure accurate readings.

Hypocalcemia tests: Clinical milk fever is obvious. However, fresh cows can be low in calcium without going down. Fresh cows low in calcium do not perform as well as cows with normal calcium, and are



Sensitivity and specificity comparison of several commercially available ketosis test options.

THE MANAGER

at higher risk for health problems. To monitor and manage blood calcium levels, draw samples soon after calving. When samples are processed and used promptly, routine hypocalcemia monitoring is less difficult to manage.

Water hardness test kits effectively measure serum calcium levels in fresh cows. The tests are rather inexpensive, but because serum is needed to run this test, a centrifuge is required.

Ketosis: Ketosis is a costly disease. Use of diagnostic tests to quantify the level of ketosis in dairy herds is a common management practice. Research from Cornell University shows the benefits of ketosis test-and-treat protocols. Several test options are available. Choosing the right one for a farm will depend on how the information is used. Partner with the farm's veterinarian to build the test protocol best suited to the dairy.

- Ketostix® (Bayer) – This is a tried and true test for acetouria (ketones in the urine). The test performs pretty well in both sensitivity and specificity (anything trace or above as positive). That is, if you can get a sample.
- KetoCheck™ Powder (Great States) – This test can be used with milk, urine, or serum, but most use it for milk samples. It has a relatively low sensitivity, so some positive cows are missed.
- Keto-Test® (Elanco) – A new milk BHBA test for test and treat protocols or herd screening. Set the level at which you call a cow positive depending on how the information will be used.
- Precision Xtra® Blood BHBA Meter (Abbot) – This has become the gold standard for subclinical ketosis testing due to its high accu-



Accurate BHB results in seconds (Precision Xtra®, Abbott).

racy. Unfortunately, the manufacturer of this human medical device no longer sells test strips to the veterinary market. New devices are currently entering the market. □

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PRO-DAIRY hires Dr. Robert Lynch, DVM, as Dairy Herd Health and Management Specialist

PRO-DAIRY has hired Dr. Robert A. Lynch, DVM, as Senior Extension Associate – Dairy Herd Health and Management Specialist. This newly created position enhances the capacity of PRO-DAIRY and results from a response to industry needs and increased funding from New York State in 2015 – 2016.

“We are grateful for the opportunity to expand PRO-DAIRY’s capacity with a professional of Lynch’s caliber and experience,” said PRO-DAIRY Director Tom Overton. “He has extensive training and experience working with the dairy industry here in the Northeast and has true passion for helping dairy producers and their advisors innovate.”

Lynch was a senior veterinarian for Zoetis for 10 years, where he most recently led a “Calf & Heifer Initiative” that developed educational programs and resources focused on management of the replacement dairy heifer. Prior to Zoetis he was a managing partner at Willow Creek Animal Hospital in Leesport, PA, where he managed 10 veterinarians and 30 employees. His areas of expertise include transition cow health, milk quality, reproduction, replacement management, genomics, housing, lameness prevention, immunology, obstetrics and neonatal care.

As Dairy Herd Health and Management Specialist, Lynch will establish a statewide Extension program focused on dairy herd health and management for the New York dairy industry. He will link with faculty and staff in the Department of Animal Science and the College of Veterinary Medicine and work to translate research-based concepts to practice within the dairy industry.

“Cornell University’s PRO-DAIRY Program leads the industry in advancing our understanding of dairy management. I look forward to joining this team where I can further focus my time helping the dairy industry in New York State and beyond,” Lynch said.