

# HEIFER NOTES

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## A look at calf welfare from multiple angles

### Social housing improves social and cognitive development

With more and more watchful eyes on the dairy industry, including calf raising, animal welfare is not only important to animals and producers – but also consumers. Jennifer Van Os, University of Wisconsin-Madison assistant professor and extension specialist in animal welfare, describes welfare as the state of an individual animal.

Animal care involves ethical judgment, which can be informed by scientific evidence, Van Os told those attending the 2019 Dairy Calf and Heifer Association Annual Conference.

“Scientific research in animal welfare includes both social- and biological-science approaches to understand stakeholders’ perspectives and animals’ needs, respectively,” said the UW dairy science assistant professor.

Van Os explained that animal welfare involves three overlapping ethical concerns – biological functioning, internal emotional states and ability to express natural behavior. Generally, producers, veterinarians and others directly involved in dairy farming tend to place the highest value on biological functioning. Besides health and thriftiness, others (consumers) express concern regarding pain management for routine procedures, such as dehorning, social companionship and freedom of movement.

#### Pain management

“A considerable body of research has established that disbudding causes pain and stress, regardless of the method

used,” said Van Os. “The conventional wisdom is that calves should be disbudded as young as possible; horn buds should be destroyed before they adhere to the skull (about 8 weeks old). However, some studies on other species (e.g., sheep) found that if an animal experienced a painful procedure soon after birth, that animal can have increased long-term pain sensitivity.

“This research finding suggests using caution in disbudding day-old calves.”

Regardless of the disbudding method, the best practice recommended by veterinary organizations (e.g., American Veterinary Medical Association, American Association of Bovine Practitioners) to manage pain is to combine a local anesthetic (e.g., lidocaine) with a non-steroidal anti-inflammatory drug (e.g., meloxicam).

“In Canada and parts of Europe, pain control is now mandatory,” said Van Os. “And as of 2020, this will be an expectation of the Farmers Assuring Responsible Management (FARM) program.”

In the United States, the number of producers regularly using pain relief has increased but still represents less than half of farms. One reason for the slow uptake in the United States is that these medications require a prescription. “It is important for U.S. producers to work with their veterinarians to provide pain relief during dehorning to both improve the animal’s experience and meet consumers’ expectations,” said Van Os.

#### Social companionship

For decades, U.S. and Canadian dairy producers typically housed young calves individually to prevent disease transmission and monitor health. With the advent of automated health monitoring technologies and better calf management, researchers have taken a closer look at paired and small group housing.

“Social housing improves social and cognitive development, with calves showing better behavioral flexibility and adaptability to change, including a greater willingness to try new feeds, compared with those reared individually,” said Van Os. “This translates into better resilience to weaning stress.”

Across studies – particularly when fed higher milk allowances – socially housed calves perform as well or better than individually housed calves in terms of solid feed intake, bodyweight at weaning and average daily gain. “Solid feed intake before weaning is important for stimulating rumen function; early-life growth translates to earlier onset of puberty and higher milk production at maturity.”

Furthermore, housing calves in groups requires more total space, which allows for “natural expression,” such as play. “In parts of Europe, social housing for pre-weaned calves older than 2 weeks is mandatory,” said Van Os.

One social housing concern is cross sucking. To avoid this undesirable behavior, Van Os suggests feeding

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milk through a “teat” instead of an open bucket or providing “dummy” or “dry” teats that remain accessible to the calf for at least 20 minutes after milk ingestion. “Calves that are more established on solid feed are less likely to cross suck, so step-down weaning – based on starter intake, rather than calf age – can help reduce cross sucking,” she said.

### Freedom of movement

Bovines like to manipulate their tongues – be it on ropes, themselves, herd mates or brushes. Van Os discussed how lactating cows work hard to gain access to rotating mechanical brushes. Similarly, a study of 2-week-old calves found they used brushes daily. A Canadian study by Van Os with 20-week-old dairy heifers and simple, 10-inch deck scrub brushes

found that heifers started using the brushes in less than four minutes (on average). Some heifers approached the brushes after eight seconds. Heifers used the brushes primarily for grooming their heads but also chewed on the bristles.

To learn more about Van Os’ research, visit [dairyanimalwelfare.org](http://dairyanimalwelfare.org).

## Proper calf preparation before transport pays off

How can you make sure calves make a successful transition to the heifer grower? “I’d definitely put more effort into prevention,” advised Curt Vlietstra, DVM, at Boehringer Ingelheim. This is especially true for respiratory disease.

### Preparing for calving

Vaccination is important to build immunity, so the cow is healthy for calving. But making sure the colostrum is loaded with protective antibodies is also crucial for the calf.

“If you give cows killed vaccines during the dry period, they add protection to the colostrum against diseases that you typically can’t vaccinate a baby calf against, such as bovine viral diarrhea,”<sup>1</sup> explained Vlietstra.

When a killed vaccine is administered after a modified-live virus (MLV) vaccine is given pre-breeding, it offers another advantage. “The killed vaccine will stimulate a different part of the immune system, creating a strong immune response in both the cow and in her colostrum when she calves,” stated Vlietstra.

### Colostrum: The first hours are critical

“The best thing you can do is get colostrum into that calf as soon as

possible,” he emphasized. Calves should receive 1.5 to 2 gallons of colostrum during the first 12 hours of life.

### Pre-weaning vaccines

Maternal antibodies will eventually wane in the calf, just as the risk of environmental pathogen exposure increases. Even so, it’s hard to determine when the maternal antibodies won’t interfere with the immune response to pre-weaning vaccines.

“That’s where the right pre-weaning vaccine can help,” suggested Vlietstra. “Not all vaccines work when maternal antibodies are still present, but that doesn’t mean none will. Injectable vaccines shown to work in the presence of maternal antibodies can provide a lot of flexibility for producers.”<sup>2</sup>

### Preventing respiratory disease

In a perfect world, every farm would administer the vaccines precisely when they’re needed, but that doesn’t always happen.

“If farm history dictates that a certain group of calves struggle with respiratory disease all the time, producers, working with their veterinarian, may decide to administer a preventive dose of antibiotic,” Vlietstra said. “If you do that, you want a broad-spectrum antibiotic that will



Strive to minimize calf exposure to respiratory pathogens.

work quickly and last a long time.”

Of course, it’s always important to minimize calf exposure to respiratory pathogens. “In general, we try to vaccinate for the pathogens we can, and try to prevent the things that we can’t vaccinate for,” concluded Vlietstra.

<sup>1</sup> Smith BJ, Rieger RH, Dickens CM, et al. Anti-bovine herpesvirus and anti-bovine viral diarrhea virus antibody responses in pregnant Holstein dairy cattle following administration of a multivalent killed virus vaccine. *Am J Vet Res* 2015; 76(10):913–920.

<sup>2</sup> Zimmerman AD, Boots RE, Valli JL, Chase CCL. Evaluation of protection against virulent bovine viral diarrhea virus Type 2 in calves that had maternal antibodies and were vaccinated with a modified-live vaccine. *J Amer Vet Med Assoc* 2006;228:1757–1761.

## Are you caught in the price trap?

By Alyssa Dietrich, Cargill Calf & Heifer Specialist

The investment you make feeding calves and heifers is the linchpin to their future success as profitable, lactating cows. We only have one opportunity to get these animals off to a strong start that can optimize growth and lifetime production. Calving animals early only pencils out if they have been grown to the right size at breeding. Once they become pregnant, fewer nutrients become available for structural growth.

Making strategic feeding decisions means thinking beyond the initial price of feed (which is tempting) and staying focused on outcomes. Like all important decisions, the upfront price should be one factor but not the deciding one.

Think about it like buying a truck; you would not make a purchase based on the sticker price alone. You would investigate other critical factors, such

as horsepower, towing and warranty coverage to understand which truck had the best value. Often, you discover spending a little more upfront saves you money in the long run.

When it comes to calf feed purchases, optimal growth at the most efficient cost is the ideal scenario. Analyzing feed based on cost per pound of gain, supplier support and other factors is much smarter than selecting feed on the price per ton. A difference of \$5 per bag of milk replacer might seem significant, but you would likely need to see less than 0.1 pound of average daily gain more on the higher priced milk replacer to justify choosing it. Any growth or health benefits beyond that adds to the value.

According to the 2014 U.S. Department of Agriculture National Animal Health Monitoring System study, 56.4 percent

of dairy operations fed calves 5 quarts or less of milk or milk replacer per day. At a concentration of 13 percent solids, this feeding rate is likely to result in very slow growth if calves are not eating much starter yet. In cold weather, this feeding rate may not even exceed maintenance requirements – leaving no energy for additional growth. Producers often feed these low rates of milk or milk replacer to reduce daily feed costs per head. However, this strategy often results in a high cost per pound of gain.

When you can think beyond the trap of upfront pricing and understand the big picture cost, you can make more strategic feeding decisions that will benefit your calves and strengthen your business’s bottom line. Which criteria are receiving too much value on your dairy?

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