

How farmers are reducing antibiotic use

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ANTIBIOTIC residue and resistant bacteria prevalence in the environment are growing concerns across the globe, controlled by complex physical, chemical, and biological processes. However, a network of human decisions influences this potential contamination, from disease prevention strategies to treatment decisions and waste management choices.

To understand the flow paths and human decisions involved with antibiotic transport on farms, we interviewed central New York dairy farmers across management strategies (conventional to organic), farm sizes, and farmer ages. The primary methods by which farmers influenced antibiotic residue transport into the environment were through minimizing their usage and employing nonantibiotic treatments. Also visible through our interviews were strong “us versus them” paradigms as well as industry wide factors not necessarily acknowledged by dairy farmers.

Farmers we interviewed discussed at length the efforts they have taken to minimize antibiotic usage. Larger conventional farms tended to have the perception that “we firmly believe that there are too many [antibiotics] being used, and so we’ve implemented a lot of changes with that. We use antibiotics as a last resort,” as well as, “Antibiotics managed right are a good tool. It’s no different than our children.”

Smaller conventional farmers talked about using alternative treatments to mitigate disease. One such farmer stated, “If we get a cow with a hard quarter, we’re more likely to hand strip it and put udder cream on it than we are to shove a tube of antibiotics up there. Nine times out of 10, they take care of it themselves anyway.”

Cost also factored in, as one farmer stated, “Vets are expensive; drugs are expensive. You want to

minimize that as much as possible.”

Most farmers interviewed thought their usage of antibiotics was less than in the past, and they wanted to minimize usage as much as possible. Several shared the view that, “I use a lot less than my dad ever did. I remember when I was a kid, we used to milk cows that were pretty nasty. They’d treat them and treat them and treat them, and they never cleared up.”

Culture and treat

Also discussed, though not as frequently, was the practice of culturing milk samples to determine which antibiotic, if any, was appropriate to treat the bacteria present. One conventional farmer stated, “If we have a cow that shows signs of mastitis, we’ll take a sample. It gets sent to the lab, and then once we get it, we’ll get that resolved within 24 hours. If it shows no growth, or it’s a gram negative, we don’t treat that with antibiotics because it’s not going to help. If it’s a gram positive, then we know that we can utilize antibiotics on that particular animal.”

Some of these farms incubated samples on-farm, while others sent them in to labs. Culture and subsequent nuanced treatment was more commonly discussed by younger farmers. This effort was discussed as a means to minimize antibiotic usage in the context of mastitis.

Alternatives to antibiotic usage were prevalent among both conventional and organic farms, although the methods employed were quite different. Organic farms discussed at great length the usage of herbals to alleviate disease, stating, “I make my own garlic tincture. And echinacea tincture, too. I buy . . . licorice root, barberry, and astragalus.”

Conventional farmers reference udder creams most frequently. Two farmers discussed probiotics as an antibiotic alternative.

“Us versus them” paradigms

Not surprisingly, systematic differences were seen in farms that were managed according to differing standards (organic versus

conventional) and farm size (large versus small). A strong “us versus them” paradigm was suggested between these two sets of categories.

Owners of small farms tended to state, “When you have a smaller farm, you are able to make [treatment] decisions like this a little easier. You put your hand on just about every animal every day. You can catch things a little easier than if you’re running around a 1,000 head freestall barn.”

On the other hand, a farmer managing a large, conventional dairy emphasized formal data collection, saying, “A lot of farms don’t do this the way that we do it, but we take blood from the cows [to test]. Sometimes with the fresh cows, usually up to 65 days, I look at the milk rates, I go out and look at them. If even one milking is off, I will go test them.” This statement implies that despite a larger herd, managers are able to make case-by-case decisions, assisted by the analysis of data collection.

Especially in the antibiotic usage arena, the “us versus them” paradigm was strongly felt between organic and conventional farms. One organic farmer stated the opinion that conventional farmers managed around the idea that, “You have an antibiotic, so why bother doing anything else? That’s the magic silver bullet, so they don’t necessarily do all the other things that you could do to help supplement, because they’re like, ‘Well, they’re on an antibiotic. What more do they need?’ I feel like it’s all the other things that we do, that you almost don’t need the antibiotic if you’re doing those other things.”

Interestingly, a farmer who manages both a conventional and an organic dairy noted, “Sometimes it will make me cringe that I wasn’t able to treat that cow. She got through it, but I think she would have gotten through it better with some sort of treatment.”

Three conventional farmers shared the opinion that organic cows aren’t as healthy as conventional cows. They explained, “I wouldn’t want to be an organic cow. I’ll go into an organic herd and 80% will be three-quartered, like they’ve had mastitis and lost a quarter.”

A few farmers who had transitioned to organic argued, “We just don’t have the issues that we used to. I think the fact relates back to that we don’t push the cows for production, so they’re less stressed.”

Unifying industry practices

While the paradigms we discussed are very real in the dairy industry, there remains a plethora of unifying factors that dairy farmers employ to keep their herds healthy. Farmers

we interviewed, no matter organic or conventional, large or small, discussed prevention of disease as being a main driver of keeping herds healthy. Three main elements discussed were the use of vaccinations, cow comfort and facility conditions, and attention to nutrition based on stage of life.

Many conventional and organic farmers referenced preventative vaccination as one of the strongest disease prevention tools to reduce antibiotic usage. Cow comfort was highlighted by the comments, “Give them the best you can give them to eat and keep them comfortable with good air,” and “Making sure they’re in the healthiest environment we can have them, depending on the weather.”

Nutrition was also referenced in this context, with the statement to ensure that cows have “good air, a clean bed, and good feed and water all the time. If they got all the stuff they need, they tend to stay healthy.”

Farmers across all categories referenced the time around calving as requiring more attention and specialized nutrition, such as calcium bolus, drenching, injection of vitamins, and probiotics.

Calves were also frequently referenced as being a focal life stage for treatment and disease prevention decisions, no matter the farm category. Frequently heard was the comment, “The calf stuff has been a really big deal in terms of prevention, and in terms of treatment,” and methods of colostrum feeding, probiotics, and vaccinations were discussed.

Future implications

Addressing the growing threat of antimicrobial resistance requires actions from all contributors, from livestock operations, anthropogenic usage, and wastewater treatment, rather than blaming environmental contamination on one sector over another. Reductions can be achieved by small human decisions made at every stage of livestock management (and analogously, human medicine).

Practices used by organic and conventional farmers, on large and small farms, can all aid in reducing usage of these important compounds so to maintain their efficacy across livestock and human medicine. Understanding animal agriculture’s evolving usage of antibiotics and working to inform both the agriculture and nonagriculture sectors are good initial steps. 🐄



More farmer perspectives and the full study summary can be found at on.hoards.com/residueperceptions.

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