The SQMI Quarterly

Improving milk quality and farm profitability in the Southeast U.S.

Summer 2015

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Every second counts

The little things we do during milking time have a profound effect on udder health and milk quality. It is important to remember that every quarter of every cow must be prepped for milking the same way by every milker at every milking. Specifics of milking procedures may vary from farm to farm. For example, one farm may prep cows in sets of 4 cows, while the next farm preps in sets of 6. However, the basics of timing should ideally be the same or similar on every farm.

The first important time frame to remember relates to contact time of the teat disinfectant being used as pre-dip. Most pre-dips require a minimum of 30 seconds contact time to have adequate killing. However, there are a few dips marketed with a shorter kill time. If you are questioning the proper kill time for your pre-dip, check your manufacturer's instructions. During this time, the quarters can be stripped, but the dip needs to remain on the teat skin for the full time prior to wiping. In addition to contact time, we must ensure that the "prep-lag-time" has an average length of 90 seconds from start of tactile stimulation. Prep-lag-time is defined as the time from the start of stripping, massaging or wiping the teats with a towel (whichever comes first) to unit attachment. On some farms, first tactile stimulation is stripping, and on other farms it is wiping—it just depends on preparation procedures of the individual operation. If we attach units prior to the 60-second mark, we have not given adequate time for oxytocin to reach a useful concentration in the udder.

> "…the basics of timing should ideally be the same or similar on every farm."

On the flip side, we need to ensure units are attached within 90 seconds of stimulation to make maximum use of the letdown effect. I encourage you to take a stop-watch to the parlor, check your timing of milking procedures and make necessary adjustments to your routine until you are within these time frames. One suggested protocol would include prepping cows in blocks of 4 or 5. Begin with the first cow by removing lose debris with a towel, then stripping each quarter and examine the milk for signs of clinical mastitis. This would be repeated for the remaining cows in that block.

Start back at the first cow in the block (do not weave back through the cows in reverse order) and apply the pre-dip, ensuring that at least the bottom-half of the teat is entirely covered. Once the entire block has been pre-dipped, begin wiping the first cow of the block with a single-use towel. At this point, you should be able to also attach the unit before wiping the second cow of the block. However, check your timing and make sure a full 60 seconds have elapsed from the time that cow was stripped. If you are shy of the 60-second mark, continue wiping the remaining cows in the block and then return to attach the units, starting at the first cow.

Once you have a routine established, you will need to monitor the routine monthly to ensure the time frames are being met. Proper milking procedures will help to lower somatic cell count, increase pounds in the tank and decrease milk-out time.

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SUMMERTIME FLIES AND HEIFERS DON'T MIX!

Don't overlook fly control: In the US, fly season begins as early as April and lasts through September or early October, especially in the Southeast. Following the "5-point plan" for mastitis control has led to a reduction in the level of intramammary infections; however, the importance of fly control in udder health has been overlooked. Many producers implement fly control techniques to reduce insect populations on farm premises and on animals; however, they are not applied to specifically prevent mastitis among dairy cows and heifers.

With the temperature and humidity steadily rising in recent months, numbers of blood-sucking horn flies (*Haematobia irritans*) are on the increase. These flies are commonly found on the backs of dairy animals, but will also attack the teats, leading to the development of mastitis, especially among dairy heifers.

> "...the importance of fly control in udder health has been overlooked."

Horn flies carrying *Staph. aureus* zero in on the teat ends of dairy heifers and suck blood from vessels below the teat skin, causing the formation of abscesses and scabs with their invasive mouth parts, subsequently depositing *Staph. aureus*. This places these bacteria in an opportune position to enter the teat canal and cause mastitis. Flies then serve as vectors and carry bacteria from animal to animal, resulting in an increased prevalence of *Staph. aureus* mastitis.

Horn flies damage teat ends: In an ongoing trial at UGA, teat ends of heifers are being monitored during fly season. At the beginning of fly season and before application of a control program, teats were populated with blood-sucking flies and many were covered with bloody scabs associated with *Staph. aureus* intramammary infections. Less than 48 hours after pour-on repellent administration, fly populations were drastically decreased, and less than 2 weeks later, teats were healed and free of scabs. However, the damage had been done, and *Staph. aureus* infections were established, which were subsequently cured with dry cow therapy.

The prevalence of *Staph. aureus* among quarters was 30% (Figure 1); not that uncommon in GA dairy herds. The rest of the quarters were infected with the coagulase-negative staph, also known as CNS (27%), and the streptococci (3%); only 40% of quarters were uninfected. Not only do these flies provide a vector for the spread of *Staph. aureus*, but they are also a nuisance to the already stressed animals during hot weather.

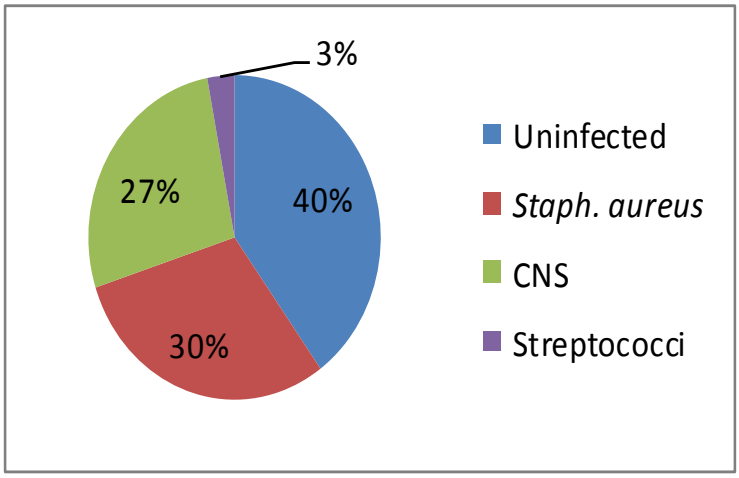

Figure 1. Prevalence of mastitis among quarters of bred dairy heifers.

What you can do to protect your heifers: Sanitation is key in reducing farm populations of all types of flies. Proper management of manure, water troughs, and left-over feed and hay will reduce fly numbers, and may lower the incidence of mastitis caused by these flies. Also, several fly control techniques exist such as aerosols, baits, strips, foggers, dust bags, traps, oilers, insecticidal ear tags, insecticidal pour-on solutions, and feed supplements containing insect growth regulators. At UGA, the use of a pour-on every 2 to 4 wk was found to drastically reduce fly populations, allowing teats to heal, and reducing two important sources of *Staph. aureus*: flies and teat end scabs.

While there are no techniques that are 100% effective, the use of some type of fly control is important in reducing mastitis cases in dairy heifers, and in turn, decreasing SCC when they freshen. With milk buyers' current demand for low herd SCC, all feasible methods that lead to improvements in milk quality are essential to consider. Don't let flies cost you money due to increased mastitis, elevated SCC, and loss of quality product premiums when your heifers enter the milking herd.

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The Importance of Dry Cow Therapy

The goal of the dry period is to have as few quarters infected with bacteria as possible at calving coupled with maximum production of low SCC milk during the next lactation. To achieve this, we need to 1) prevent new infections caused by environmental organisms, and 2) eliminate infections present at dry off. Over 95% of all new infections in the dry period are caused by environmental pathogens and most are acquired in late gestation. These include the coliforms and environmental streptococci. About 8-25% of quarters develop new infections during the dry period, and to prevent these, it is important to minimize bacteria in the cow's environment and increase her defenses to infection.

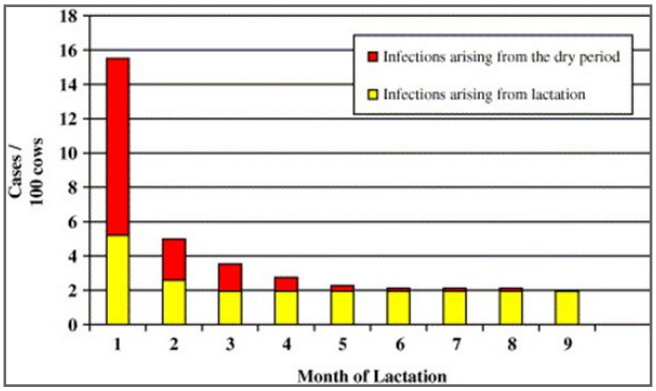

Figure. 1. Proportion of clinical cases arising during the dry period and lactation by month of lactation.

Keys to Prevention of New Infections in the Dry Period

1. Environmental Management - Keeping dry cows clean, dry, cool, and comfortable is critical to udder health. Dry cows lie down 9-14 hours a day, and because their teats are in direct contact with bedding material, populations of bacteria in bedding are related to the number of bacteria on teat ends and rates of infection. Bacterial numbers increase as the outside temperature and moisture levels increase. Often, dry cows are kept in fields with access to shade trees. If cows consistently congregate under the same trees depositing manure, these trees should be fenced off periodically to reduce environmental bacteria exposure. Likewise, cows should not have access to ponds or standing water, which have high environmental bacterial loads. In warmer climates, cooling dry cows is often overlooked. Well-ventilated barns, fans, sprinklers, and shades are just as important for dry cows as lactating cows.

2. Blanket Dry Cow Therapy (DCT) - Intramammary antibiotics administered to all quarters of all cows at dry-off is key to mastitis control, and is one of the most economically beneficial mastitis prevention methods available. In challenging financial conditions, producers sometimes skip this control method, but see increased early lactation mastitis. It is estimated that 70-98% of infections present at dry-off can be eliminated with DCT. The prevention of new infections has been estimated at 50-80% with DCT. Other benefits include reduced SCC and clinical mastitis, and increased milk yield in the next lactation. New broad spectrum products are available, but it is important to know what organisms are causing problems in your herd. Talk with your veterinarian about culturing for mastitis organisms and proper antibiotic selection.

3. Teat Sealants - Dry cow formulations do not persist late into the dry period, leaving the udder unprotected just before calving. Internal teat sealants are often used to prevent new infections during the dry period. Sealants are not antibiotics, but contain an inert substance (bismuth subnitrate) that when infused correctly into the teat, persists as an internal barrier to infection throughout the dry period. A study comparing OrbeSeal® combined with DCT versus DCT alone found a reduction in new infections at calving using the combination treatment (3.7% vs. 7.3%). Also, the incidence of clinical mastitis in the 1st 100 days of lactation was lower for the combination group.

4. Nutrition - Dry matter intake, energy balance, and mineral supplementation are all important considerations during the transition period to reduce mastitis, ketosis, retained placenta, and displaced abomasum.

5. Vaccination - Core antigen vaccines (Enviracor J-5™, J-Vac®, ENDOVAC Dairy®) will not reduce the number of new dry period coliform infections but they will decrease the clinical effects of infection. These vaccines enhance the ability of white blood cells to destroy bacteria. Clinical mastitis caused by coliforms varies from mild (abnormal milk, swollen gland) to severe signs (fever, depression) and death. Vaccination will decrease the incidence of these symptoms and decrease culling losses.

The dry period is important when it comes to overall health and productivity in the next lactation. The goal is to have as few quarters infected with bacteria as possible at calving. Keeping dry cows cool, dry, and comfortable, and the administration of DCT to all quarters of all cows at the end of lactation will go a long way toward achieving this goal. Investments in mastitis prevention in the dry period result in increased revenues through increased production and reduced mastitis costs.

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United States Department of Agriculture
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Thank you for your interest in the Southeast Quality Milk Initiative (SQMI).

For further information on how to improve your milk quality, visit www.sequalitymilk.com.
If you have specific questions, comments, or suggestions to enhance milk quality in your area, please contact your local SQMI representative listed below.

Florida—Dr. Albert De Vries at devries@ufl.edu or 352-392-5594 ext 227
Georgia—Dr. Stephen Nickerson at scn@uga.edu or 706-542-0658
Mississippi—Dr. Stephanie Ward at srhill@ads.msstate.edu or 662-325-8773
Kentucky—Dr. Jeffrey Bewley at jbewley@uky.edu or 859-257-7543
Tennessee—Dr. Steve Oliver at soliver@tennessee.edu or 865-974-7172
Virginia—Dr. Christina Petersson-Wolfe at cspw@vt.edu or 540-231-4767

Enclosed is a Spanish version of the newsletter;
feel free to copy and distribute this to the Hispanic dairy community.

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