Determining Cause and Incidence Rate of Clinical Mastitis in Dairy Cattle

By: Abbey Chandler and Dr. Donna Amaral-Phillips, Ph.D.

Mastitis is one of the more expensive infections on a dairy operation. The average case of mastitis cost farmers $325 this includes vet costs, treatment, labor, discarded milk, decreased milk production, culling, extended days open, and death (Liang and Others, 2016). The difference between clinical and subclinical mastitis is that with clinical mastitis the cow shows signs of an infection. The following discussion will focus on determining the cause and incidence of clinical mastitis. Since subclinical cases can’t be detected easily and are still costing you money without you even knowing it the key to controlling both types of mastitis in your herd is prevention.

What causes clinical mastitis? The most effective way to determine what organism causes clinical mastitis in a herd is to culture milk samples. To culture a milk sample means to place the milk sample in a sterile dish with a growth medium in a lab and provide an environment for whatever bacteria is present in the milk to grow. Then, once the bacteria have grown for a certain amount of time, a lab technician or researcher can evaluate the sample and determine the causative pathogen. Research using bacteria cultures shows that the majority of clinical mastitis cases are caused by five main bacteria. They are: *E. coli* (and other coliforms), *Streptococcus* spp., *Bacillus* spp., and *Staph. aureus*. Although considered a minor pathogen, coagulase-negative staphylococci are also frequently isolated from clinical samples.

How do you determine which bacteria is causing clinical mastitis in your herd? Bacterial cultures of milk samples from infected cows in your herd are needed to determine which bacteria is/are causing your problem. Milk samples need to be collected aseptically following strict procedures **BEFORE THE COW IS TREATED.** To collect samples for culturing:

1. Obtain sterile vials from either a diagnostic lab or milk cooperative such as DFA.
2. Wear gloves when collecting the samples.
3. Begin by preparing the cow or cows to be sampled just as you would prepare them for milking. Forestrip, pre-dip, then wipe clean with a dry towel or cloth. Next take a cotton ball moistened with rubbing alcohol, but not dripping wet, and for 15 to 20 seconds scrub the teat end. Continue doing this with new cotton balls until the cotton ball is still white after cleaning the teat end.
4. Do not open the collection vial until you are ready to take the sample. Hold the vial at a 45-degree angle and do not touch the inside of the lid. Also do not lay the lid on the ground, hold it facing down to minimize the risk of contamination.
5. Do not let the teat touch the collection vial, but aim for direct streams of milk into the vial. Do this as rapidly as you can, but be careful to avoid contamination. Do not fill the vial completely full as the sample will need to be frozen until it can be taken to the lab and if the vial is too full when it is frozen it will bust and your sample will be lost.

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Avoiding contamination is a huge concern because contamination causes a greater chance of skewed results including other bacteria than those causing the mastitis as well as overgrown cultures that cannot be analyzed correctly. Knowing the specific pathogen causing the mastitis in your herd will allow you to treat infected cows more effectively. An important thing to note however, is that 40 to 50% of bacteria cultures come back as no growth. Reasons for this can be that the cow may have already been treated with antibiotics, that the cow’s body has already dealt with the infection on her own or bacterial numbers are too low to detect. For the other 50-60% of cultures, with the exception of overgrowths, the results can lead you to the best course of treatment and management practices for the specific pathogen causing problems in your herd.

**How much is too much clinical mastitis?** To answer this question, you must determine the incidence rate for clinical mastitis in your herd. Simply put incidence rate for clinical mastitis is the percentage of cows in your herd with a case of clinical mastitis during their current lactation. So to determine your incidence rate you would take the number of cows with a case of clinical mastitis this lactation and divide it by your total number of cows and multiply that number by 100 to get a percentage. According to a research study done at the University of Wisconsin School of Veterinary Medicine, conducted by Nigel Cook and Rebecca Mentink, the average incidence rate of mastitis on a conventional dairy operation is 32%; this means 32 out of 100 cows on average have a case of clinical mastitis in this lactation. In a perfect world even one case of clinical mastitis is too much, but achieving that low of an incidence rate is virtually impossible for many reasons. With that being said it is not uncommon in some of the top herds for the incidence rate of clinical mastitis to be below 10 to 15%. So practically speaking, how much is too much? This answer can be different for every herd depending on the standards you are trying to maintain. In general, the higher the incidence rate the more money lost. Therefore, the lower the incidence rate the better.

**Prevention is key.** Preventing mastitis is by far the best, most cost effective option there is. There are several things you can do to prevent mastitis in your herd. The simplest thing is to make sure all employees are trained and that proper milking and sanitation procedures are followed. Determine problem areas on your farm where the cows most often are exposed to the pathogen causing your mastitis and correct the problem or keep the cows out of that area as much as possible. To reduce the spread of mastitis from cow to cow in your herd use an effective pre and post dip as well as clean, well-maintained milking equipment. Using dry cow treatment at dry off as well as an internal teat sealant, such as Orbaseal, and a coliform vaccine can also help prevent mastitis during the dry period and in the next lactation.
Management Practices Associated with Milk Quality

By: Derek Nolan and Jeffrey Bewley, Ph.D.

All dairy producers strive for improved milk quality, which can be accomplished through a variety of management practices. At this year’s ADSA – ASAS Joint Annual Meeting in Orlando, researchers explained what management practices were associated with low SCC in different parts of the United States. This paper is a brief overview of the results found in these studies.

Changes in milking procedures

The USDA National Animal Health Monitoring System completed a study to determine how milking procedures have changed from 1996 to 2014. Over the 18-year period, the average herd size in the U.S. has more than doubled from 70 cows to 160 cows. During that period, the average somatic cell count has dropped from 300,000 cells/mL to 200,000 cells/mL. Surprisingly, 52.8% of the farms surveyed still milked in either a tie stall or stanchion barn in 2014. Use of milk parlors have nearly doubled in 18 years as 28.8% of farms milked in a parlor in 1996 compared to 45.7% in 2014. On a per cow basis, 54.9% of the cows in the U.S. were milked in a parlor in 1996 compared to 86.0% in 2014. The number of farms milking 3X has also doubled over the past 18 years from 5.8 to 10.2% of the farms in 1996 and 2014 respectively. In the parlor, the number of farms implementing recommended management techniques to improve milk quality has increased. The number of farms that forestrip to check for clinical mastitis increased from 44.5 to 71.5% from 1996 to 2014. Close to 60% of farms implemented the wearing of gloves while milking in 2014 compared to 32.9% in 1996. Automatic take-offs have been the slowest adopted management practice with an increase of only 13% over the 18 years from 36% to 49%.

Other management tools

Researchers from the University of Wisconsin examined the association between parlor management, bedding types, and bulk tank somatic cell count. Farms that used iodine based dips had a higher bulk tank somatic cell count than those that used other pre-dip products, and somatic cell counts were lower for farms that dried teats before milking. Researchers from the University of Illinois analyzed the correlation between organic matter in bedding and somatic cell count and found a high correlation between the two. Higher organic matter in the bedding was associated with higher somatic cell count.

Monitoring Clinical Mastitis

In a collaborative project, researchers from Columbia and California examined how well milkers detected clinical mastitis. Between ten different milkers, the total number of cases detected ranged from 21 to 113 per milker. Milkers that were best at detection caught between 9 and 12 clinical cases per 100 cows, while those who caught less identified between 2 and 7 cases per 100 cows. Such a wide range in detection rates may suggest that protocols need to be implemented and enforced. According to a USDA National Animal Health Monitoring System study, 24.1% of cows experienced at least one clinical mastitis case in 2013. Of those cows 72.9% recovered, 24% were sold, and 3% died.

By adopting milking procedures and successful management practices, dairy producers in the U.S. continue to improve their milk quality. Inorganic bedding continues to be the best option for bedding when it comes to milk quality. Data from recent studies shows and reminds that proper management is key to improving milk quality.

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5 Common Parlor Mistakes You Should Avoid to Keep Somatic Cell Counts Low

By: Jeffrey Bewley, Ph.D.

Maintaining a low bulk tank somatic cell count has always been a good dairy management strategy. Low somatic cell counts are associated with improved milk quality, increased shelf life and cheese yield after the milk leaves the farm, increased milk production, and reduced veterinary and drug costs. Recent market changes have led to an increased emphasis by milk buyers toward lowering bulk tank somatic cell counts at the farm level. As a result, many dairy producers have refocused efforts to lower somatic cell count. Often, the reasons for a high bulk tank somatic cell count can be found in the milking parlor. Following are 5 common parlor mistakes that should be avoided to keep somatic cell counts low:

1. Milking dirty or wet teats.
   Poorly cleaned or dried teats result in increased incidence of mastitis and higher somatic cell counts. The slogan for effective milkers should be “We milk clean, dry teats.” The first step to milking clean, dry teats is to keep cows as clean as possible before they ever enter the milking area. Clean cows are exposed to fewer environmental mastitis-causing bacteria and they are easier to clean before milking. If you feel the need to wash a high percentage of your cows, you may want to reconsider how your pastures or barns are managed to improve cow cleanliness. Dirt, manure, or debris can often be removed by hand or with a towel without the use of water. When cows are excessively dirty, some use of water may be necessary to clean the teats. However, this practice should be the exception and not the rule. Water use in the milking process should be kept to a minimum. If water is used, be sure to only wet the teats and not the entire udder. It is nearly impossible to dry the udder and this water ends up being drawn into the inflations during the milking process. Generally, the use of water in the parlor results in increased mastitis and higher bacteria levels in milk. All teats should be thoroughly dried with a single service, absorbent cloth or paper towel. Never use the same towel on two cows. All debris, manure and predip residue on the teats should be removed while drying, using a gentle, twisting motion. During the drying process, pay particular attention to getting the teat ends clean and dry. If teats are not adequately dried, water, containing mastitis-causing bacteria, may end up in the teat cups during the milking process and expose the open teat ends to these bacteria.

2. Poor pre or post dip coverage.
   Pre-dipping and post-dipping are two “tried and true” mastitis management strategies. Unfortunately, carelessness in the milking parlor often leads to inadequate teat dip coverage. Predipping with a sanitizing solution eliminates bacteria on teat ends prior to milking and helps to control mastitis caused by environmental mastitis pathogens. The predip should remain on the teats for at least 30 seconds before drying. As soon as possible after the milking units are removed, teats should be dipped with a post-dip, which has been demonstrated to be an effective germicide through independent research. An effective post-dip kills bacteria on teats, prevents organisms from colonizing in the teat canal, and reduces the rate of new infections from contagious mastitis bacteria. When pre-dipping and post-
dipping, at least ¾ of the teat should be covered with a goal of covering the entire teat. Teat dip cups should be kept clean. Some dairy producers choose to spray teats rather than dip. While it is possible to adequately cover teats with a spray bottle, full coverage is often inadequate when spraying teats. A good way to test the effectiveness of dipping is to wrap a paper towel around the teat just after dipping. The goal is to see a continuous streak of teat dip on the paper towel, indicating the entire teat was covered. With spraying, you will often find broken streaks of teat dip because the opposite side of the teat is often not covered.

3. Too little or too much time between teat stimulation with the cow and milker attachment.

Attaching milkers too soon or too late can result in excessive milking time or reduced milk yield. The timing of milking unit attachment is a critical step in a good milking procedure. Oxytocin, which causes milk letdown, reaches peak levels at 60 seconds after stimulation. Therefore, milkers should be attached within 1 to 1.5 minutes after teat stimulation. Coordinating attachment with milk letdown helps ensure that the milkers are attached during the time frame when milk flow is highest.

4. Spreading mastitis with contaminated hands.

Contagious mastitis-causing bacteria, like *Staph. aureus*, may live on your hands and be transmitted between cows during milking. At minimum, hands should be thoroughly washed with soap and water before milking. Ideally, because bacteria are less likely to adhere to gloves than rough, calloused skin, nitrile or latex gloves should be worn during milking. Gloves minimize the spread of contagious mastitis between cows during milking and help protect the milker’s skin. Gloves are also easier to disinfect than bare hands. Whether gloves are worn or not, hands should be washed periodically throughout the milking process.

5. Overmilking.

Care should be taken to avoid overmilking which can increase the incidence of liner slips and lead to teat end damage. Damaged teat ends are more susceptible to mastitis. When automatic take-offs are used, the unit settings should be adjusted to ensure they do not stay on too long. Additionally, it is important to resist the temptation to override the automatic detachment by putting the milker back on. The process of machine stripping, or holding down on individual teat cups or milking clusters, should be avoided. Properly stimulated cows milked with correctly functioning and attached milking units should not have excessive residual milk left in the udder. The potential losses from machine stripping far outweigh any potential benefits.

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Management of the Dry Cow to Prevent Mastitis

By: Michelle Arnold, DVM

As we move to a new era of lower acceptable somatic cell levels, the prevention and control of mastitis takes on new importance. For many years, the contagious mastitis pathogens including *Staphylococcus aureus*, *Streptococcus agalactiae* and *Mycoplasma bovis* were the focus of control measures primarily implemented in the milking parlor to stop the spread of these organisms from cow-to-cow. These contagious organisms often cause high individual somatic cell counts and ultimately high bulk tank somatic cell counts. As these high somatic cell count cows have been culled due to milk marketing regulations, the contagious pathogens are decreasing in prevalence and importance. Meanwhile, the environmental mastitis pathogens are becoming more important in many herds as the cause of clinical mastitis ("clinical"=visibly abnormal milk including the presence of clots, heat, pain, or swelling of a gland), especially in the first 100 days of lactation. Prevention of infection by these “environmental” organisms including the coliforms (*Escherichia coli*, *Klebsiella spp.*, *Enterobacter spp.*) and environmental streptococci (*Streptococcus uberis*, *Streptococcus dysgalactiae*) begins with the dry cow. Studies have shown that over 60% of new intramammary infections occur during the dry period and an overwhelming majority of these are due to environmental bacteria.

Illustration of the incidence of new intramammary infection during the lactation cycle. The peak in new infection rate, after drying off, is higher in cows not receiving any form of dry cow therapy. (*Data from Bradley AJ, Green MJ. The importance of the nonlactating period in the epidemiology of intramammary infection and strategies for prevention. Vet Clin Food Anim 2004;20:547-568.*)

The dry period is a time of change for many body systems including the mammary gland. Generally speaking, there are three phases of change in the mammary gland during the dry period, two of which are periods of increased susceptibility to infection. The first of these occurs immediately following dry off in the first 3 weeks of the dry period (involution) and the second period is immediately prior to and just after calving (colostrogenesis).

1. Involution-This is the first transition that prepares the gland for stopping the production of milk. Milk accumulates in the udder causing increased pressure, decreased secretory

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activity, and changes in the structures and secretions in the gland. There is an increased risk of infection because there is no flushing of bacteria from the streak canal, no teat dip protection, and there is leakage of milk. Development of the keratin plug to seal the streak canal is crucial in preventing entry of bacteria into the gland but studies have shown that 50% of quarters are still open at 10 days post dry-off and 5% are still open at 60 days. For most cows, involution is considered complete and the udder is resistant to infection after 21-30 days into the dry period.

2. Steady state involution (involved)-Once fully involuted, the mammary gland is very resistant to infection. There are several protective factors during this time that inhibit bacterial growth and the physical barrier of the keratin plug effectively seals the streak canal.

3. Colostrogenesis (transition)-As calving approaches, the second transition in the mammary gland occurs as the udder prepares for milk synthesis. These changes are essentially opposite of involution as there is growth of mammary tissue and increased secretory activity in the last two weeks of gestation. Susceptibility to infection increases as the keratin plug breaks down, leukocyte function is impaired (the protective white blood cells do not work as well) and leakage of colostrum often occurs. By this time in time, the dry cow treatment is usually no longer effective.

The ultimate goal of the dry period is to have as few quarters infected with bacteria as possible at calving. Attainment of this goal goes a long way towards maximum production of low somatic cell count milk during the next lactation. To attain this goal, there must be an emphasis on: 1) prevention of new infections caused by environmental organisms and 2) infections already present at dry off must be eliminated. It is reported that 95% of all new intramammary infections in the dry period are caused by environmental pathogens and most are acquired in the last 2-3 weeks of gestation. These infections are not noticeable during the dry period but cause clinical mastitis early in the next lactation. To prevent new infection in the dry period, it is important to decrease the bacteria in the environment and increase the cow's defenses to infection.

Data showing the origin of infection (dry period or lactation) in cases of clinical mastitis. (Data from Green MJ, Green LE, Medley GF, Schukken YH, Bradley AJ. Influence of dry period bacterial intramammary infection on clinical mastitis in dairy cows. J Dairy Sci 2002;85(10):2589–99.)

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Keys to Prevention of New Infections in the Dry Period

1. Antibiotic dry cow therapy (DCT) - The use of long-acting intramammary antibiotics administered to all quarters of all cows after the last milking of lactation is the key step in mastitis control in dry cows. It is estimated that 70-98% of infections present at dry off can be eliminated with DCT except in the case of *Staphylococcus aureus* which is much more difficult to cure (See UK Extension Publication ID-190: *Staphylococcus aureus* Mastitis). The reduction of new infections has been estimated at 50-80% with DCT. Other benefits include reduced somatic cell count, reduced incidence of clinical mastitis, and increased milk yield in the next lactation. However, there are some issues with the effectiveness of dry cow therapy against environmental organisms. Most dry cow products are formulated for treatment of Gram (+) organisms (*Staphylococcus* spp. and *Streptococcus* spp.) and not Gram (-) organisms such as *E.coli*. New products with a broader spectrum of coverage 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.

2. Teat Sealants - Many of the dry cow formulations do not persist late into the dry period and leave the udder unprotected in the period of time just before calving, especially if the dry period is long. A 2007 study comparing the use of the internal teat sealant OrbeSeal combined with dry cow therapy versus dry cow therapy alone found a significant reduction in new infections at calving in the combination treatment group compared with the antibiotic alone treatment (3.7% vs. 7.3%). Perhaps more importantly, the incidence of clinical mastitis in the first 100 days of lactation was significantly lower for the combination treatment group than for the antibiotic treatment alone.

3. Environmental Management- Keeping dry cows clean, dry, cool, and comfortable is critical in terms of udder health. Cows lay down 12-14 hours a day and their teats are in direct contact with the material where they rest. Populations of bacteria in bedding are related to the number of bacteria on teat ends and rates of infection. These bacterial numbers increase in the environment as the outside temperature and moisture levels increase.

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

5. Vaccination-J5 core antigen vaccines (J-5, J-Vac®) are not associated with a reduction in the number of new dry period infections but they do decrease the clinical effects of the infection. These vaccines are able to reduce bacterial counts in milk, resulting in fewer clinical symptoms by enhancing the ability of white blood cells to destroy the bacteria. Clinical mastitis caused by environmental pathogens varies from mild, local signs (abnormal milk, swollen gland) to systemic signs and death. Only about 10% of clinical coliform cases result in systemic signs such as fever, anorexia (off feed), altered respiration (rapid breathing), and possibly death. In these severe cases, vaccination will decrease the incidence of these symptoms of mastitis and will decrease culling losses, especially in the first 2-3 months of lactation.
Management of the Dry Cow to Prevent Mastitis

The dry period is of great importance when it comes to overall health and productivity in the next lactation. Many changes occur to the mammary gland during this time which must be taken into consideration when developing a health management program. The goal of the dry period is to have as few quarters infected with bacteria as possible at calving. Keeping dry cows cool, dry, and comfortable and administration of dry cow therapy to all quarters of all cows at the end of lactation will go a long way towards achieving this goal.
Six Real-World Examples of On-Farm SCC Reduction

By: Jeffrey Bewley, Ph.D. and Dave Roberts, KDDC Consultant

When struggling with somatic cell count problems, it is easy to become frustrated and think that it is impossible to achieve a lower SCC. The temptation is to blame the situation on some outside force or to say that low SCC cannot be achieved in the South. At times, it may seem like industry recommendations don’t always work and that having new facilities is the key to lowering SCC. But, the reality is that the recommendations for maintaining low SCC established by the National Mastitis Council really do work. And, management and people hold the keys to maintaining low SCC.

The University of Kentucky and the Kentucky Dairy Development Council have worked together to help dairy producers lower their SCC in a program called MILK Counts. To date, we have worked with over 50 dairy producers. In this program, we evaluate the dairy system to identify bottlenecks that may be contributing to the SCC problem. This milk quality audit includes an evaluation of DHIA records (when available), milking procedures, facilities, animal hygiene, dry cow management, and interpretation of milk cultures. While not every MILK Counts visit has resulted in a SCC reduction, many farmers have seen a dramatic improvement. Following are six real-world examples of farms who have lowered SCC after making a commitment toward this goal.

**Example 1:** This particular farm had a consistent struggle with DHIA SCC ranging from 400,000 to over 1 million cells/mL. In October 2010, with a DHIA SCC over 900,000, the producer decided to make some changes. First, he started using the DHIA “Hot Sheet” to identify which cows were contributing to the SCC problem followed up by using the CMT (California Mastitis Test) on high cell count cows to identify problematic quarters. Bacteriological cultures were then performed on these high SCC cows. The results of these cultures were used to adjust the herd’s mastitis treatment strategy to attack the herd-specific bacterial population. Additionally, cows with contagious mastitis (*Strep. ag. and Staph. aureus*) were culled from the herd. To help provide an incentive to milkers to adhere to the established milking procedure, the producer started paying his milkers a milk quality bonus. Lastly, the producer started using an internal teat sealant (Orbeseal®) at dry off to prevent new infections during the dry period. By February 2011, DHIA SCC had been reduced to less than 200,000 cells/mL and has remained at that level.

**Example 2:** During the summer of 2010, this particular herd had a SCC over 700,000 cells/mL. The major change implemented by this producer was moving cows to a new sand freestall barn, which reduced SCC by 50% in the first month after moving into the new barn. This producer also enrolled his herd in DHIA and began to use this information to cull high SCC cows from the herd. In the parlor, he started using individual rather than shared paper towels, started using a barrier teat dip, and switched...
to pre- and post-dipping cows using non-return teat dip cups rather than spaying. This farm now consistently maintains SCC between 225,000 and 250,000 cells/mL. Perhaps, more importantly, the number of clinical cases of mastitis was also reduced and the producer indicates that he often has no cows with milk being withheld from the tank.

**Example 3:** This particular farm had a long-term struggle with SCC consistently ranging between 400,000 to 600,000 cells/mL. These producers reduced their SCC primarily through changes in the milking parlor with a renewed emphasis and focus on milking procedure adherence. Unfortunately, once they decided to do this they had to terminate one employee who was unwilling to make the necessary changes. Milkers started wearing gloves while milking and switched to using individual rather than shared paper towels to dry cows. They also started using a chlorine dioxide teat dip. During the challenging financial times of 2009, these producers had stopped dry cow treating all cows and observed an increased incidence of fresh cow mastitis. However, when the commitment was made to reduce SCC, they returned to dry cow treatment for all cows. They also used their DHIA records to determine which problem cows to remove from the herd. Since making these changes, this herd has maintained SCC less than 300,000 cells/mL.

**Example 4.** As organic dairy producers, this dairy farm faced a particularly challenging situation with SCC hovering around 1,000,000 cells/mL. Through bacteriological culturing, they identified a *Staph. aureus* problem in the herd. Using this information, they culled a few cows and started milking the remaining *Staph.* cows last to minimize transmission to other cows. Like the other example farms, this farm started using their DHIA “Hot Sheet” more frequently to identify problem cows. They reengineered their milking procedures to better prevent mastitis and they renewed their focus on cow cleanliness within their tie-stalls. All of these changes resulted in a consistent SCC around 300,000 cells/mL.

**Example 5.** Although this producer had often attained low SCC in the past, SCC had increased to almost 700,000 cells/mL during the summer of 2010. This producer managed cows in a compost bedded pack barn, but was not stirring the pack frequently enough resulting in a wet pack and dirty cows. After the producer started stirring the pack twice daily, the compost process started working better resulting in a dry pack and clean cows. Additionally, this producer started using the DeLaval DCC cell counter for on-farm SCC measurement. He uses this tool for the bulk tank, to identify high SCC quarters, on fresh cows, and to dry cows off early. Finally, this producer attributes much of his reduction in somatic cell count to the use of the DHIA hot sheet and paying more attention in the parlor. SCC now ranges from 200,000 to 300,000 cells/mL.

**Example 6.** This farm represents the most dramatic changes in SCC. The first visit to the farm was initiated by a health department letter indicating it was time to reduce SCC. At that point, a high percentage of the herd was being discarded and SCC was still over 750,000 cells/mL. The first changes these producers made were in the milking parlor where they stopped using a water hose to clean cows and started pre-dipping, fore-stripping, and wearing gloves. Soon after that, they rebalanced their rations, started using sand bedding in their existing freestall barn, and started using a barrier teat dip. By that point, SCC had been reduced to around 500,000 cells/mL. Next, they remodeled their freestall barn and enrolled in DHIA. These last changes help push their SCC below 300,000 cells/mL.

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Commonalities among Successes: All of these producers had a strong desire to change and stay in the dairy industry for the long-term. In many cases, they were also motivated to reduce SCC to maintain their milk market or attain a milk quality bonus. They also really wanted to understand why there was a problem and how they could prevent it in the future. They all utilized DHIA to help manage SCC. With some of the farms who have not observed the same success, the focus tended to be on “what” is the problem rather than “why” and on treatment rather than prevention. These successful producers were willing to make changes to reduce their SCC and cull a few cows to get out of the problem. They all were committed to making changes in the milking procedures and had a full team dedicated to achieving this goal. Thus, the key to success was the attitude and commitment of what the producers and their employees did after we visited their farms.