

The BovLine

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NMC edition

Highlights from the 44th Annual NMC Conference

For those of you not familiar, the NMC (old name National Mastitis Council) is an organization for mastitis control and milk quality. This organization is global with nearly a quarter of the membership being from outside the U.S. The NMC is open to anyone and is a great resource for information about milk quality.

Attached to this newsletter is an index of papers presented. If you would like a copy of any of these papers, contact us and we will email or send them to you.

Quote of the meeting

“The Executive Committee of the NMC will again pursue lowering the legal SCC limit in the U.S. to 400,000.”

James Winter, First Vice President, after the membership voted and approved the motion.



On-line

- www.nmconline.org—website for the NMC where membership, article, publication and resource information can be found
- www.dqacenter.org—website for the Milk and Dairy Beef Quality Assurance Center, an organization that every dairy should be familiar with!
- www.uwex.edu/milkquality—website of the Univ of Wisc Dept of Dairy Science Milk Quality Resources “World’s Best Milk Quality Web Site”
- www.foodscience.cornell.edu—website of the Dept of Feed Science Extension @ Cornell
- drinc.ucdavis.edu—website for dairy research and information center (DRINC) @ UC Davis
- www.uwex.edu/uwmril—website for the Univ of Wisc Milking Research and Instruction Laboratory
- www.das.psu.edu/dcn—website for Penn State dairy cattle nutrition that



Preconference Symposium Highlights Does High SCC in Milk Constitute a Human Health Risk?

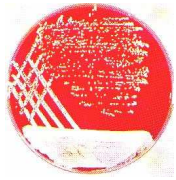
Six speakers spoke on a variety of topics during this preconference seminar. Like most organizations involved in educating their membership, food safety continues to be topic on programs for good reason. Here are some highlights.

Steve Oliver from the Univ of Tennessee gave a detailed overview of dairy food safety. While this paper did not discuss control measures for dairy cattle zoonotic disease, it is an excellent resource for understanding the prevalence, significance and trends of food borne disease. Contrary to our beliefs, the risk of foodborne illness in the U.S. has markedly increased over the last 20 years. The primary reasons for this is that more meals are consumed outside the home and consumers demand fresh fruit and vegetables year round increasing the amount of produce imported. Cattle are known carriers of Salmonella, Campylobacter and Shiga-toxin producing E. coli. Along with Listeria, which is found in the environment, these are major food borne pathogens. Although pasteurization is regarded as an effective method to eliminate foodborne pathogens and other bacteria in milk, an increasing number of reports on detection of these pathogens in fluid milk and ready-to-eat dairy products indicates that pas-

teurization alone is not the final solution for the control of food borne pathogens.

While Johne’s disease does not cause a direct increase of somatic cells, it is shed in the milk. Judy Stabel gave a description of Crohn’s disease in humans and discussed it’s recent claim to be linked to Johne’s disease in cattle. A study in 1996 suggested that viable Paratuberculosis (causative agent of Johne’s disease) were present in pasteurized milk. This raised obvious concerns about the effectiveness of pasteurization conditions to inactivate this organism. This set off a number of additional studies on the topic. Most studies agree that a very small percentage (<1 percent) of the organism may survive pasteurization using the holder or HTST methods. So pasteurization successfully reduces but does not eliminate this organism in milk. Johne’s is known to be shed in the feces and milk of infected cows and the prevalence of Johne’s is escalating in the U.S. In addition, producers suffer reduced milk production, infertility and premature culling due to Johne’s, all which effect profitability. Combined with the potential link between Johne’s and Crohn’s disease, producers are urged to join their state control programs to slow the spread of infection and thus human exposure to this disease.

Joe Hogan provided a summary of research regarding human health risks and high SCC. Consuming milk with high SCC does not pose direct, specific health risks to humans. But there is a relationship to high SCC and poor farm hygiene, antibiotic residues and presence of pathogenic organisms and toxins in milk. These relationships offer insight into the potential increase in food safety risk factors to consumers when high SCC milk is marketed. Most reports indicate that lowering limits of SCC will positively influence acceptability and suitability of milk as measured by improved safety, milk quality and value added products. In the EU, safety, suitability and consumer’s acceptance play comparatively important roles as driving forces for lowering SCC.



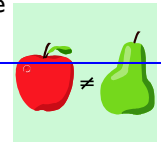
What's new in the treatment & diagnosis of Gram-positive mastitis?

• **Treatment** Two on-farm studies in a 3000 cow dairy in Michigan were presented. First, the farm looked at lowering the SCC and subclinical mastitis rate by culturing fresh cows 1-6 days in milk. Any quarters that were positive for *Strep* spp, *Staph* spp or *Staph aureus* were enrolled in the trial. All cows with clinical mastitis were excluded from the trial. Cefa-Lak was used in all quarters once daily for a total of 3 days. Only cows infected with subclinical *Staph* spp. showed a significant decline in SCC post treatment. Next, the farm compared several treatment methods for treatment of *Strep* spp., *Staph* spp. and *Staph aureus*. Treatments included a control or no treatment group, Amoxiclast, Amoxiclast plus intramuscular ampicillin, Pirsue and a Pirsue plus intramuscular ampicillin group. Cures were defined as no growth on a 21-28 day culture. Treatment with systemic ampicillin in conjunction with an intramammary treatment proved more effective in eliminating *Strep* spp. and kept more cows in production over just using the traditional intramammary therapy alone. The same was not true for *Staph* spp and *Staph aureus*.

• **Diagnosis** A poster was presented on evaluating the agreement of single and duplicate quarter samples collected over a five day period in non-mastitis cows. Three diagnostic laboratories—Cornell, Guelph and Minnesota participated. They concluded that there is considerable variability in the recovery of mastitis pathogens from repeated quarter samples. In order to diagnose an infection, the number of CFU per mL and the SCC of the quarter should be considered.

To Strip or Not to Strip—That is the Question!

Four good papers were presented on managing the milk parlor. Jeffrey Rushen talked about acute stress and handling during milking. Summarizing several studies, he found that there is a large difference between dairy farms in the way that cattle are routinely handled. Additionally cows' fear of people and milk yield are affected by the way cows are handled indicating that there are significant economic costs associated with this particular welfare problem. Jim Cullor outlined the evidence based role of fore-stripping. It is outlined in the PMO in the U.S. that "...abnormal milk shall be milked last or in special equipment and discarded" section 7 item 1r. Another section regarding milking states that "...flanks, udders, bellies and tails shall be free from visible dirt and the udders and teats shall be clean and dry before milking", section 7 item 13r. So these sections clearly indicate that we must milk a clean, dry, presanitized udder and we are not allowed to put abnormal milk into the bulk tank and offer it for sale. Internationally, the same principles exist. David Reid provided information about on-farm evidence of the role of fore-stripping. While it is tempting to base decisions of fore-stripping on cows milked per hour, a better monitor is milk produced per stall per hour. The goal for 2x herds is 150 pounds per hour and 3x herds is 120 pounds per hour. This monitor allows for the output differences between spending less time in a prep and having a lag time from unit attachment to milk letdown to spending more time in a prep and having better milk flow per unit of time. Overmilking, either at the beginning or end of milking, is an important factor that effects the milkability of a cow. The only studies done on differences of parameters between stripping and not stripping are on herds that previously stripped. Many believe the data is potentially biased for this reason but both studies conclude that milk yields are the same but forestripping decreased average unit on time, increased peak milk flow and overall flow rate average. One U of Wisc researcher argued in a Q & A discussion that the results were not biased because they have data showing cows respond very quickly to changes in their routine and data taken during a "transition time" (of moving a cow from stripping to not stripping) compared to study data did not differ. John Smith provided a good paper on overall parlor management and economic considerations. Every manager should read this paper! He suggests the decision of forestripping is not the same in every herd and is dependent upon our goals. He reviewed options for milking procedures and routines in herringbone, parallel and rotary parlors, advantages and disadvantages of minimal and full milking routines and outlined an economic analysis of these different parameters.



Do Liners Differ?

Despite being in the "Information Age" where we often have more data than we know what to do with, this is one area that the speaker remarked is "...still witchcraft". The evolution of liners from the first double action teat cup in 1878 that used a rubber liner to today's version with synthetic rubbers and varied formulation allowed there to be many different types to choose from. Among the variables are means of manufacturer (extrusion or molding), dimensions of the main sections (mouthpiece, barrel and short milk tube), option to re-tension or not, composition of milk liner and others. The variety of liner types that have been marketed worldwide runs into thousands of models with hundreds still available today. It is a confusing part of any supplier's catalogue to find the variety of sizes and shapes offered. These are combinations of shape x size x material. So liners certainly do differ and therein lies a problem for manufacturers, suppliers and customers. Liners have a mouthpiece lip diameter of 18 to 26 mm, a barrel bore diameter of 18 to 28 mm, an effective length of 90 to 164 mm and a short milk tube diameter of 7 to 12 mm with barrel cross sections that may be round, oval, triangular or square. The barrel walls may be parallel or tapered and possibly rubber circularly or longitudinally. Liner development appears to have been "pulled" by best practice and optimization to meet particular commercial pressures. Evidence that development has been "pushed" by understanding of actions and predictions of effects is less common. Several attempts to model liner movement and forces have been made with limited success. The best advice the speaker, J. Eric Hillerton, had to offer was to stay with the design you have chosen unless there are problems. A mix and match approach is not recommended.