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Dairy Herdsman Short Course to be held at CSU, Chico October 28-30

Save the date now for the 3-day Herdsman Short Course sponsored by the University of California Cooperative Extension and California State University, Chico. The event will be held at the CSUC Farm. Lunch, a comprehensive notebook and other class materials will be included in the $150 fee. Additional participants from the same dairy can register for $75.00. Student registration is $75.00. Three days of classes and hands-on laboratories will be held covering topics such as foot care, conducting a cow-health exam, milking management, human health concerns, reproductive physiology and milk quality. We will be sending out a flier with registration information and all the details in a future newsletter. This workshop is for farm owners and their herd managers, so mark your calendar today!

Chlorhexidine Not Recommended To Halt Lactation of Chronically Infected Quarters

John H. Kirk, DVM, MPVM
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Chlorhexidine (Nolvasan) along with several other solutions have been used to halt milk flow in quarters of dairy cows that have been chronically infected and non-responsive to antibiotic therapy. After the infusions, the quarter is not milked for the remaining of the lactation. This is an extra-label use of the product.

A recent report[1] established that there is a danger of inhibitory residue in the milk. In the study, 6 cows were infused with chlorhexidine in a single infected quarter. The remaining 3 quarters were milked for another 42 days. Chlorhexidine could be detected in all treated quarters for up to 42 days following the infusions. It was also detected in milk from some of the untreated quarters. It is not precisely known at what level the residual might be detected as an inhibitory substance by testing at the milk cooperative.

Two potential situations might result in a detectable residue. First, the treated quarter could be mistakenly milked into the bulk tank milk. Or, enough residue might appear in the untreated quarters to become detectable. The research pointed out that they milked the treated quarters in order to determine the

chlorhexidine concentration. On the dairy, the quarter would not be milked. Therefore, the concentration might remain higher in the un-milked quarter and present a greater risk if it were milked accidentally.

In summary, these researchers recommend that chlorhexidine not be used to stop milking of infected quarters in dairy cows.

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[1]Middleton JR, Herbert VR, Fox LK et al. Elimination kinetics of chlorhexidine in milk following intramammary infusion to stop lactation in mastitic mammary gland quarters of cows. JAVMA 222(12); 1746-1749, 2003.

Prolonged Oxytocin Treatment Has Limited Use

John H. Kirk, DVM, MPVM

Naturally, oxytocin is produced by the pituitary gland. When released from the pituitary gland it causes contraction of the smooth muscles of the uterus and mammary gland. The primary stimulation is from the massage of nerve endings in the teats at the beginning of milking preparation. Cows may also be stimulated by the sound of the milking machine or the actions of the water in the wash pen. In the absence of sufficient hand massage, the action of the milking machine liners serves as a stimulus. The presence of the calf may also be the stimulus.

Once the nerve endings have been stimulated, oxytocin is released from the pituitary gland into the blood stream. From the brain, the oxytocin is carried by the blood to the mammary gland where it causes the smooth muscles of the alveoli to contract. After these alveoli contract, the alveolar milk is forced down into the gland cistern and teat cistern. This release results in swelling of the teats and milk ejection. Once the milk is let down into the gland and teat cisterns, the milking machine can remove the milk easily.

Under normal conditions of natural oxytocin release, 10-30% of the total milk will remain in the gland at the end of milking. This residual milk may amount to up to 2 cups of milk for the four quarters.

Oxytocin is often used in first calf heifers that are having difficulty letting down their milk during the initial adaptation to the milking parlor. It may also be used in older cows that have teat injuries resulting in let down problems. In some cases, the injections of oxytocin are given over long periods of time as the cows seem to become "addicted" or in attempts to increase milk production.

In a recent report[2] studying chronic oxytocin injections, stopping the injections caused an abrupt drop in milk output. Three groups of seven cows were used in the study. The cows were milking 50-70 lbs/day with 2X milking. The volume of milk decreased significantly (15-20% on average) at milking when oxytocin was withheld in the oxytocin group with a range of 5-50% reduction. The other groups (sodium chloride injections or no treatment) remained the same. The residual milk remained the same for all groups.

Regular injections of oxytocin will not reduce the amount of milk remaining the udder following proper stimulation of the udder during the preparation prior machine attachment. Prolonged use of oxytocin may eventually result in decreased production when the injections are halted and may cause the cows to resist entering the milking parlor. The researchers suggest that regular administration of oxytocin is of limited use and should only be done when udder health was endangered by leaving large amounts of milk in the udder after milking.

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[2]Bruckmair, RM. Chronic oxytocin treatment causes reduced milk ejection in dairy cows. J Dairy Res. 70;123-126, 2003.

Cleaner Cows Have Lower Somatic Cell Counts

A study was conducted by Reneau, et al at the University of Minnesota to evaluate the relationship between cow hygiene scores and Somatic Cell Count (SCC). Body condition scoring, lameness scoring, and teat condition scoring are examples of successful use of subjective scoring systems on dairy farms. Scoring is also one way to evaluate cow hygiene.

A study in the Netherlands showed that herds with Bulk Tank Somatic Cell Counts (BTSCC) less than 150,000 had 4 times fewer dry cows with more than 30% of their udders covered with manure (1). Although common sense tells us that cleaner cows would have fewer environmental mastitis infections than dirty cows, this relationship has not been documented. Also, because "cleanliness" is often subjective, what appears dirty to one individual may appear "normal" to another. The objective of the Minnesota study was to investigate if there was any correlation between cow hygiene scoring and individual cow SCC.

The researchers selected a scoring system scale from 1 to 5. Score 1 indicates cow that is absolutely clean while a score 5 indicates a very dirty cow. Five-point scale-scoring schemes are common in the dairy industry and are easily understood. The 1-5 scale is easily broken down into half or quarter-point increments depending on the skill and experience of the scorer. This type of scoring can obtain repeatable observations.

A scorecard was devised by modifying the cleanliness scorecard developed by Chiappini et al (2). This scorecard uses simple drawings to illustrate the degree of cow hygiene. This scorecard is similar to the body condition scorecard developed and validated by Edmonson et al (3). The cow hygiene scorecard was broken down into five general areas: Tail head, Flank, Belly, Udder, and Rear legs and feet.

A total of 1093 cows in the 9 herds were hygiene scored within 2 days of DHI test day. All herds were deemed to have predominantly environmental mastitis problems as indicated by bulk tank cultures. Individual cow SCC and culture data was used to edit known contagious mastitis pathogen infected cows from the data. Each cow was scored in each of the five body areas. An udder-leg composition score was created by averaging the udder and rear legs scores. Statistical analysis incorporating herd, parity, days in milk and hygiene score was compared to SCS.

Table 1. Mean Values for 1093 cows

SCC	SCS (linear score)	FCM	DIM	305ME
405,242	3.35	80.91	207	24,321 lbs.

Herd, Parity, DIM and DIM² were all significant effects in the model ($P < .01$). Of the hygiene score traits Tail head, Flank and Belly were not significant. However, as Udder, Rear legs, and Udder - Rear legs composition scores increased SCS also increased. For each 1 standard deviation increase in Udder, Rear legs or Udder - Rear legs composition score, SCS increased by 0.13, 0.17 and 0.17, respectively.

Table 2. Relationship of cow hygiene score and SCS

	Mean Hygiene Score	Standard deviation	Regression Coefficients	P - Values
Tail head	2.43	0.74	-0.02	0.82
Flank	2.54	0.92	0.05	0.40
Belly	2.31	0.76	0.08	0.33
Udder	2.64	0.84	0.15	0.03
Rear legs / feet	3.21	0.76	0.22	< 0.01
Udder + legs composite	2.92	0.67	0.25	< 0.01

Conclusion

Hygiene scores of udder and lower rear legs significantly affected SCS. Herds with predominance of environmental mastitis infections and similar somatic cell count levels may expect to see a 40-50,000 change in herd SCC for each 1-unit change in cow hygiene scores. The bottom line: Clean cows have better quality milk.

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(1)Barkema, H. W., Y. H. Schukken, T. J. G. M. Lam, M. L. Beiboer, G. Benedictus, and A. Brand. 1998. Management practices associated with low, medium, and high somatic cell counts in bulk milk. J. Dairy Sci. 81:1917-1927.

(2) Chiappini, U., P. Zappavigna, P. Rossi, and P. Ferrari. 1994. Proc. 3rd Internatl. Dairy Housing Conf. 2-4 February 1994, Orlando, FL.

(3) Edmonson, A. J., I. J. Lean, L. D. Weaver, T. Farver, and G. Webster. 1989. A body-scoring chart for Holstein cows. J. Dairy Sci. 72: 68-78.

DHIA Data for May

May DHIA Averages for N. Sacramento Valley Herds

ROLLING HERD AVERAGE	BREED				Overall Average
	Brown Swiss	Holstein	Jersey	Other	
# of Cows	53	331	290	131	303
Lbs Milk	22472	20535	14433	16702	18655
% Fat	3.92	3.66	4.56	4.27	3.95
Lbs Fat	882	751	660	712	726
% Protein	3.32	3.17	3.62	3.46	3.32
Lbs Protein	747	648	525	576	610
Somatic Cell Count (1,000)	304	341	310	306	329
% CULL	35	31	27	45	30
Calving Interval	14.1	14.6	13.5	14.0	14.2
Average Services/Conception	5	3	3	3	3
Percent conception at 1st service	23	34	42	36	36
Average days open	191	155	141	173	153
Average Days in Milk at 1st service	66	85	78	90	83