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## Herd Health Articles

By John H. Kirk, DVM, MPVM

Veterinary Medicine Extension

University of California, Davis/Tulare

### Drying Off a Quarter During Lactation

It is sometimes desired to dry off a quarter during lactation due to chronic reoccurring mastitis while leaving the other quarters milking. A recent report (*JDS* 84:1976, 2001) compared two methods for drying off a single quarter chronically infected with *Staphylococcus aureus* mastitis. The study compared each method for stopping milk production, effect on milk production in the next lactation and curing the infected quarters.

One group of cows was infused once intramammarily with 120 ml of 5% povidone iodine (Betadine) after complete milk out. The other group twice intramammarily with 1 gram of chlorhexidine (Nolvasan Suspension) after two milkings 24 hours apart. Treated quarters were not milked again during the lactation. Before infusion, each cow was treated with 600 mg Banamine IM to minimize udder inflammation. During the next lactation, milk samples were cultured for *Staph. aureus* once each month for 3 months. Three negative cultures indicated a microbiological cure.

In the next lactation, none of the iodine treated quarters produced milk while 71% of the chlorhexidine quarters produced milk. The chlorhexidine treated quarters produced amount similar to those in the previous lactation. However, over half the chlorhexidine quarters that did milk remained infected. Milk

production on a cow-basis was not significantly altered in the next lactation with the use of either drug even though some cows were only milking on three quarters.

The study authors point out that treatment with either iodine or chlorhexidine would be extra-label use of these drugs. Therefore, the herd veterinarian should be consulted prior to use of these drugs to determine the milk and meat withdrawal times. When Banamine is used it should also be considered when determining the withdrawal times.

When the object of the procedure is to eliminate a quarter from lactation and thereby reduce the risk of infecting other cows during milking with *Staph. aureus*, this study would suggest that Betadine is superior to chlorhexidine. In either case, the production of the cow will not be negatively affected during the subsequent lactation.

### Testing Individual Cow's Milk for Antibiotic Residue Using Tests Designed for Bulk Tank

A recent study (*Am J Vet Res* 62(11); 1716, 2001) reported on the validity of using antibiotic residue tests designed for use on commingled bulk tank milk for testing milk from individual cows that had been treated for mild mastitis with commercially available, intramammary infusion products. The cows in the study had naturally occurring cases of mastitis. The clinical signs of mastitis were confined to the udder (enlarged,

reddened) with visibly abnormal milk. Cows with severe mastitis or other concurrent diseases were excluded from the study. Drugs for treatment were selected by the dairymen and veterinarian and included pirlimycin, hetacillin, and cephalixin. All drugs were administered according to the manufacturer's label. Samples for residue testing were collected prior to treatment and at the first milking following the withholding period. Three residue tests were used – Penzyme Milk Test, SNAP beta-lactam Assay, and Delvo-SP Assay.

None of the pretreatment milk samples were found to have antibiotic residues. The ability of all three tests to predict a positive test or an actual antibiotic residue when a residue was actually present was poor. This indicates that dairymen would not be able to rely on these tests to decide whether to discard or sell the milk. Using a conservative approach and discarding the milk and retesting at the next milking would have resulted in milk from 17 of 45 cows being unnecessarily discarded.

Results of this study using cows with naturally occurring mild mastitis confirm the findings of earlier studies using antibiotic-spiked milk samples. Antibiotic residue tests designed for use on commingled, bulk tank milk are, in these researchers' opinion, highly questionable for use in making decisions about discarding or selling milk from individual cows as these tests would tend to discard more milk than is necessary. However, they do err on the side of preventing antibiotic residues.

## **Twinning Rates in Holsteins**

Many dairymen seem to think that the rate of cows calving with twins is increasing. Most dairymen feel that this is detrimental to production due to increased numbers of calving difficulties, more retained placentas, longer rebreeding intervals, high calf mortality rates and frequent occurrence of freemartins. A recent report (*JDS* 84:2081,2001) examined the twinning rate in the National Association of Animal Breeders database that included over 1.3 million births. Multiple births other than twins were not included in the data set.

The study found that the average incidence of twinning increased from first to fifth calving: 1.63, 5.22, 6.66, 7.19 and 7.19%, respectively. The twinning rates were highest from April to June and October to December compared to other times of the year. Sires born after 1990 had a higher incidence of twins than sires born before 1990. Heritability for all sires was estimated to be 8.71%.

The twinning rate for California Holstein cows on 14 dairies had been estimated by Day et.al. (1995) to be 6.86%. In this study of over 5000 cows, cows carrying twins were almost twice as likely to abort as cows with single pregnancies. It has previously been reported in another study that cows that gave birth to twins had a tendency to twin again. Cows that twinned once, twin again at a rate of 9.3%. If a cow twins twice, 12.5% twin for a third time.

Dairymen should keep in mind that they have an opportunity to change the incidence of twinning by selecting for sires with low PTA for twinning rate. Where possible, dairymen can also identify cows carrying twins and take aggressive actions to deal with calving difficulties that may occur. Early calving interventions taken as soon as lack of calving progress is noted can be expected to reduce difficulties in rebreeding and calf mortality.

## **Short Term Effects of Vaccinations**

Dairymen sometimes question their herd veterinarians about possible negative effects after giving their herd vaccines. A recent study (*Canadian Veterinary Journal* 42:793, 2001) used 2 commercially available, killed, 9-way vaccines containing IBR, BVD, PI<sub>3</sub>, BRSV and 5-way leptospiral bacterin to determine if an effect actually occurs. Individual cow milk production was recorded for 21 days beginning 7 days before the vaccination was given. Rectal temperatures were also taken each day for 10 days beginning 3 days prior to injection. Cows were allotted to 3 blocks based on DIM, production and randomly assigned to one of three groups (controls, vaccine 1 and vaccine 2).

The researchers reported a transient loss of milk production and rise in body temperature. Only one of the vaccines had a significant drop in milk production (+/- 5 lbs) on the day after the vaccination compared to the control group. The second vaccine tended to be lower than the control group but was not significantly lower. The largest drop in milk production (+/- 10 lbs) was seen in the highest production group. Body temperature was elevated for only the day following vaccination.

The results of this study suggest that dairy farmers can expect a small, transient drop in milk production following vaccination with this type of vaccine. The drop in production will be most noticeable in the higher producing cows. In addition, there will also be a short term rise in body temperature. While the rise in body temperature cannot be avoided, the effect on herd milk production can be decreased by selecting late lactation or dry cows for vaccination.

## **Herd Benefits From BVD Vaccination in Young Dairy Calves**

Vaccinations to prevent disease outbreaks are highly recommended by dairy veterinarians actively engaged in total herd health programs. Vaccination against BVD has long been considered a key step in these dairy herd health programs to minimize clinical severity and death losses due to BVD infections. Even though BVD vaccines do not provide complete protection against abortions or disease, they do prevent the catastrophic outbreaks.

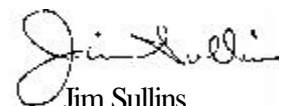
A recent article by M. Thurmond, C. Munoz-Zanzi, and S. Hietala in the *Journal of the American Veterinary Medical Association* (219(7);968-975)

suggests that there may be other benefits from vaccinating young calves for BVD using a modified live vaccine. Results of their field study in a typical California drylot dairy indicates that vaccinating young calves may reduce the transmission of BVDV among calves. Calves vaccinated at about 45 days of age had increased protection from exposure to BVDV type 1 for 60 days after vaccination. By having a control and a vaccinated group of calves for comparison, it was found that this protective effect was due to the vaccination. After vaccination until 9 months post-vaccination, vaccination prevented up to 48% of BVDV type 1 transmission.

Prevention of BVDV transmission was specific for the type of BVDV most similar to the type in the vaccine. Though BVD virus is grouped into type 1 and type 2, the virus really occurs as an entire spectrum of variants ranging from type 1 at one extreme to type 2 at the other, and the entire range of diversity exists in the field strains. In the herds studied, reduction of transmission was apparent for BVDV type 1 as that was the type in the vaccine used in their study. Transmission of BVDV type 2 was not significantly reduced in the study herds. Under field conditions, the degree of transmission reduced will vary with the type or types of BVD virus circulating in the herd.

In summary, the work of Thurmond, Munoz-Zanzi, and Hietala indicates a benefit of reduced transmission of specific types of BVDV from the use of MLV BVDV vaccination when given to calves at 45 days of age under conditions of intensive management on drylot dairies. However, the degree of transmission reduction may vary from dairy to dairy due to field strain diversity known to occur in the BVD virus.

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Jim Sullins  
County Director