

Update of Teat Dipping (Pre- and Post-), Backflushing, and Dry-Cow Therapy

R. J. Eberhart, D.V.M.

Department of Veterinary Science
The Pennsylvania State University
University Park, PA 16802

Postmilking teat dipping with a germicidal product is the single most effective practice available for reducing the spread of contagious mastitis bacteria in lactating cows. It will also reduce the new infection rate for environmental streptococci, but has little or no effect on coliform infections.

A difficulty with teat dipping is the selection of effective products. Manufacturers of teat dips are not required to provide evidence of safety and efficacy. Therefore some of the products on the market may not be effective, and some may not be safe. Products for which controlled research data from field studies are available include hypochlorite (4%), iodophors (.25 to 1%), chlorhexidine (.5%) and dodecyl benzene sulfonate (1.94%). However, germicidal activity may be affected by other compounds in the formulation, especially those added as emollients.

An outbreak of *Serratia marcescens* was apparently caused by a teat dip said to contain .5% chlorhexidine and an unspecified concentration of an emollient. This product supported large populations of several gram-negative rods including *Serratia*. In at least one herd, a high prevalence of udder infection with this pathogen apparently resulted. An outbreak of *Serratia* mastitis associated with a quarternary ammonium teat dip was previously reported. Contaminated teat dips are especially dangerous because they are applied immediately after milking at a time when the teat canal is highly vulnerable to infection.

Germicidal teat dips in the dry period. Use of a germicidal dip after the last milking of the lactation, or at the time of dry cow therapy, will destroy contagious bacteria left there from lactation. This practice has been shown effective in reducing new dry period infections caused by *S. aureus*. However, teat dipping, either at the end of lactation or in the prepartum period, does not reduce new infections caused by environmental pathogens.

Barrier teat dips. There are limited data indicating that barrier type dips reduce new coliform infections in lactating cows. However, they appear to be less effective than germicidal dips in preventing streptococcal and staphylococcal infections. Therefore, it seems reasonable to recommend their use only when it is known that coliforms are a major part of the mastitis problem in a herd. There are data showing that barrier dips now available are ineffective in the dry period.

Predipping. Use of a germicidal teat dip before milking

has been recommended for the control of environmental mastitis. The rationale appears to be that bacteria reaching the teat end from the environment between milkings may be forced into or through the teat canal during milking. Reducing the numbers of these bacteria would then be expected to reduce the number of new infections. Predipping does reduce the number of bacteria recoverable from the teat skin, but the effect of this practice on new infections is controversial. In controlled Vermont field studies, predipping reduced new infections by environmental pathogens by more than 50%. However, in a Pennsylvania study predipping had no effect on new infections. More research is clearly needed to define the possible benefits of predipping. Although predipping presents an obvious risk of increasing germicide residues in milk, the increase in residues appears to be minimal if the dip is carefully wiped off before the milking unit is applied.

Backflushing. Automated backflushing systems for flushing disinfectant solutions through the milking units after each cow is milked are commercially available. Two recent studies have evaluated their effect on new infection rates. It appears that backflushing may be useful to reduce the spread of contagious pathogens but have little or no effect on environmental pathogens. When post milking teat dipping is practiced, the additional benefit obtained from backflushing is likely to be small. Backflushing with iodophor disinfectants may also lead to an increase in iodine content of milk because iodine is absorbed on plastic hoses during backflushing then released into milk during milking. It appears that backflushing units are not usually economically justified in typical Northeast dairy herds. Their use may be warranted in special situations such as a) very large herds with hired labor, and b) herds heavily infected with contagious pathogens such as *S. aureus* and mycoplasma.

Dry Cow Treatment. Treatment of all quarters of all cows with an FDA—approved dry cow product is recommended. Dry cow treatment has both a) a curative effect for infections already present, and b) and a preventive effect for new dry period infections. In low cell count herds, the preventive effective is probably more important than the curative effects. Shortcomings of dry period treatment are a) it has no preventive effect on coliform infections, and b) it provides no preventive effect in the critical precalving period.

How dry cows (and probably lactating cows as well) are

infused appears important. In a recent study, effects of inserting the syringe cannula completely through the teat canal with only partial insertion were studied. Quarters infused by complete penetration had higher new infection rates by major pathogens than quarters infused by partial

penetration. Cure rates for existing infections were lower in quarters treated by complete insertion than by partial insertion, although this difference was not statistically significant. Histological studies showed that full insertion removed much of the teat canal keratin.

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