



When should pre-milking teat disinfection be considered?

Pre-dipping teats means applying a quick-acting disinfectant just before milking to reduce the bacterial population on teat skin especially in the region of the external teat orifice. In the United States, it is common to use 0.1-0.5% iodophor as a pre-dip. The addition of an emollient is neither necessary nor desirable for pre-milking teat disinfection.

Pre-dipping is widely accepted as being most effective against environmental rather than contagious pathogens, reducing new environmental streptococcal infections by as much as 50% in some studies (Pankey et al 1987, Smith and Hogan 1997). However, at least one recent paper indicated that dipping teats both pre- and post-milking with a disinfectant containing chlorous acid and chlorine dioxide reduced *Staph aureus* infections by nearly 70% and *Strep uberis* infections by 65% when compared with post-dipping alone (Oliver et al 1993).

Australian farmers could consider pre-dipping teats if they had high numbers (more than 5 per 100 cows per month) of clinical cases due to environmental bacteria (for example *Strep uberis*). Because no teat disinfectants are registered for use as pre-dips in Australia at present, no recommendations are given to farmers in the Countdown Downunder Farm Guidelines for Mastitis Control. Nevertheless, veterinarians could make recommendations for off-label use in appropriate situations provided that the local milk processor is aware of the advice given to one or more of their suppliers, and that people take precautions to minimise chemical residues in milk. A list of sanitisers approved for pre-dipping in the United States is published in the National Mastitis Council proceedings each year and updated regularly (National Mastitis Council 1998).

The major concern is the potential for increased iodine residues in milk. Although pre-dipping with 0.5% or even 1% iodophor did not affect milk iodine residues as long as teats were wiped dry with a paper towel, residues increased significantly when teats were not wiped (Galton et al 1986).

Confidence – Low

Data from the United States indicates that pre-dipping is effective in reducing environmental mastitis and possibly *Staph aureus* infections. (Note that this is an off-label product use in Australia at present.)

Research priority – High

The effects of pre-dipping or pre-spraying teats on environmental streptococcal infections and *Staph aureus* mastitis under Australian conditions should be explored, with special attention to strategic pre-milking teat disinfection in the first few weeks after calving.

Technote 7 describes post-milking teat disinfection.

If a pre-dip is used, it should have a contact time of at least 15 seconds (and preferably 20-30 seconds) to achieve an effective kill.

Teats should be free of manure and visible dirt before the dip is applied.

Depending on the chemical used, teats should be wiped dry before teatcups are applied.

The 'Iodine milk residues' FAQ sheet discusses the impact of post-milking teat disinfection on iodine residues.

The general technique, as recommended in United States, is part of a pre-milking udder preparation routine that can be summarised as: 'Strip, Dip, Dry and Apply'. That is:

- Strip: Wipe loose dirt from each teat and pre-strip foremilk;
- Dip: Pre-dip and wait for at least 15 sec, preferably 20-30 sec;
- Dry: Wipe each teat with a single-use paper towel;
- Apply: Apply teatcups 60-90 sec after the first touch of each udder.

An effective alternative method of pre-milking disinfection could suit typical Australian milking routines. It involves a commercially available, disposable paper towel pre-moistened with an ethanol/chlorhexidine disinfectant. The 'dip' and 'dry' in the list above can be combined when this product is used, provided that the operator takes care to wipe across each teat orifice with a clean section of the sanitary wipe.

Key papers

Blowey R, Edmondson P. Teat disinfection. In: Mastitis control in dairy herds, Chapter 7, Farming Press Books, Ipswich, United Kingdom, 1995:93-102.

Galton DM, Petersson LG, Erb HN. Milk iodine residues in herds practicing iodophor premilking teat disinfection. J Dairy Sci 1986;69:267-271.

National Mastitis Council. List of approved teat disinfectants. In: Proceedings of the 37th National Mastitis Council Annual Meeting, St. Louis, Missouri 1998.

Oliver SP, Lewis MJ, Ingle TL, Gillespie BE, Matthews KR. Prevention of bovine mastitis by a premilking disinfectant containing chlorous acid and chlorine dioxide. J Dairy Sci 1993;76:287-292.

Pankey JW, Wildman EE, Dreschler PA, Hogan JS. Field trial evaluation of premilking disinfection. J Dairy Sci 1987;70:867-872.

Smith KL, Hogan JS. Risk factors for environmental streptococcal intramammary infections. In: Proceedings of the symposium on udder health management for environmental streptococci, Ontario Veterinary College, Canada, 1997:42-50.

Features of pre- and post-milking teat disinfection (adapted from Blowey and Edmonson 1995)

| Feature | Pre-dip disinfection | Post-dip disinfection |
|-----------------------------|---|--|
| Season of use | High-risk periods | Essential throughout the year |
| Speed of action | Must be rapid | Not important |
| Primary target | Environmental mastitis | Contagious mastitis |
| Effect on total plate count | Decreases if plate counts are high due to dirty teats | No effect unless Strep agalactiae is involved |
| Effect on milk residues | Teats must be wiped dry | May increase the potential for milk residues (although this is unlikely) |