National Mastitis Council Fact Sheet:

Postmilking Teat Disinfection

The rate of new intramammary infection is related to the degree of teats' exposure to mastitis-causing pathogens. This may be the number of bacteria on teat skin, especially near the orifice, or the proportion of teats with colonized skin lesions. Disinfecting teats with a germicidal agent immediately after cluster removal at every milking kills a significant proportion of the pathogens on teats, aids healing of lesions and helps ensure good skin condition. This in turn reduces the chance of those pathogens entering the mammary gland.

Postmilking teat disinfection is especially effective against the contagious pathogens *Staphylococcus aureu*s and *Streptococcus agalactiae*. While milking can spread any type of mastitis pathogen, these two pathogens in particular spread from cow to cow during the milking process. Staphylococcus aureus, Streptococcus dysgalactiae and *Arcanobacterium pyogenes* readily colonize lesions. Control of different pathogens varies with product used. It has long been considered that postmilking teat disinfection may be less effective in reducing the new infection rate of "environmental" pathogens such as coliforms and *Streptococcus* species other than *Streptococcus agalactiae*. Various products have approved claims to control this specific type of problem and can be identified from their labels. Control of environmental pathogens is further aided by management practices such as maintaining cows in a clean, dry environment; good premilking hygiene and using milking machines designed, installed and operating to specification and appropriate standards. Milkers should continue postmilking teat disinfection as a routine part of milking procedures, even if S. agalactiae have been eliminated and somatic cell counts are low.

A variation on postmilking teat disinfection is to use a barrier teat disinfectant. Barrier teat disinfectants are formulated to leave a persistent film on teat skin to manage contamination by environmental bacteria. Several products have proven effective in trials using NMC protocols.

Expectations

The rate of new intramammary infection can be 50% lower when disinfecting teats with an effective product immediately after every milking compared to no disinfection. Teat disinfection does not affect existing mammary gland infections but may reduce colonization of the teat ducts by coagulase-negative staphylococci. Existing infections are best eliminated by dry cow treatment and culling chronically infected cows. Preventing new infections by using teat disinfection reduces the prevalence of mastitis in a dairy herd over the long term. Improvements, such as fewer cases of clinical mastitis and/or lower herd somatic cell count, generally, can be observed within a few months.

Application

Postmilking teat disinfectants can be applied either by dipping or spraying. Either method is acceptable, if done in a manner that covers the entire teat thoroughly. Make sure all four teats are completely covered. The disinfectant should be applied immediately after cluster removal at every milking.

Proper Handling

Storage

- Store teat disinfectants in cool, dry areas.
- Do not allow disinfectants to freeze.
- Keep containers closed to prevent contamination.
- Do not use after the expiration date.

- Do not assume that all teat disinfectants will kill all pathogens. Some pathogens can survive in some specific disinfectants under certain conditions.

Instructions for use

- Follow label instructions.
- Use teat disinfectants at recommended concentration.
- Do not dilute unless indicated on the label. If dilution is necessary, use a recommended water type only (bacteria-free, pH, hardness, etc.).
- Use a clean container for diluting and mixing the final product.

Dip cups

- Empty and clean cups after every milking or if contaminated during milking.
- Ensure the supply is sufficient for the whole milking.
- Never pour used disinfectant back into the original container.
- Discard and replace damaged dip cups.

Sprays

- Only use products formulated to spray.
- Ensure the supply is sufficient for the whole milking.
- Use a lance or wand to extend the sprayer under the teats.
- The nozzle should provide spray droplets never less than 10µm to limit inhalation and absorption by the operator.

Products to Use

Good teat disinfectants have efficacy against the major mastitis pathogens, are economical, easy to apply, and help maintain or promote good skin condition. Use only products that are registered/listed with the Food and Drug Administration (FDA) for the United States, the Veterinary Drugs Directorate (VDD) of Health Canada for Canada, and the European Medicines Evaluation Agency (EMEA) for Europe and many other places. FDA regulates teat disinfectants as over-the-counter drugs. However, FDA does not require proof of effectiveness for labeling. All EMEA licensed products must have demonstrated efficacy in controlled studies. In Canada, teat disinfection products must complete a full submission and approval process for veterinary drugs. This process includes evaluation of efficacy, safety, residue and manufacturing data. In all of these countries, approved products will claim to reduce or aid in reducing mastitis. Be aware of products that are attempting to mimic ones that are registered or unregistered/unlicensed products that may claim to be a disinfectant but have no label claim for mastitis control. Avoid these latter products.

Dairy producers should request information from the manufacturer/supplier on registration/licensing and results of controlled research studies showing efficacy. Another source of information concerning teat disinfectant efficacy is the Summary of Peer-Reviewed Publications on Efficacy of Premilking and Postmilking Teat Disinfectants published since 1980, updated annually by NMC. This bibliography of peer-reviewed publications is not exhaustive. It is possible that evaluations of teat disinfectant efficacy may have been completed and published, but might not be identified and cited in the NMC bibliography. As such, the bibliography might not include products tested to EMEA requirements that differ from NMC recommended protocols. In Canada, the formal approval process currently uses the standard protocols for the evaluation of teat disinfectant efficacy recommended by NMC.

Testing Teat Disinfectants

NMC recommends two methods for testing teat disinfectant effectiveness. Protocols for experimental challenge and natural exposure are described briefly below.

Experimental Challenge evaluates the ability of a teat disinfectant to prevent infections in dairy cows under conditions of experimental exposure to mastitis pathogens. This protocol determines effectiveness under experimental conditions only.

Natural Exposure evaluates ability of a teat disinfectant to prevent infections in dairy cows under commercial dairy practices. This protocol determines effectiveness under natural conditions.

EMEA has different regulatory requirements. Products approved by EMEA are issued with a license. The registration number will always be found on the container label. Products approved by VDD of Health Canada are given a Notice of Compliance and issued a Drug Identification Number that is shown on the container label.

Teat Disinfecting in Different Seasons

During periods of extreme cold or significant wind chill, take special precautions to avoid chapped or frozen teats. Cold weather recommendations include:

- Disinfect all teats after every milking using a high emollient concentration product. Winter dips with more than 50% emollients may be useful in extreme conditions.
- Teats should be dry before turning cows out into cold weather. Allow 30 seconds contact time, then blot off any excess disinfectant with either a single-service paper towel or laundered dairy cloth.
- Warm teat disinfectants during cold conditions to reduce drying time.
- Provide windbreaks for cows in outside areas.
- Monitor newly calvedjust-fresh animals; they are more susceptible to chapped and frozen teats.

In summer or warmer and dry conditions:

- A lower emollient concentration may be used.
- Under fly challenge conditions, a product containing a fly repellent may be useful.
- When ultraviolet light B (UVB) is high, a product containing sun screening agents may be useful.

Summary

- Teat disinfection is an important part of the NMC 10-point mastitis control plan.
- More than 50% of new udder infections can be prevented with proper teat disinfection.
- Only use a product with proven efficacy.
- Apply teat disinfectant to every teat immediately after every milking.
- Ensure that the disinfectant thoroughly covers the entire surface of all teats.
- Handle teat disinfectants properly.

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The NMC is a not-for-profit educational organization that provides a forum for the global exchange of information about udder health, mastitis control, milking management, and quality milk production.
