400K Beat It! Prevent new infections before they become a problem

By Michael Zurakowski and George Cudoc

Preventing new mastitis infections from occurring on dairy farms is a never ending job. Stresses to the animal’s immune system (lactation, nutritional, environmental), the prevalence of environmental and contagious pathogens, teat end conditions, animal hygiene, and milking equipment all contribute to whether an animal will acquire a new infection. The overall level of mastitis in a herd is linked to the number of new infections and the duration of these infections. Most producers will agree that preventing new infections from occurring is more economical and rewarding than managing established infections.

Top producers, nationwide, hope to maintain new infection rates of less than 5% to 8% of their herd. Once new infection rates rise above 8%, it is important to determine where these infections are coming from, how they may be prevented and what happens to these infections over time.

Most dairy producers monitor their bulk tank somatic cell counts to identify trends throughout the year. When persistent increases in somatic cell count or increases in临床 mastitis occur, further investigation is necessary. Many dairies utilize somatic cell count services to identify animals with high somatic cell counts. Farms often fail to take advantage of all the other data that is available, which can help to recognize trends and infection rates. This information, when paired with culture data, can assist us in determining when and where mastitis infections originate and explain the overall effect on your bulk tank somatic cell count.

Your regional Dairy One marketing manager, QMPS laboratory, herd veterinarian, or milk inspector can provide more information on how to evaluate udder health and new infection rates.

<table>
<thead>
<tr>
<th>SCC Benchmarks</th>
<th>High Bulk Tank SCC</th>
<th>Few cows (&lt;2%) contribute to high SCC</th>
<th>Many cows (&gt;2%) contribute to high SCC</th>
<th>New Infections &gt;8% (*July 2011)</th>
<th>Chronic Infections &gt;10% (*August 2011)</th>
<th>Fresh Cow Infections &gt;15% (*May 2011)</th>
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*2011 Case Study Herd: In a four-part series, QMPS analyzes SCC in a dairy herd, starting with individual cows (March 2011), and then looking deeper into each component of the herd with >2% of all cows with high SCC. Each group of cows falls out of the “Top” benchmark level. More than 15% of fresh cows (May 2011) exhibited infections; more than 8% of new cows brought into the herd exhibited infections (July 2011); and more than 10% of the herd had chronic infections (August 2011). The full series will be archived at www.dairyone.com and www.qmps.vet.cornell.edu.
Case study: Happy Cows Dairy

Happy Cows Dairy is a well managed eastern New York based farm that milks approximately 350 cows. Typical bulk tank somatic cell counts average 200,000-250,000 cells/ml throughout the year. The new infection rate is usually 3%-4%. Proper milking procedures have always followed National Mastitis Council recommendations, milking equipment is regularly serviced and evaluated, and clinical cases of mastitis are routinely cultured. Animals infected with contagious pathogens are segregated or culled from the herd.

In the spring of 2010, the owners observed that there was a steady rise in their bulk tank somatic cell count that persisted through the summer and into the fall. (Figure 1).

Further evaluation of herd data revealed a consistent increase in the new infection rate. The new infections spanned the entire herd without one particular group showing a higher incidence of mastitis over another. (Figure 2).

Culture results of clinical animals identified environmental mastitis pathogens (Streptococcus uberis, E.coli, Klebsiella, and coagulase negative Staphylococcus species).

Overall cow hygiene had declined with many udders stained with manure and other debris. Bedding quality and quantity was poor. Review of the milking procedures revealed inadequate teat dip coverage and contact time.

The owners noted that in the early spring 2010, several new farm employees were hired. They depended on the existing personnel to train these new workers. In early 2011 a formal training was held with all staff members to review all farm protocols. The bulk tank SCC and new infection rate showed a dramatic improvement.

The analysis of a high new infection rate should include:

- **Milking procedures**: Proper milking procedures include wearing gloves, pre-dipping with at least 30 seconds of contact time, pre-striping, and post-dipping immediately after milking.
- **Milking equipment**: Routine maintenance with minimal vacuum fluctuations is essential.
- **Proper animal hygiene and teat end condition**: Clean, dry bedding and smooth teat ends help to reduce environmental mastitis.
- **Segregation of animals with contagious pathogens**: Animals infected with contagious pathogens should be managed appropriately (milked last, milked with a separate unit, or culled) to prevent further spread of these organisms through the herd.

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The analysis of a high new infection rate should include:

- **Milking procedures**: Proper milking procedures include wearing gloves, pre-dipping with at least 30 seconds of contact time, pre-striping, and post-dipping immediately after milking.
- **Milking equipment**: Routine maintenance with minimal vacuum fluctuations is essential.
- **Proper animal hygiene and teat end condition**: Clean, dry bedding and smooth teat ends help to reduce environmental mastitis.
- **Segregation of animals with contagious pathogens**: Animals infected with contagious pathogens should be managed appropriately (milked last, milked with a separate unit, or culled) to prevent further spread of these organisms through the herd.

**Figure 1.** The average test day SCC began to rise in April 2010 and stayed elevated until the beginning of 2011. In December 2010 the bulk tank SCC was 343,000 cells/ml.

**Figure 2.** The percentage of new infections from September to December 2010 reached 13%-14%.

DairyComp Commands

**Farms that have access to Dairy Comp 305** can produce reports similar to those provided above:

- **Figure 1** (average SCC for each test date): PLOT SCC FOR LACT>1 'R
- **Figure 2** (table of infection dynamics): PLOT LS=4.5 BY LS FOR ID>0 'YRSZ.

QM2 is the newsletter of Dairy One and Quality Milk Production Services.

How to reach us...

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**QMPS is a program** within the Animal Health Diagnostic Center, a partnership between the New York State Department of Agriculture and Markets and the College of Veterinary Medicine at Cornell. The QMPS staff of veterinarians, technicians and researchers works with New York dairies to improve milk quality by addressing high somatic cell counts, milking equipment and procedures, and milker training in English and Spanish. QMPS also conducts research and teaching programs.

Reach the four regional QMPS laboratories at:

- **Central Lab, Ithaca.**
  877-MILKLAB (877-645-5522)
- **Eastern Lab, Cobleskill.**
  877-645-5524
- **Northern Lab, Canton.**
  877-645-5523
- **Western Lab, Geneseo.**
  877-645-5525

**QMPS website:**
http://qmps.vet.cornell.edu

**Dairy One** is an information technology cooperative, providing DHI records services and herd management software to dairies throughout the Northeast and Mid-Atlantic region. A comprehensive laboratory network provides milk quality testing as well as forage, soil, manure and water testing.