

Chronic Mastitis: Using your tools for a healthier herd

by Linda Tikofsky, DVM and Jack van Almelo, Dairy Management Resources

Chronic mastitis is a headache for every farm. However, there are several tools available to manage your chronic mastitis infections including Individual Cow Somatic Cell Counts (SCC), Milk Culture Results, Culling, and Pharmaceuticals. These tools are not new, but methods for integrating the information are giving dairies and their veterinarians more effective approaches to keeping their herds healthy.

Even in the best managed herds, dairy cows get mastitis infections regularly, much like healthy people can feel tired for a day or so while they "fight off a bug". In the healthiest dairies, the environment allows most of the animals to fight off the infection without ever getting sick. In the worst cases animals can not defeat the infection and they become chronically infected, shedding large numbers of somatic cells, experiencing lower production, and serving as a reservoir of infection which threatens the rest of the herd.

Are Chronic Infections a Problem?

The "top" herds we see in the Northeast consistently run a Bulk Tank SCC under 200,000 and find less than 6% of their cows carry chronic mastitis infections. If your herd has greater than 8% of the animals chronically infected you will likely benefit from an integrated response to chronic animals.

The very best herds typically have less than five percent of the herd newly infected, less than five percent of the herd chronically infected and less than ten percent of the fresh cows calving with a SCC greater than 200,000.

| | New | Chronic | Fresh |
|--------|------|---------|-------|
| Top | ≤ 5% | ≤ 5% | ≤ 10% |
| OK | ~ 8% | ~ 8% | ~ 15% |
| Not ok | 10+% | 10+% | 20+% |

Figure 1: Percentage of the herd infected.

SCC counts reflect the number of leucocytes and epithelial cells in a sample of milk and are expressed as a number per milliliter. Linear Score is calculated from the SCC count. It is generally agreed that animals are likely to have an infection when their SCC count goes above 199,000 cells per ml. A "200,000" SCC count is the same as a Linear Score of 4. If you double the SCC, the Linear Score (LS) increases by one. A 400,000 SCC is a LS of 5. A 100,000 SCC is a LS of 3.

You need individual cow SCC in order to identify your chronically infected animals. If the animal has an SCC >200,000 (LS>3.9) for two months in a row or two out of the last three months, she is chronically infected.

You can determine the percent of your herd chronically infected using the DHI SCC summary report or use your high SCC list and count those that had a high count last month. You can also calculate it with Dairy Comp using the command shown in Figure 3.

DHI SOMATIC CELL REPORTS I. HERD SUMMARY DHI-240

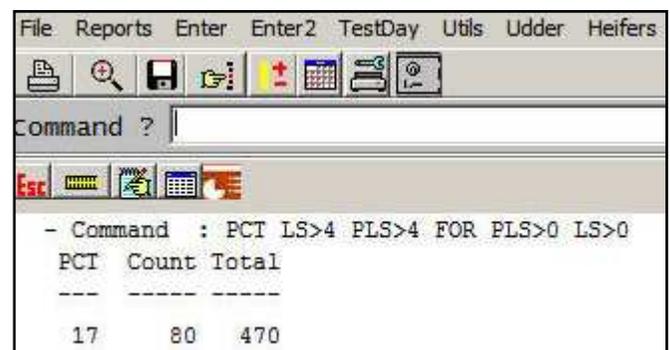
ESTIMATED INFECTIONS

| New | | Chronic | | 100 lbs. Milk Lost Herd/ 30 Days |
|-----|-----|---------|-----|--|
| NO. | PCT | NO. | PCT | |
| 3 | 4 | 12 | 16 | 20 |
| 1 | 1 | 11 | 16 | 6 |
| 2 | 3 | 14 | 21 | 21 |
| 6 | 8 | 10 | 14 | 25 |
| 8 | 11 | 12 | 16 | 35 |

Figure 2: Portion of the DHI Summary Report.

The DHI SCC Summary report lists each test day as a row, and then shows the number and percent of the herd newly infected that test day and the number chronically infected that test day. In this case the herd currently had 16% of the animals chronically infected and has consistently been running greater than our suggested "take action" trigger of greater than 8%.

A very quick way to calculate this number in Dairy Comp 305 is with the PCT (Percent) command. The herd in Figure 3 has 17%, or 80 animals chronically infected of the 470 animals that have SCC results the last two months.



```

File Reports Enter Enter2 TestDay Utils Udder Heifers
Command ?
- Command : PCT LS>4 PLS>4 FOR PLS>0 LS>0
PCT Count Total
---
17      80    470
    
```

Figure 3: Dairy Comp command showing percentage of the herd infected.

Identify your Chronic Cows

Once you determine you have greater than 8% of your herd chronically infected, move on to creating a list of the animals in order to submit milk samples for culturing. You can identify the animals from any number of Dairy One SCC lists or your farm software.

Cull or Culture

Some chronically infected animals will be easy to decide to cull based on their reproductive status, the presence of other health problems and production records. The flow chart below will help you choose the best candidates for culturing and taking the next step. Once you prioritize the animals to culture, carefully take milk samples in small sterile vials. Contact Quality Milk Production Services (QMPS) with the Cornell University Diagnostic Laboratory, your Dairy One Technician, or your veterinarian, for the specific directions on how to appropriately take a milk culture sample.

If you can not get your samples cultured immediately, freeze them. You can send them in with your Dairy One technician, send them directly to QMPS, or there are a number of veterinary practices now that are collaborating with QMPS and Dairy One, using the "Culture Tracker" system.

This collaborative system involves laboratory training, quality control monitoring, and software that will keep track of each animal's culture results and then use the Internet to put those results into your herd's Scout, Dairy Comp 305, or Dairy One Technician's Dairy Comp records. Once culture results are integrated with the rest of your cows' records you can easily look up an individual animal, summarize how your herd is changing, and make it available to your advisors.

When culture information is stored with a cow's production, reproduction and SCC history you have more tools available to make better decisions for individual animals.

| Events | Items1 | Items2 | TestDays | PrevLacts | Lactation | Picture | |
|---------------|----------|--------|----------|-----------|-----------------|----------|------|
| ID | 243 | DIM | 337 | DUE | - | RPRO | BRED |
| AAA | 456 | SCC | 2986 | MKDAT | 1/18/06 | DSLH | 22 |
| LACT | 1 | TBRD | 9 | BFDAT | 1/22/06 | MAVG | 73 |
| PEN | 1 | AGE | 2-8 | DCC | 0 | MTOT | 75 |
| 3/ 2/05 FRESH | SB CP2 | | | | 9/15/05 BRED | 11H6719 | 0 4S |
| 3/24/05 MOVE | FR03T006 | | | | 10/18/05 BRED | 1H6280 | 0 4S |
| 4/21/05 HEAT | STAND/R | | | | 11/ 3/05 HARDJO | | |
| 5/ 9/05 BRED | 7H8505 | 0 4T | | | 11/ 6/05 BRED | 7H8541 | 0 4S |
| 6/ 1/05 FEET | LRWRAP | | | | 11/26/05 BRED | 29H56 | 0 5S |
| 6/ 3/05 BRED | 91H4408 | 0 4S | | | 12/ 5/05 HARDJO | | |
| 8/12/05 OK | CIDER | | | | 12/18/05 BRED | 11H5778 | 0 4S |
| 8/19/05 OPEN | CIDER | | | | 1/11/06 BRED | 7H8581 | 4S |
| 8/26/05 OK | OVSY | | | | 1/12/06 MAST | TODAY/LF | |
| 9/ 2/05 PROST | LUT | | | | 1/12/06 CULTURE | S/LF | |
| 9/ 5/05 BRED | 7H8555 | 0 4N | | | | | |

Figure 4: Dairy Comp Cow Card, Events Page

Cow 243's Cowcard on 1/17/06

This cow 243 had a clinical mastitis on 1/12 and was cultured with Strep species in the left front quarter. This farm sent the sample to the culture lab, and the results were downloaded back into their PC automatically with preliminary results the next day, and final results in two days. The farm made the decision to begin a treatment regime that set the MKDAT (Milk withholding date) to 1/18 and the BFDAT (Beef likely ok) date to 1/22. The protocol that is active is in red amongst the events and the BFDAT and MKDAT are colored because they are still in effect.

We can also see that this cow is 321 days in milk, and bred just 6 days. It is positive to note that she has not gone through a dry period with this infection.

| Events | Items1 | Items2 | TestDays | PrevLacts | Lactation | Picture | | | | | |
|----------|--------|--------|----------|-----------|-----------|---------|------|------|-----|-----|-----|
| EMILK | 71 | RELV | 121 | DIM | 337 | ONBST | 1 | | | | |
| MKDEV | 2 | TOTM | 27650 | DUE | - | WK10M | 63 | | | | |
| TestDate | DIM | MILK | PCTF | PCTP | FCM | 305ME | RELV | SCC | LS | PEN | MUN |
| 3/17/05 | 15 | 77 | 3.6 | 2.9 | 78 | 25900 | 84 | 76 | 2.6 | 3 | 13 |
| 4/19/05 | 48 | 85 | 3.7 | 2.6 | 88 | 28880 | 94 | 44 | 1.8 | 6 | 13 |
| 5/17/05 | 76 | 92 | 3.7 | 2.8 | 95 | 30880 | 100 | 115 | 3.2 | 6 | 16 |
| 6/21/05 | 111 | 111 | 2.9 | 2.9 | 100 | 36380 | 118 | 303 | 4.5 | 6 | 10 |
| 7/18/05 | 138 | 98 | 3.6 | 3.2 | 100 | 35770 | 116 | 283 | 4.4 | 6 | 10 |
| 8/15/05 | 166 | 95 | 3.1 | 3.3 | 89 | 36340 | 118 | 230 | 4.2 | 6 | 12 |
| 9/19/05 | 201 | 79 | 3.3 | 3.6 | 76 | 35580 | 115 | 492 | 5.3 | 6 | 12 |
| 10/17/05 | 229 | 84 | 3.4 | 3.6 | 83 | 37030 | 120 | 1393 | 6.8 | 8 | 13 |
| 11/21/05 | 264 | 81 | 3.9 | 3.6 | 86 | 37470 | 122 | 2786 | 7.8 | 8 | 8 |
| 12/19/05 | 292 | 72 | 4.3 | 3.6 | 81 | 37320 | 121 | 1393 | 6.8 | 8 | 10 |
| 1/16/06 | 320 | 73 | 3.4 | 3.4 | 72 | 37350 | 121 | 2986 | 7.9 | 9 | 11 |

Figure 5: Dairy Comp Cowcard, Test day Page

When we look at her test day page we can see that this animal has been a chronic problem beginning on 6.21.05; however, it is surprising that she has only had one clinical case since 6.21.05. Data show that if strep infections are detected and treated early, the likelihood of a cure increases.

In the past when farms cultured their animals the results would wind up in a filing cabinet, in a heap on the desk, or worse. Having the rest of the animal's history with the milk culture results helps us make better decisions for chronic cows. Treatment protocols for specific infections can be devised and implemented which will improve cure rates, decrease expenses by not treating animals that are unlikely to respond and reduce the risk of having milk or meat residues by incorporating withhold dates directly into the cow card.

The flow chart in Figure 6 summarizes the process for detecting our chronic sub-clinical cows and treatment options. For animals that are greater than 200 days in milk and pregnant, early dry off with the appropriate antibiotic is a good option to consider.

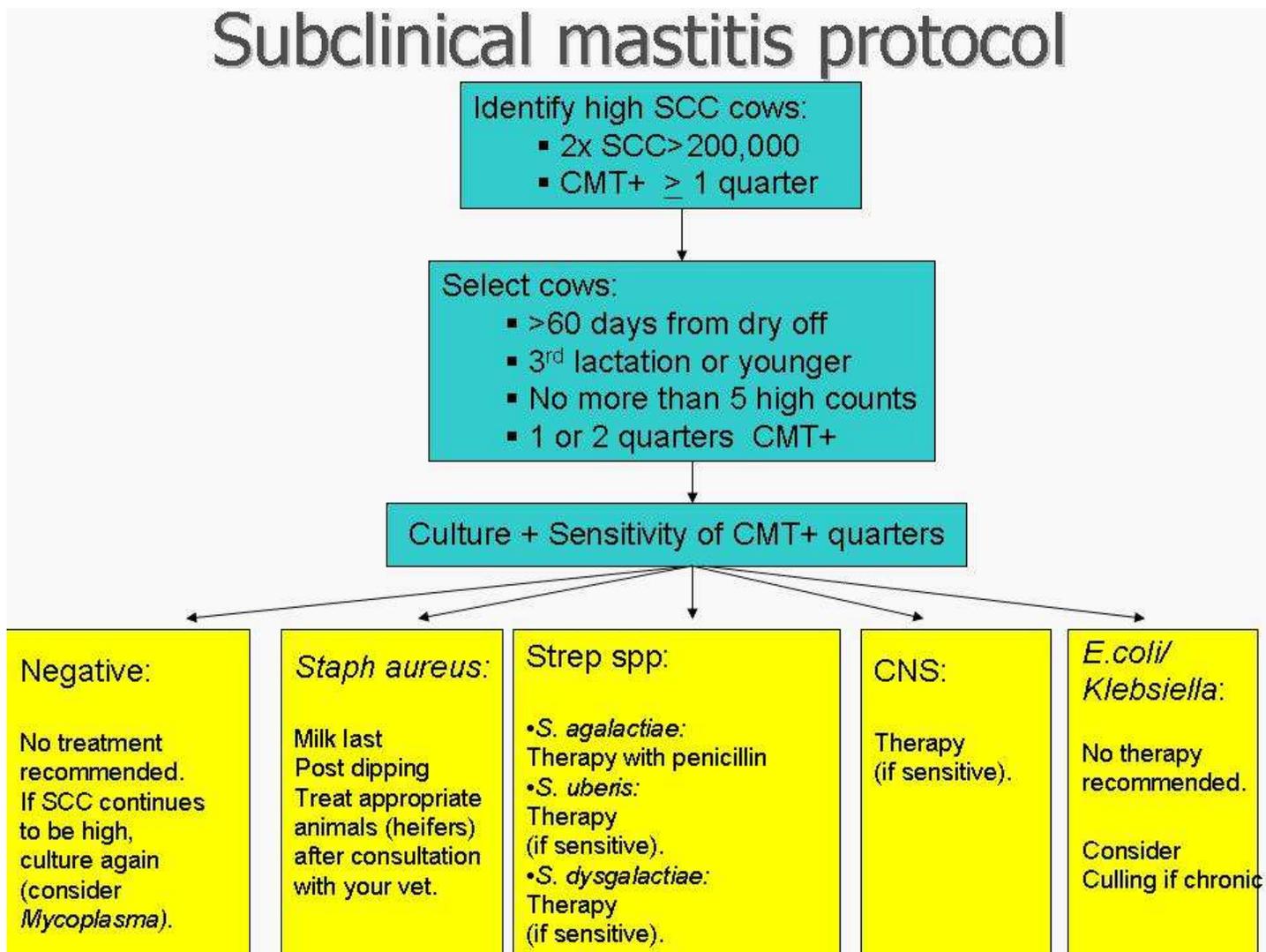


Figure 6: Summary of detecting and treating chronic, sub-clinical cows.

Every farm has challenges with mastitis detection and treatment. However, by using all the tools in our chest, we can construct logical and effective protocols to diagnose and resolve high bulk milk SCC.

This article first appeared in the May 2008 issue of Northeast Dairy Business. Reprinted with permission.