

How to Interpret and Use the ProStaph 1™ Test

Jeffrey F. Keown, Extension Dairy Specialist
Paul J. Kononoff, Extension Dairy Specialist

The ProStaph 1™ Test can identify cows that are infected with mastitis but have no visible symptoms. This NebGuide explains how to interpret and use the test.

Mastitis costs U.S. dairy producers almost \$2 billion dollars per year in lost milk production and treatment costs. Mastitis is the major health problem of dairy cattle. The actual lost income for each mastitis infection is more than \$400. Over 70 percent of the economic loss in mastitis is due to lost milk production from subclinically infected cows (those without apparent symptoms). Subclinical forms of mastitis may not be observed by the milkers or other individuals in the dairy operation. Since there may be little or no visible change in the udder or milk, a laboratory test is needed to identify infected animals. Since subclinical cows may not be observed as infected, these animals carry great potential to transmit disease and infection to healthy cattle and thus put the entire herd at risk.

Staphylococcus aureus Pathogens

Staph. aureus infections are caused by contagious pathogens transmitted through milk and other direct contact sources. A *Staph. aureus* infection is almost impossible to treat effectively since it does not respond well to antibiotic treatment. The only control method is to identify cows that have this form of mastitis and employ one of several management practices to minimize the spread of the organism within the herd.

It is important to test for the *Staph. aureus* organism to identify infected cows because this organism is very contagious and usually spreads during milking. Since most infections are subclinical, a herd can have many infected cows without the producer knowing it. Tests must be used to identify infected cows.

What is ProStaph 1™?

In addition to the conventional method of laboratory culture to identify the presence of *Staph. aureus*, another test

is available to screen milk samples for the presence of the *Staph. aureus* antibody. This test is called the ProStaph 1™ Test. This test has been a good tool to help identify infected cows. One advantage of this test is that it can be performed on raw or preserved milk samples and does not require aseptic collection. Culture testing methods require aseptic collection of samples and are much more costly and time consuming.

ProStaph 1™ test samples can be taken by the Dairy Herd Improvement Testing supervisor during routine production testing. In fact, an additional sample is not needed. Simply identify which samples also should be tested for *Staph. aureus*.

It is advisable to conduct a bulk tank sample first to see if the herd has a problem. *Table I* lists the various courses of action to follow once the results are returned from the testing center.

Table I. Interpretation and recommended action for bulk tank *Staph. aureus* mastitis tests.

Bulk tank antibody level	Somatic Cell Count	
Low	Less than 200,000	OK. Retest in three months. Culture cows with high somatic cell counts for the presence of other contagious organisms or other environmental <i>streptococci</i> or coliforms.
	Greater than 200,000	Herd may have a problem with other types of microorganisms. Culture cows with high somatic cell counts or cows with clinical mastitis.
Medium		Initially ProStaph 1™ Test all cows in the herd for <i>Staph. aureus</i> and implement a <i>Staph. aureus</i> control program.
High		Indicates <i>Staph. aureus</i> infection. Test all cows in herd and implement a <i>Staph. aureus</i> control and culling program.

Control Program

If the bulk tank test indicates that the entire herd or a portion of the herd should be tested, collect samples from each cow. When results are returned, evaluate which management practices will reduce the chance of spreading the

organism from infected to non-infected cows or from other vectors, such as human, flies or faulty milking equipment. The following procedures should be rigorously followed to alleviate the problem.

1. Separate clean from suspect and positive cows.
2. Wear gloves when milking to reduce the possibility of cross contamination.
3. Milk clean cows first into a clean bulk tank.
4. Retest milk from the clean bulk tank before milking suspect or positive cows. If only one or two cows in a herd are infected, the test, because of dilution, may not be positive.
5. Continue testing the clean bulk tank milk until all fresh cows and additions are tested.
6. When no positive or suspect results are produced by fresh cows and additions, culture of the clean bulk tank can be extended to once every three months.

Remember, if the clean bulk tank sample tests positive, individually test all cows in the group to identify and isolate the cow or cows that are positive.

Two groups of cows should be retested later: all cows less than 30 days in milk and cows producing less than 30 pounds per day. Cows less than 30 days fresh should be retested as they progress in lactation. Those producing less than 30 pounds should be retested in the next lactation.

It is important to reduce the probability of exposing the teats of clean cows to infected milk. This type of exposure can come from careless human hands, milking equipment or flies. A few general rules should be followed:

1. Maintain milking equipment, prevent squawking and change liners.
2. Use separate clean paper towels for drying udders.
3. Use an effective teat dip.

4. Use effective back flushing.
5. Segregate or milk in the following order:
 - Clean cows first,
 - Suspect cows second and
 - Infected cows last.
6. Do not over or under milk.
7. Cull cows infected with *Staph. aureus* when economically feasible, but always consider them sources of new infection to others.
8. At drying off time, dry cow treatment should be used on all quarters of all cows because many infections can occur during the dry period.

Veterinarian Assistance

It is recommended that you visit with your veterinarian for help in interpreting the results of the ProStaph 1™ Test. Begin a treatment program only under the strict supervision of a veterinarian. Any treatment for any type of mastitis problem requires strict prescription dosages and restrictive drug withdrawal times for both milk and meat sales. Remember to read all labels on over-the-counter and prescription drugs carefully, follow dosage instructions and withdrawal times rigorously. Also be certain that all drugs are stored correctly in a clean, locked cabinet or refrigerator. All drugs or medications must be labeled and used according to federal, state and the Pasteurized Milk Ordinance Guidelines.

Additional dairy information can be found at: www.nebraskadairy.unl.edu.

UNL Extension publications are available online
at <http://extension.unl.edu/publications>.

**Index: Dairy
Herd Management**
Issued January 2007

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

University of Nebraska–Lincoln Extension educational programs abide with the nondiscrimination policies of the University of Nebraska–Lincoln and the United States Department of Agriculture.

© 2007, The Board of Regents of the University of Nebraska on behalf of the University of Nebraska–Lincoln Extension. All rights reserved.