Mastitis

GENERAL RISK ASSESSMENT
NYSCHAP Mastitis Module

- http://nyschap.vet.cornell.edu
- Resource materials
  - Core Module
  - Risk assessment guide
  - Educational & informational materials
  - Case histories
General Risk Assessment Guide

- Biosecurity
- Milking Procedures
- Milking Equipment
- Treatment Protocols & Residue Avoidance
- Vaccination Considerations
- Nutrition
- Environment & Housing
- Data Collection & Record Keeping
Contagious Mastitis
- Infected resident cattle
- Purchased animals/herds
- Fairs & Shows
Screening animals

- Bulk tank culture
- Individual animals
  - culture sensitivity
  - Multiple cultures are necessary
    - Strep ag 90%
    - Staph aureus 75%
    - Mycoplasma 50%

![Graph showing the probability of detection for different numbers of samples for various pathogens.](image)
Milking Procedures
Milking period

- Greatest risk for new infections
- Proper milking procedures
- Positive attitude
- Clean environment
Consistent operating procedures

- Cows are handled gently and quietly.
- Avoid performing other procedures during milking.
  - A milking environment that chronically stresses cows can have a negative effect on milk let-down and milk production.
Cleanliness and Sanitation

- Holding area and parlor must be kept clean and free of standing water and accumulation of manure
- Clean when cows have left the area
- Holding area and parlor must be kept clean and free of standing water and accumulation of manure
- Clean when cows have left the area
Wet or dirty teats

- increased new infection rate
  - environmental mastitis
  - *Streptococcus* spp.
  - *Coliform*
- Can degrade milk quality
  - elevated bacteria counts - coliforms
Premilking procedures

- Washing
- Forestripping
- Predipping
- Wiping dry
- Establish a regular routine
Milk Let-Down

MILK FLOW GRAPH

Time (sec)

Milk Flow

Cow 1
Cow 2 (oxy)
Forestripping

- Stimulated let down
- Examination for abnormal milk
- Floor of the parlor or Strip cup
  - never strip into your hand
Predipping

- Works best when teats are relatively clean
- Dip the entire length of the teat
- Allow to remain on the teat for 30 sec. before wiping dry
  - dry the entire teat including teat ends.
Dipping vs spraying
Dipping vs spraying
Post-milking Teat Dipping

The single most important procedure for controlling the spread of contagious mastitis.
Milker Attachment

- Within 2 minutes
  - 40-60 seconds is optimal
- Deliberate
  - allow as little air to enter the system as possible
  - prevent vacuum fluctuations
- Adjust milker supports
  - prevent liner slips, squawking, & teat injury
Milk cows in a logical order

- Dictated by herd size and facilities
- Clean to Contaminated
  - Low SCC cows
  - High SCC cows
  - Contagious group
  - Treatment group
Evaluation of teats

- Skin condition
- Teat end lesions

1. Smooth bottom with no callus or ring
2. Slightly raised callus or ring
3. Raised callus or ring (teat end as a pinpoint)
4. Raised ring with cracking/cuts on teat-end opening
5. Lesions, scabs, and/or excessive hyperkeratosis (callus)
Milking Equipment

- Routine maintenance
- Evaluation
- Certified Dairy Equipment Technician
Treatment Protocols & Residue Avoidance

➢ Culture clinical & high cell count cows
  ➢ culture & sensitivity results can help discern risk factors
  ➢ aid in the development of treatment protocols

➢ Review culture results with a veterinarian
  ➢ develop treatment protocols based on the organisms present (high SCC), or likely to be present (Clinical mastitis) clinical signs, and farm goals.
Avoid violative drug residues

- Follow manufacturers recommendations (Rx, OTC)
- Comply with PMO, AMDUCA labeling requirements
Vaccination Considerations

Core antigen vaccines have been proven to be safe and cost-effective.

Often underutilized.

*Staph aureus* vaccines
  - Efficacy varies from herd to herd.
  - Protocols should be planned and implemented in collaboration with the herd veterinarian.
Two nutritional areas adversely affect immunity

- ENERGY
- TRACE MINERAL / VITAMIN DEFICITS
Monitor DMI for dry, *prefresh* & lactating cows.

Review management procedures that may affect DMI

- comfort, bunk access, feed availability, palatability

Monitor BCS

- Dry cows & Transition Cows
Energy

- Review ration characteristics that may affect intakes
  - forage quality, chop length, protein degradability, etc
  - appropriate for stage of gestation/lactation
Trace Minerals/Vitamins

- Selenium .3ppm for all animals
- Vitamin E
  - Lactating cows 600-800 IU
  - Dry cows 1,000 IU
  - Prefresh cows 1800 IU
- Cu & Zn
- Iron is an oxidant.
  - Rarely needs supplementation
In the majority of well managed herds, mastitis cases are environmental in nature.
Avoid overcrowding

- Overcrowding can compromise herd hygiene
  - Cows lying in alleyways
  - Excessive accumulation of manure
Keep stalls clean and comfortable

- appropriately sized
- bedded frequently with clean, dry material
Clean & Dry is Critical for Dry Cows & Maternity Pens
Keep stalls adequately bedded
Adequate bedding
Use the right bedding material

BEDDING CULTURES CAN BE VERY USEFUL

- Used and unused should be evaluated
Keep Walk ways clean

- Accumulated manure and water causes manure to be splashed onto udders
- Heavily soiled hooves will degrade bedding quality at an accelerated rate
Establish herd goals

- free of contagious mastitis
- < 2% clinical mastitis/month
- < 5% new infections (based on LS < 4.0)
- < 5% chronic infections (based on LS > 4.0 for 2 consecutive TD)
- BTSCC < 200,000, SPC < 5,000 cfu)
Monitor herd performance routinely

- Can lead to early recognition and resolution of a problem
- Computerized records
  - DC 305
  - QMPS menu
Culling

- May be the only way to manage some pathogens or individuals.
- Establish a culling strategy.
- An important component of reducing herd prevalence of mastitis.
  - Mycoplasma, Staph aureus
  - animals with more than 3 clinical episodes in a single lactation.
  - Chronic high SCC animals that persist into the next lactation.
Conclusions

- Mastitis is still one of the most costly diseases of dairy cattle
- Direct effect on the productivity of the animal and herd and profitability of the farm enterprise
- Mastitis has a direct effect on dairy product quality shelf life
Days in Milk first Mastitis vs. LS at Calving
# Days in milk at first mastitis by lactation

<table>
<thead>
<tr>
<th>D</th>
<th>I</th>
<th>M</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>537</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>501</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>465</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>429</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>408</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>394</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>358</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>322</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>286</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>251</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>215</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>179</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>143</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>108</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>72</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>36</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LACTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 13 6 5 4 3 1 1</td>
</tr>
</tbody>
</table>
Milk Quality Program

- You must have a real understanding of the nature of mastitis in your herd
- That you have an understanding of the ecology of the major mastitis pathogens
- That you have an understanding of the potential mastitis threats facing your herd under current and future management conditions
- Establish a biosecurity program