Mastitis Reminders and Resources

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Scenario—What would you do?

4 year old cow (just freshened) comes in with clinical mastitis symptoms. What do you do next?

A. Cull now
B. Wait for infection to clear during this lactation
C. Treat infection right now
D. Other?

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Scenario—What would you do?

How did you come to this decision?

The Udder's First Line of Defense

- Teat canal sphincter
- Keratin

Damaging the First Line of Defense

- Trauma (damages keratin and mucous membranes)
- Incorrect use of sanitizers and cleaning compounds, improper teat dip mixing
- Warts on teat end, frostbite
- Failure to prep cows and overmilking
- Insertion of mastitis tubes or treatment cannulae
- High impact force on teat end (propels bacteria into teat canal)
- Liner dip: temp vacuum loss/abrupt removal without shut off
- Vacuum fluctuations
- Poor liner condition
- ...and more

Bacterial entry during period when teat is dilated (1-2 hours following milking)

The Udder's Second Line of Defense - Inflammatory Response

- Bacteria enter and produce toxins and enzymes — stimulate response from inflammatory cells
- Signaled by damaged tissues, immune cells move from bone marrow to invading bacteria
- Somatic cell count (SCC) in udder increases (SCC=white blood cells)
- White blood cells destroy bacteria; meanwhile:
  > Getting to milk — sometimes blockages in small ducts
  > Blockages = scar tissue and loss of function
  > SCC stays high, white gland heals

2017 Area Dairy Conferences
**Scenario—What would you do?**

A 4 year old cow (just freshened) comes in with clinical symptoms. What do you do next?

- Cull now
- Wait for infection to clear during this lactation
- Treat infection right now
- Other?

How did you make this decision?

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**Scenario: What if she had E. coli?**

- **Recommended:** “Do not treat local cases” (treat systemic cases); supportive care as needed

If you...

- **Culled now**
- **Left alone**
- **Treated now**

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**Scenario: What if she had Staph. aureus?**

- **Recommended:** “Treatment with pirlimycin in early lactation (days 5-7); do not treat chronic infections” Calling appropriate depending on case; treatment not always effective, but recommended based on EID data: 90% of early lactation cases and first cases in 2nd/3rd lactation; prevention is best.

If you...

- **Culled now**
- **Left alone**
- **Treated now**

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**Scenario: What if she had Prototheca?**

- **Recommended:** “No treatment; cull cow.”

If you...

- **Culled now**
- **Left alone**
- **Treated now**

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**“Know the Enemy”**

Milk culturing: a good way to find out what you’re dealing with.

Culture at least 10-20% of herd annually

- Can you culture in time for treatment responses?
- Can’t culture every cow
- Cost/time/resources for culturing
- May miss some subclinical cows

...but sensitivity management is “not one-size-fits-all”

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**When do most infections occur?**

- Two weeks after dry-off
- Two weeks prior to calving
- Two weeks after calving

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**Scenario: What if she had**
Prevention reminders: Housing and Environment

- Mitigate wet spots, manure pools in loafing areas
- Reduce contact of udders with wet/dirty organic matter
- Keep free stalls clean and dry—rebed and scrape daily or 2x
- On pasture: keep cows out of wet and swampy areas
- "Maintain dry, clean calving areas"
- Control flies: insecticides, manure removal, tip/drain water collection sites

Prevention reminders: Dry Cows

- Dry off Holsteins producing <20 lbs/day (infection risk goes up as production goes down)
- Dry cow therapy: teach quarter at time of dry off
- Immunize: at dry off, 30 days into dry period, and at calving (J5 for E. coli)
- Pay attention to dry cow/heifer housing: are pastures overgrazed? Do cows congregate in certain areas?
- Vitamin E and selenium supplementation leading up to calving—work with your nutritionist/vet

Prevention Reminders: Lactating Herd

- Milk with clean hands and use gloves
- Follow good milking procedures (unlabeled, cleaning, drying, removal, post-dip)
- Avoid water on udders
- Milk "problem cows" last—segregate
- Double-check to ensure that treated cow milk stays out of bulk tank (records, marking, and residue testing!)
- Keep good records—Ex, do you know if this is her first round or Staph aureus, or her third?
- Check milking parlor equipment and vacuum—could be a whole host of problems tied back to these

Prevention reminders: Mammary Infusions

"When infusing the mammary gland with a mastitis treatment or at dry off with a dry cow therapy product:
- The teats must be clean and dry.
- After the udder is milked out, use a separate alcohol wipe for each teat. Scrub each teat thoroughly until clean.
- Infuse the teat with a single-dose sterile tube or cannula.
- Do not reuse teat cannulas or tubes.
- Consider inserting the teat cannula only partially into the teat canal."

-Christina S. Peterson-Wolfe


- Factsheets for each mastitis pathogen
- Reference guide for mastcell causing bacteria
- VT Mastitis and Immunology Lab [mgia.missouri.edu](http://mgia.missouri.edu), (541) 231-4767
- "Resources" page on SQMI site: detailed culture sample collection procedures:

More pubs on VCE dairy page:
- Preventing a Thrust Molasses Problem
- Understanding the Basis of Mastitis
- Equipment Factors Affect Milk Quality
- Proper Dry Cow Management Critical for Mastitis Control
- Guidelines to Gilling Cows with Mastitis

**SQMI**

Improving milk quality in the Southeast through enhanced knowledge on the farm

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How does Virginia measure up on milk quality?

University of Tennessee
Virginia Tech
University of Kentucky
University of Georgia
Mississippi State University
University of Florida

2017 Area Dairy Conferences
Project objectives

- Survey tool to understand the "why"
- Identify science-based recommendations to improve milk quality
- Annual status report
  - On-farm assessments
  - On-farm demonstrations
- Develop user-friendly tools to manage milk quality
- Education (students, trainers, industry, etc...)

On-farm assessment

- 4 of 6 states involved
  - VA, KY, TN, MS
- Total of 282 farms
- Single site visit
  - Parlor evaluation
  - Producer survey
  - Barn design
  - Milk quality data

On-Farm assessment

- Visits equally spaced throughout the year
- Equal distribution of low, mid and high milk quality
- Analyses are underway by 4 graduate students

Equipment function & maintenance on BTSCS

- Data transformed to BTSCS
- Variables of interest:
  - State
  - Herd size
  - Teat end scores
  - Presence of cracked teat ends
  - Claw vacuum
  - Pulsator function
  - Air flow capacity
  - Equipment maintenance
    - % cracked teat ends * average claw vacuum

Results

- Average herd size
  - 228 ± 20
    - Range: 32 to 2500 cows
    - Majority of herds (78%) were < 250 cows
- Average BTSCS
  - 4.29 ± 0.03
    - Range: 2.78 to 5.75
    - Significant difference between states

Results

- Things that were not significant:
  - Use of ATOs
  - Pulsator settings
  - How often the parlor was serviced
  - Who performed parlor service
  - Milking frequency
  - Age of the parlor
Results

- Mean cracked teat ends was 60%
- Median cracked teat ends 65%
- Range 0 too 100%

Herds with majority cracked teat ends + Increased claw vacuum = Increased BTSCS

Herds with majority non-cracked teat ends + Increased claw vacuum = Lower BTSCS

Conclusions

- Both state and herd size impact BTSCS
  - Environmental factors
  - Management decisions
  - Resources available to producers
- Claw vacuum * % cracked teat ends impacts BTSCS
  - Maintaining healthy teat ends may allow an increase in vacuum
  - Impact on milk out is unknown

Objective 2. What's left?

- Identify strategies effectively & efficiently employed in the southeast
  - Annual status report
  - Analyses of 282 on-farm assessment study
  - Intensive on-farm analyses
    - Currently on-going
    - 9 farms each from VA, KY and TN, 3 from MS