

## Bovine Mastitis (Prevention and Management)

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References from Dr. Bhushan Jayarao- Ex. Vet.  
Penn State Univ.

Dr. Larry Fox, Washington State Univ.

John Swain, Washington State University

## Mastitis Management- Who on the farm needs to be involved???

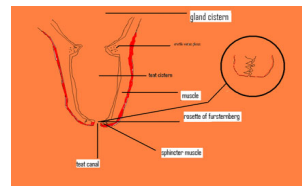
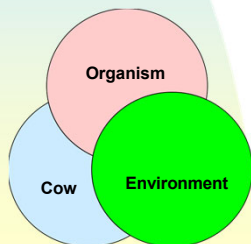
- Milkers
  - Housing Maintenance personnel
  - Milk Equipment Maint. Personnel
  - Operation Supervisor
- ◆ Mastitis cannot be eliminated. It can be controlled
  - ◆ People control mastitis- TEAM EFFORT

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## How does mastitis develop ?

- **Cow**
  - ◆ Predisposing conditions
    - Existing trauma (milking machine, heat or cold, injury)
    - Teat end injury
    - Lowered immunity (following calving, surgery)
    - Nutrition
- **Organisms**
- **Environment**



## How is mastitis diagnosed ?

- **Physical examination**
  - ◆ Signs of inflammation
  - ◆ Empty udder
  - ◆ Differences in firmness
  - ◆ Unbalanced quarters
- **Cowside tests**
  - ◆ California Mastitis test
  - ◆ Electrical Conductivity



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## Somatic Cell Count

Linear Score	SCC (cells/ml)
1	25,000
2	50,000
3	100,000
4	200,000
5	400,000
6	800,000
7	1,600,000

- Legal Limit in the U.S. is 750,000 cells/ml
- Legal limit in Europe and some part of U.S.A is 400,000 cells/ml
- Infection level is >200,000 cells/ml
- Herd bulk tank goal: <250,000 cells/ml

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## Mastitis; subclinical detection, cont'd

### California Mastitis Test (CMT)

- detergent coagulates cellular DNA
- greater amount of coagulation = greater number of PMN leukocytes
- quick cow-side test - ID specific quarters



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## Mastitis

- CMT- scc>200,000 cells/ml indicate that intramammary infection is probably present.
- Score      Scc (cells per ml)
  - ◆ Neg      0-200,000
  - ◆ Trace    150,000-500,000
  - ◆ 1        400,000 – 1,500,000
  - ◆ 2        800,000 -5,000,000
  - ◆ 3        >5,000,000

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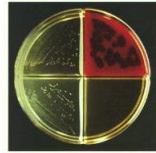
## Mastitis

- Electrical Conductivity
  - ◆ Leakage of blood components
    - ☞ Proteins
    - ☞ Ions – chloride (salts increase conductivity)

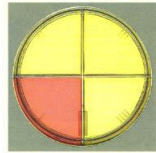
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## How is mastitis diagnosed ?

- **Culture analysis**
  - ◆ The most reliable and accurate method
  - ☞ costly (\$ 5- 12)



Strept ID Quad w/beta-hemolytic streptococci.

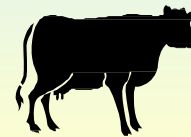


Synergy Quad w/Enterococcus faecalis.

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## How do you treat mastitis ?

- **Clinical mastitis**
  - ◆ Strip quarter every 2 hours
  - ◆ Oxytocin valuable
  - ◆ high temp, give aspirin
  - ◆ Seek veterinary assistance
  - ◆ Treatment with penicillins
- **Subclinical mastitis**
  - ◆ Questionable



**Attitude adjustment !!!!!**  
 Don't expect SCC to go down ASAP (4-5 weeks !)  
 Discard milk from treated cows (double jeopardy!)

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## Mastitis; prevention & treatment

The National Mastitis Council (NMC) five-point program for mastitis control

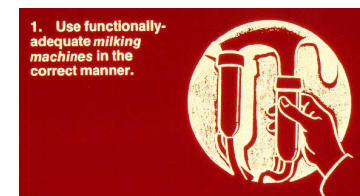


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## Mastitis; prevention & treatment, cont'd

NMC 5-point mastitis control program:

1. ....



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- **One:**
  - ◆ Milking equipment should be adequate in size, functioning properly, and regularly cleaned and maintained
  - ◆ **Correctly use proper functioning milking machines and properly prepare udders**
    - Attach teat cups after thorough cleaning and drying of teats
    - Provide stable vacuum
    - Check for slipping of teat cup liners
    - Shut of vacuum before removing teat cups.

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## Mastitis; prevention & treatment, cont'd

NMC 5-point mastitis control program:

2. ....

"If you milk only 1 cow, and she has only 1 teat - DIP IT!!"

2. Dip teats after milking with an effective product.



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## THE 5 STEPS TO MASTITIS CONTROL

- **Two:** Udder preparation is pre-dipping with a dip labeled for pre-dipping. Pre-dips lower the risk of new infections by 70% !!!!!!!!!!!!!!!
  - ◆ Pre-dips
    - Iodophors 0.0 -1.0 %, ▫ Chlorhexidine 0.2%, ▫
    - Use single service paper towels, dry teats before machine-application.
- **Dip each teat after each milking using a germicidal teat dip.**
  - ◆ Post-dips seal the teat ends temporarily for 6 to 8 hours
  - ◆ A must for long term mastitis control program

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## Mastitis; prevention & treatment, cont'd


NMC 5-point mastitis control program:

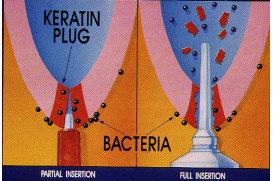
3. ....

culture - know pathogens  
use full series  
first cases, young cows most successful

- **Treat clinical cows, follow label recommendations, treat aseptically. Withhold treated cows' milk from milk supply.**
- **Culture milk to identify pathogen**

3. Administer promptly a full series of recommended treatments to all clinical cases.





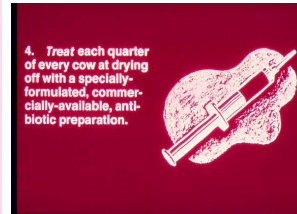
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## Mastitis: prevention & treatment, cont'd

NMC 5-point mastitis control program:

4. ....

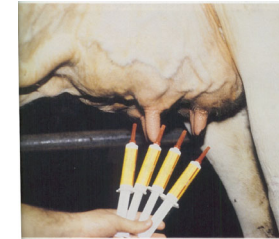
treat all quarters of all cows at dry-off  
culture - know pathogens and use effective Ab



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## THE 5 STEPS TO MASTITIS CONTROL

- **Four** : Dry treat each quarter using partial insertion techniques with an approved dry cow treatment at drying off.
  - ◆ Cure rate is twice high as that during lactation
  - ◆ Lowers the risk of clinical and subclinical mastitis during subsequent lactation



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## Mastitis: prevention & treatment, cont'd

NMC 5-point mastitis control program:

5. ....

some mastitis is incurable (staph aureus)  
infected cows are potential pool of mastitis organisms

- **Five**: Segregate chronic mastitis cows, milk them last, cull when necessary.
  - ◆ cows with chronic mastitis serve as reservoirs of organisms and could infect susceptible cows



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## Summary

- Mastitis is primarily a management problem
- Mastitis can be controlled
- Prevention programs work best when correctly followed



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