Mastitis

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What is Mastitis?

- Mastitis is defined as an inflammatory reaction of the parenchyma of the mammary gland that can be of an infectious, traumatic or toxic nature

~ International Dairy Federation 1987

Infectious Mastitis

- This, by far, encompasses the majority of cases, and can be minimized by proper hygiene and milking protocol
- We will discuss the different types of infectious mastitis, what causes them, and good prevention and treatment strategies

Different presentations of infectious mastitis

- Subclinical
- Clinical
- Acute
- Acute Gangrenous
- Chronic

Subclinical and Clinical Mastitis

- Subclinical
  - There are no visual changes of the milk or gland
  - Characterized by an increased Somatic Cell Count (SCC) and less production
- Clinical
  - Physical changes in the milk (clumping, clots, change in color-more clear than white), and visible irritation of the gland (red, hot, hard, swollen, painful etc)
  - The cow may have a mild fever or lack of appetite

Acute and Acute Gangrenous Mastitis

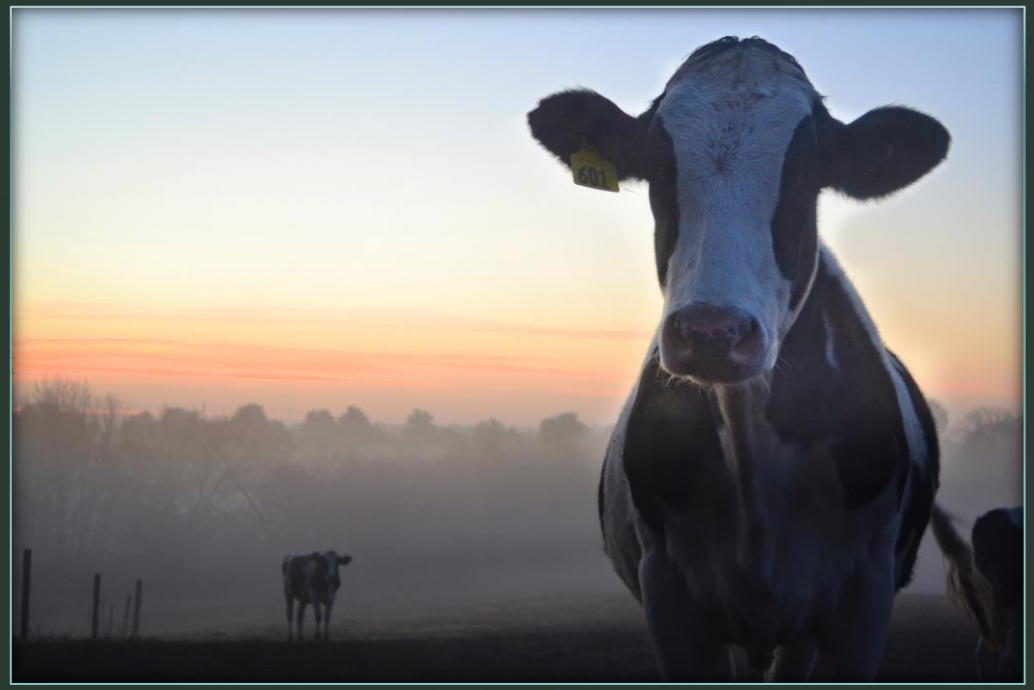
- Acute
  - Physical changes in the milk (clumping, clots, change in color-clear or purulent), and visible irritation of the gland (red, hot, hard, swollen, painful etc.)
  - Clinical signs are significant. The cow has a fever, has a loss of appetite, and is depressed
- Acute Gangrenous
  - Clinical signs are significant. The cow has a fever, has a loss of appetite, is dehydrated and depressed, and shows signs of toxemia. These signs can lead to death.
  - The gland begins as warm and swollen, but the teat soon turns cold
  - The milk can be watery or bloody, and the gland turns necrotic

Chronic Mastitis

- Occasionally, there may be flare-ups of acute mastitis, but the pathogen is never completely cleared
- The milk consistently has a high somatic cell count, and her production will be mildly decreased
- Clumping is periodically noticed in the milk

Types of Pathogens

- Contagious
  - Staphylococcus aureus
  - Streptococcus agalactiae
- Environmental
  - Streptococcus uberis
  - Streptococcus disgalactiae
  - Coliforms (E. coli, Klebsiella, Enterobacter)
  - Pseudomonas
  - Prototheca
  - Yeasts



How to Prevent Contagious Mastitis

- Contagious Mastitis
  - This type of mastitis is spread cow to cow through milk secretions
  - This is more easily spread through milking machines, but if you carry milk from one cow, on your hands, to another cow, you can also cause the spread of this mastitis
  - Clean your hands in between hand milking cows

How to Prevent Environmental Mastitis

- Environmental Mastitis
  - These are pathogens found in the environment and are minimized through proper milking protocol and good hygiene in the barn
  - Each cow's teat should be cleaned prior to milking with an iodine or chlorhexidine-based solution
  - The gland should be fully emptied during the milking procedure
  - A post-dip should be applied after milking and the cow should be encouraged to remain on her feet for an hour post milking (usually providing food after milking can help with this)
  - The barn should be cleaned regularly of manure and waste, clean bedding should be provided

Summer Mastitis

- Summer mastitis is widely thought to be spread by flies
- Not only do flies spread bacteria, they also cause irritation
- The gland is damaged even more as the cow kicks at her udder and teats to try and get rid of the flies
- Fly control is your best prevention!

Fly Control

- There are sprays and fly tags available, but environmental control can be key
- Most flies live in bushes and trees, so move cows to an area where there are few to none
- If cows stay in a barn, manure management and good airflow are vital

Dry Cow Mastitis

- Flies can also play a big role with dry cow mastitis
- Some mastitis during this period is from bacteria that wasn't completely cleared during her lactation
- When drying a cow off, treat with a dry cow antibiotic, like Cepravin
- A teat sealant can also be beneficial when trying to keep new pathogens out of the gland

Monitoring Udder Health

- At each milking, each teat should be stripped several times before collecting the milk. Look for discoloration of the milk, clumps in the milk, heat in the udder, or pain when milking
- A simple test you can use is called the California Mastitis Test. You can milk into the paddle (one quarter into each cup), mix in the solution, and then follow the directions for interpreting the changes seen in the milk. This helps you to look for high somatic cell count cows

Treatment

- A quarter exhibiting signs of clumping milk, or discolored milk, with heat, pain, redness, or swelling should be treated using intramammary antibiotics
- The teat and your hands should be cleaned thoroughly before inserting medications. Clean the teat with your pre-milking solution, then clean your hands and the teat again with rubbing alcohol
- Of the medication used, YOU MUST FOLLOW label instructions and withhold the milk for human consumption, according to label instructions

Treatment Options

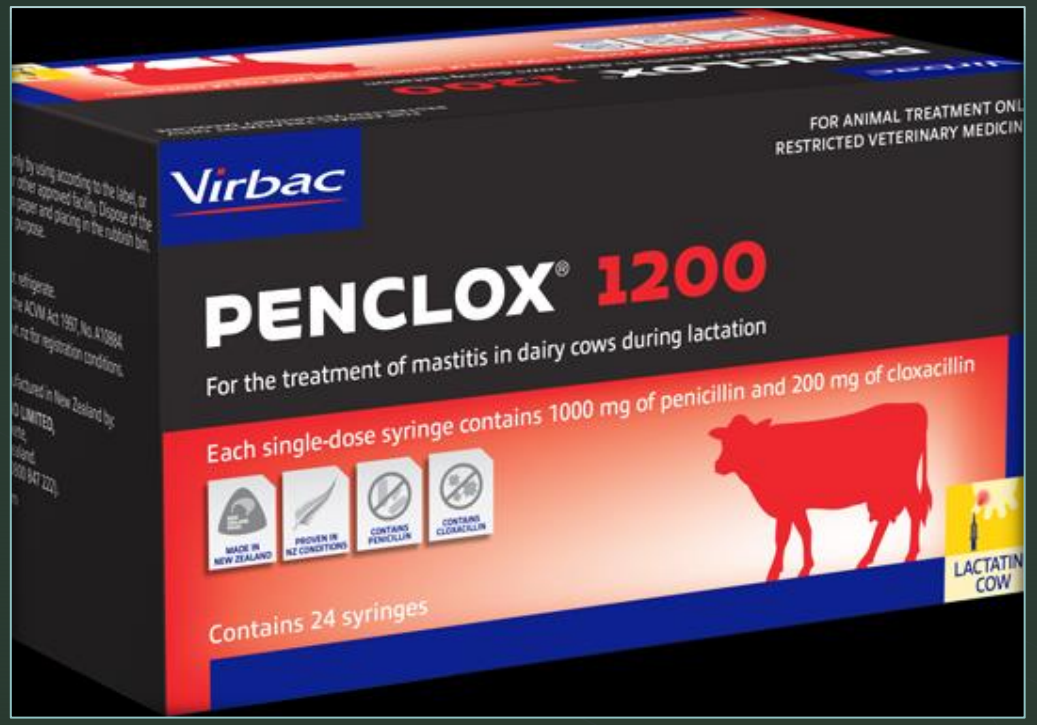
- Broad Spectrum: Zymast
  - This class of antibiotic covers gram positive and some gram negative bacteria
  - Treatment once daily for 3-4 days
  - Milk withdrawal time-unable to find
    - Similar US product-72 hour milk withdrawal

Treatment Options

- Broad Spectrum-Yelintra
  - Labeled for S. aureus, Strep species, E.coli, Klebsiella, and A. pyogenes
  - To be given twice daily for up to 8 milkings
  - Milk withdrawal-8 milkings of twice daily milking

Treatment Options

- Gram Positive: Penclox 1200
  - Labeled for Strep uberis and Staph aureus
  - Can be used twice daily, or once daily for up to 6 days of treatment
  - Milk withdrawal-9 milkings if milking twice daily, or 5 milkings if milked once daily



Treatment Options

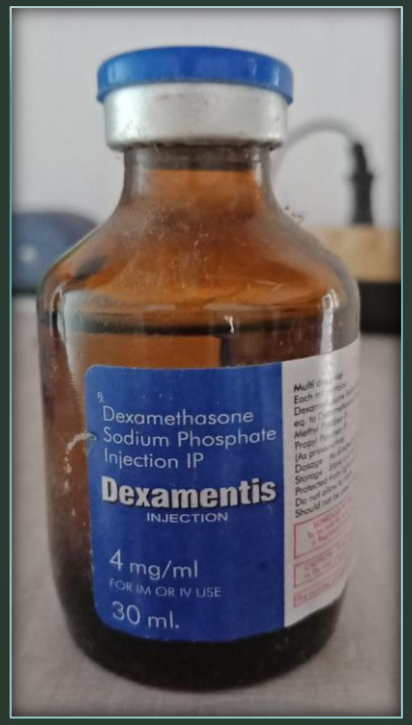
- Gram Positive-Intracillin 1000 MC:
  - Labeled for Strep uberis
  - To be given twice daily for 3 milkings, but can be used for up to 6 milkings
  - Milk withdrawal-8 milkings of twice daily milking

Systemic Treatment

- If the animal is off feed, depressed, or has a fever, she needs systemic antibiotics. You must follow label instructions and adhere to the milk withdrawals
- Anti-inflammatory medications may also be beneficial
- Antihistamines have a low bioavailability and may have minimal effect (Chlorpheniramine for example)
- Supportive care (fluids, a clean dry spot to rest) aid in recovery

Meloxicam and Dexamethasone

- I personally recommend using Meloxicam over Dexamethasone with sick cows
- Dexamethasone can suppress her immune system, inhibiting her ability to fight the infection
- Dexamethasone with also cause a pregnant cow to abort her pregnancy
- Meloxicam can help to reduce toxins in her blood stream when she is fighting acute and acute gangrenous mastitis



Cobactan

- For use in cows with respiratory disease, septicemia, digital dermatitis, and systemic E. coli mastitis
- Withdrawal times (when used according to labeled instructions)
  - 1 day milk

Ceftriaxone and Sulbactam

- Labeled for respiratory disease, septicemia, mastitis, and meningitis
- I was unable to find withdrawal times for this medication

Enrofloxacin (Fortivir)

- This antibiotic has very limited approved uses in the US
- This is a great antibiotic, but it is also extremely important in human medicine
- To reduce chance of antibiotic resistance in bacterial populations, this should not be your first choice

In Summary

- Prevention is key!
- Cleanliness of the barn, fly control, and proper gland preparation can prevent many issues
- If treatment is needed, treat based on clinical signs
- Follow all labeled instructions on medications

QUESTIONS?