MASTITIS IS THE MOST EXPENSIVE DISEASE ON THE DAIRY

When running a business, it’s important to look at ways to reduce costs and improve efficiencies—even the ones that aren’t as easy to detect. One such cost in the dairy industry is mastitis, both clinical and subclinical. The National Mastitis Council estimates mastitis costs U.S. dairy producers nearly $200 per cow.

Additionally, lowered milk production, reduced milk quality, extra labor, increased replacement cow costs, veterinary fees and treatment costs all reinforce the importance of implementing a mastitis detection protocol on your farm. Despite current management advancements, mastitis continues to rob the U.S. dairy industry of $1.7 billion per year.1,2 As demand for higher milk quality standards increases, dairy producers are urged to improve efforts to control mastitis through prevention and treatment.

Working with your veterinarian, it’s important to develop a mastitis protocol for your dairy. Not only should you know how to treat a mastitis infection, but you should know how to identify it. There are two types of mastitis: clinical and subclinical. Clinical mastitis is easily recognized—the milk has flakes, clots or clumps; the cow may have a temperature or be off feed. However, subclinical mastitis—often called hidden mastitis—can widely infect a herd without you even being aware there is a problem. For every case of clinical mastitis, experts say there are 15 to 40 cases of subclinical in the herd.

FOLLOW THESE STEPS FOR PROPER INFUSION

1. Udder should be clean and dry. All udder quarters are completely milked out.

2. At the end of each teat with a gummed past or cotton ball moistened with 70% alcohol. Allow alcohol to dry on skin for 30 seconds. Gauze balls or teat dip are also acceptable.

3. Stir the cap from the infusion tube without contaminating the tip. Note the recommended partial insertion depth on the tip.

4. Partially insert the cannula into the teat end. Udder nearest back leg first, then teats closest to you.

5. Cleanse the area and dip with a cloth or cotton ball. Detergent is not necessary but may help.

6. Identify the cow to avoid contaminating the milk supply. Follow withdrawal recommendations.

7. Record treatment information in permanent records.

**Equipment needed:**
- 70% alcohol (isopropyl rubbing alcohol)
- Cotton balls or gauze pads
- Paper towels
- Prepared, single-use antibiotic tubes
- Gauze pads or towels
- Leg band or other means of temporary identification
- Permanent record sheet
- Germicidal teat dip

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- Permanent record sheet
- Germicidal teat dip
Mastitis is the most expensive disease on the dairy

When running a business, it's important to look at ways to reduce costs and improve efficiencies—even the ones that aren't as easy to detect. One such cost in the dairy industry is mastitis, both clinical and subclinical. The National Mastitis Council estimates mastitis costs U.S. dairy producers nearly $200 per cow. Additionally, lowered milk production, reduced milk quality, extra labor, increased replacement cow costs, veterinary fees and treatment costs all reinforce the importance of implementing a mastitis detection protocol on your farm. Despite current management advancements, mastitis continues to rob the U.S. dairy industry of $1.7 billion per year. As demand for higher milk quality standards increases, dairy producers are urged to improve efforts to control mastitis through prevention and treatment. Working with your veterinarian, it's important to develop a mastitis protocol for your dairy. Not only should you know how to treat a mastitis infection, but you should know how to identify it. There are two types of mastitis: clinical and subclinical. Clinical mastitis is easily recognized—the milk has flakes, clots or clumps; the cow may have a temperature or be off feed. However, subclinical mastitis—often called hidden mastitis—can widely infect a herd without you even being aware there is a problem. For every case of clinical mastitis, experts say there are 15 to 40 cases of subclinical in the herd.

Follow these steps for proper infusion

1. Udder should be clean and dry. The same quarters are commonly infected.
2. Scrub the end of each teat with a gauze pad or cotton ball moistened with 70% alcohol. Allow alcohol to dry on skin for 30 seconds. Gauze balls should be changed after every teat.
3. Use a loop graft and hand wash the udder with 70% alcohol. Allow the alcohol to dry on the skin.
4. Partially insert the infusion tube without contaminating the tip. Note the recommended partial insertion length.
5. Partially infuse the tube slowly and completely. Infuse the nearest teats first, then teats farthest away.
6. Identify the cow to avoid contaminating the milk supply. Follow withdrawal recommendations.

Use proper infusion procedures

Intramammary infusions are an important part of mastitis treatment and control. Proper aseptic infusion procedures are necessary to maximize treatment effectiveness and prevent contamination of the quarters.

The National Mastitis Council recommends that when treating mastitis infection, the use of aseptic infusion procedures is necessary to deliver thesAus® into the mammary gland. Aseptic procedures are important when treating infected quarters to control contamination to the milk supply and prevent cross contamination between animals.

This protocol is intended for use in conjunction with other standard herd health measures to reduce the incidence of new intramammary mastitis infections, including appropriate milking procedures, good milking equipment sanitation and teat dipping. The antibiotic therapy is to reduce subclinical infections, use different antibiotics even when the support of standard mastitis management practices.

Equipment needed:
- 70% alcohol (isopropyl rubbing alcohol)
- Cotton balls or gauze pads
- Paper towels
- Prepared, single-dose antibiotics tubes
- Permanent record sheet
- Germicidal, post-milk teat dip
- Leg band or other means of temporary identification
- Permanent record sheet

Follow this protocol for mastitis treatment:

1. Udder should be clean and dry. The same quarters are commonly infected.
2. Scrub the end of each teat with a gauze pad or cotton ball moistened with 70% alcohol. Allow alcohol to dry on skin for 30 seconds. Gauze balls should be changed after every teat.
3. Use a loop graft and hand wash the udder with 70% alcohol. Allow the alcohol to dry on the skin.
4. Partially insert the infusion tube without contaminating the tip. Note the recommended partial insertion length.
5. Partially infuse the tube slowly and completely. Infuse the nearest teats first, then teats farthest away.
6. Identify the cow to avoid contaminating the milk supply. Follow withdrawal recommendations.
7. Record treatment information in permanent records.

Early intervention, early diagnosis, early treatment result in better efficacy

Mastitis is the most expensive disease on the dairy

When receiving a call from your veterinarian regarding a suspected mastitis infection in your herd, follow these steps to ensure proper treatment. The National Mastitis Council recommends that when treating mastitis infection, the use of aseptic infusion procedures is necessary to deliver thesAus® into the mammary gland. Aseptic procedures are important when treating infected quarters to control contamination to the milk supply and prevent cross contamination between animals.

Equipment needed:
- 70% alcohol (isopropyl rubbing alcohol)
- Cotton balls or gauze pads
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3. Use a loop graft and hand wash the udder with 70% alcohol. Allow the alcohol to dry on the skin.
4. Partially insert the infusion tube without contaminating the tip. Note the recommended partial insertion length.
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FOLLOW THESE STEPS FOR PROPER INFUSION

1. Udder should be clean and dry. All udder quarters are completely milked out.
2. At the end of each teat wash a gauze pad or cotton bat in 70% alcohol. Allow alcohol to dry on skin for 30 seconds. Avoid both easy and deep teats.
3. Rinse the cap from the infusion tube without contaminating the tip. Note the recommended partial insertion depth.
4. Partially insert the cannula into the teat end. Infuse nearest teats first, then teats farthest away.
5. Gently infuse the contents of the infusion tube.
6. Dip or spray teats in an approved germicide, post-milk into rubber bands.
7. Identify the cow to avoid contaminating the milk supply. Follow withdrawal recommendations.
8. Record treatment information in permanent records.
PIRSUE® (pirlimycin hydrochloride) Sterile Solution is indicated for the treatment of clinical and subclinical mastitis in lactating dairy cattle associated with Staphylococcus species such as Staphylococcus aureus, Staphylococcus xylosus and Staphylococcus uraeus.

**PRODUCT OVERVIEW**

**PIRSUE**

- **Generic Name:** Pirlimycin hydrochloride
- **Sterile Solution**: 50 mg/mL
- **Uses:** Treatment of clinical mastitis
- **Form:** Sterile Solution and PIRSUE® Sterile Suspension
- **Administration:** Once-a-day dosing
- **Duration:** 2–8 treatments
- **Maximum Duration:** 72 hours
- **Pre-Slaughter**: 2 days
- **Label Features:**
  - Unique clinical and subclinical label
  - Only lactating product for Strep. dysgalactiae
  - Superior tissue penetration
  - Effective drug concentration maintained longer in the udder

**Important Safety Information**

PIRSUE® should not be used in animals found to be hypersensitive to the product. Following PIRSUE® Therapy, milk taken from animals treated for 3 days or fewer after the last treatment must not be used for food regardless of treatment duration. Following 3 days or at a 24-hour interval, treated animals must not be slaughtered for 21 days following greater than twice at a 24-hour interval, up to 8 consecutive days. Animals must not be slaughtered for 21 days following greater than twice at a 24-hour interval. 

**THE TREATMENT TO THE BUG**

*Zoetics MASTITIS TREATMENTS*

**BRAND CONSISTENCY**

- **SPECTRAMAST® LC**
- **PIRSUE**

**ACTIVE INGREDIENT**

- **Pirlimycin hydrochloride**

**INDICATIONS**

- Treatment of clinical mastitis
- Treatment of clinical and subclinical mastitis

**LARGE ANIMALS**

- **One visit/daily**
- **Coagulase-negative staphylococci**
- **Staph. aureus**
- **Streptococcus dysgalactiae**
- **Streptococcus agalactiae**
- **Streptococcus uberis**
- **Streptococcus species such as**: Strep. dysgalactiae
- **Strep. agalactiae**
- **Staph. aureus**

**TREATMENT REGIMEN**

- 2–8 treatments
- 24-hour interval
- Treated animals must not be slaughtered for food use following greater than twice at a 24-hour interval.

**PRE-SURVIVAL INTERVAL**

- 9 days following 2 infusions
- 21 days following greater than twice at a 24-hour interval

**MAX EXCLUSION**

- 36 hours
- 9 days following 2 infusions
- 21 days following greater than twice at a 24-hour interval

**AVAILABILITY**

- PIR
- LC

**IDENTIFYING SUBCLINICAL MASTITIS AND MATCHING THE TREATMENT TO THE BUG**

The important step to identify subclinical mastitis is through screening of individual cows (usually MtC). You may categorize testing programs to measure individual cow's SCC (0). If you find those animals with a count greater than 200,000/mL, you should administer the appropriate therapy. Even above this cut point could potentially have subclinical mastitis. Monthly individual testing is ideal, but producers who do not have such a procedure in place can look at the bulk tank SCC score to see if there is a problem within the herd.

**The Clinical and Subclinical Mastitis Protocol charts found later in this pamphlet can serve as a guide to finalizing your dairy’s approach to milk quality.**

**Important Safety Information**

1. **Effective drug concentration maintained longer in the udder**
2. **Coagulase-negative staphylococci**
3. **Clinical and subclinical label**
4. **Superior tissue penetration**
5. **Therapeutic efficacy demonstrated in lactating dairy cattle**
6. **Effective drug concentration maintained longer in the udder**
PIRSUE® (pirlimycin hydrochloride) solution is indicated for the treatment of clinical and subclinical mastitis in lactating dairy cattle associated with Streptococcus species such as Streptococcus dysgalactiae, Streptococcus agalactiae, Streptococcus uberis and Streptococcus uberis strains.

Key Features:
- Single clinical and subclinical label
- Only lactating product for Streptococcus species such as Streptococcus agalactiae
- Superior tissue penetration
- Only lactating product for clinical mastitis
- Superior tissue penetration
- Extended therapy—its unique flexible label allows you to treat for two to up to eight days to achieve a bacteriological cure
- Short 36-hour milk discard—more milk and less risk of human error
- Benefits Beyond Efficacy:
  - More options for greater management and flexibility.
  - Convenient for you, convenient for your milking crew.

Immediate Safety Information:
PIRSUE® should not be used in animals found to be hypersensitive to the product. Following PIRSEU therapy, milk taken from animals being treated for 72 hours after the last treatment must not be used for food or food ingredients. Following PIRSEU therapy, milk from treated animals must not be slaughtered for 21 days. Following any extended duration of therapy (more than 24 hours interval, up to 8 consecutive days), animals must not be slaughtered for 21 days and use of this product in a manner other than that described in this label could result in excise drug violation.

Zoetis Mastitis Treatments

BRAND CONSISTENCY: SPECTRAMAST® LC PIRSEU®

ACTIVe INGREDIENT:
- Ceftiofur hydrochloride

INDICATIONS:
- Treatment of clinical mastitis
- Treatment of clinical and subclinical mastitis

LABELLED PATHOGENS:
- Streptococcus dysgalactiae
- Streptococcus agalactiae
- Staphylococcus species such as
- Coagulase-negative staphylococci
- Staphylococcus epidermidis

TREATMENT REGIMENS:
- 5 minutes intramammary injection
- 2–8 treatments

PRE-SLAUGHTER WITHDRAWAL:
- 2 days

MAX DISCARD:
- 36 hours

AVAILABILITY:
- 125 mg
- 50 mg

Benefits Beyond Efficacy:
- More options for greater management and flexibility.

Identifying Subclinical Mastitis and Matching the Treatment to the Bug

The easiest way to identify subclinical mastitis is through monitoring of individual cow somatic cell counts (SCC). If you see a monthly testing program to measure individual cow SCC, those animals with a count greater than 200,000 cells/mL, should be taken from infected quarters to determine bacterial organism identification and aid in treatment decision. To see if there is a problem within the herd.

Important Safety Information:
The Clinical and Subclinical Mastitis Protocol charts found later in this pamphlet can serve as a guide to finalizing your dairy’s approach to milk quality. Zoetis offers several quality products for the treatment of mastitis, including SPECTRAMAST® LC (ceftiofur hydrochloride), SPECTRAMAST® LC and PIRSEU® (pirlimycin hydrochloride). Note: Indications caused by bovine pathogens such as E. coli and Actinobacillus should be treated with PIRSEU.

SPECTRAMAST® LC (ceftiofur hydrochloride) Subclinical Suspension is a treatment for clinical mastitis in lactating dairy cattle and is specifically formulated to successfully treat subclinical mastitis. Blank Meta SPECTRAMAST® LC is efficacious against:
- Escherichia coli
- Coagulase-negative staphylococci
- Streptococcus dysgalactiae

Benefits Beyond Efficacy:
- More options for greater management and flexibility.

Important safety information:
When treating subclinical mastitis, PIRSEU® therapy is not intended to be used for food or food ingredients. Following PIRSEU therapy, milk taken from treatment animals must not be slaughtered for 21 days and use of this product in a manner other than that described in this label could result in excise drug violation.

Staphylococcus aureus and Staphylococcus epidermidis strains are the most common pathogens associated with subclinical mastitis. The easiest way to identify subclinical mastitis is through monitoring of individual cow somatic cell counts (SCC). If you see a monthly testing program to measure individual cow SCC, those animals with a count greater than 200,000 cells/mL should be taken from infected quarters to determine bacterial organism identification and aid in treatment decision. To see if there is a problem within the herd.

Important safety information:
When treating subclinical mastitis, PIRSEU® therapy is not intended to be used for food or food ingredients. Following PIRSEU therapy, milk taken from treatment animals must not be slaughtered for 21 days and use of this product in a manner other than that described in this label could result in excise drug violation.

SPECTRAMAST LC PRODUCT OVERVIEW

SPECTRAMAST® LC (ceftiofur hydrochloride) Subclinical Suspension is a treatment for clinical mastitis in lactating dairy cattle and is specifically formulated to successfully treat subclinical mastitis. Blank Meta SPECTRAMAST® LC is efficacious against:
- Escherichia coli
- Coagulase-negative staphylococci
- Streptococcus dysgalactiae

Benefits Beyond Efficacy:
- More options for greater management and flexibility.

Important safety information:
When treating subclinical mastitis, PIRSEU® therapy is not intended to be used for food or food ingredients. Following PIRSEU therapy, milk taken from treatment animals must not be slaughtered for 21 days and use of this product in a manner other than that described in this label could result in excise drug violation.
PIRSUE® (pirlimycin hydrochloride) Sterile Suspension is indicated for the treatment of clinical and subclinical mastitis in lactating dairy cattle associated with Staphylococcus species such as Staphylococcus aureus and Staphylococcus agalactiae, Streptococcus dysgalactiae, and Streptococcus uberis species such as Streptococcus agalactiae. Cows found to be hypersensitive to the product. Following intramammary administration, animals treated must not be used for food within 72 hours after the last treatment.

Key Features:
- Unique clinical and subclinical label
- Once per day dosing
- Short 24-hour interval
- No risk of bacteroicide treatment
- Does not affect milk output
- Sterile Suspension allows you to treat for 36 hours after the last treatment must not be used for food
- For food safety, milk should only be used for food at least 72 hours after the last treatment.
- Effective drug concentration maintained longer in the udder

Important Safety Information: PIRSUE should not be used in animals found to be hypersensitive to the product. Following PIRSUE therapy, milk from animals being treated for 36 hours after the last treatment must not be used for food. Animals treated must not be slaughtered within 3-8 days following greater than twice at a 24-hour interval, up to 8 consecutive days, and 3-8 days after the last treatment. Animals must not be slaughtered for 3-8 days after the last treatment, up to 8 consecutive days, and 3-8 days after the last treatment. Animals treated must not be used for food within 72 hours after the last treatment. Following intramammary administration, animals treated must not be used for food within 72 hours after the last treatment.

Important Safety Information: PIRSUE should not be used in animals found to be hypersensitive to the product. Following PIRSUE therapy, milk from animals being treated for 36 hours after the last treatment must not be used for food. Animals treated must not be slaughtered within 3-8 days following greater than twice at a 24-hour interval, up to 8 consecutive days, and 3-8 days after the last treatment. Animals treated must not be used for food within 72 hours after the last treatment. Following intramammary administration, animals treated must not be used for food within 72 hours after the last treatment.

Identifying Subclinical Mastitis and Matching the Treatment to the Bug

The easiest way to identify subclinical mastitis is through monitoring of individual cow somatic cell counts (SCC). If you are in a monthly testing program to measure individual cow’s SCC, look for those animals with a count greater than 200,000 cells/mL. This point of reference will be different for each herd and should be identified through conversations with your veterinarian. Careful observation of mastitis in bulk milk can also provide clues to a problem within the herd.

The bulk tank SCC score can serve as a guide to help in diagnosing the cause of mastitis. For the treatment of subclinical mastitis, the California Mastitis Test (CMT) protocol is recommended for all subclinical mastitis treatment candidates. Be sure to check the CMT results to determine bacterial species identification and antibiotic sensitivity. Careful observation of mastitis in bulk milk can also provide clues to a problem within the herd.

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**PIRSUE** Pirlimycin hydrochloride Sterile Suspension is indicated for the treatment of clinical and subclinical mastitis in lactating dairy cattle associated with *Streptococcus* species such as *Streptococcus agalactiae*, *Strep. uberis*, *Strep. dysgalactiae*, and *Staphylococcus* species such as *S. aureus*, *S. epidermidis*, and *S. hominis*. 

**Key Features:**
- Single clinical and subclinical label
- Short 36-hour milk discard
- No risk of human error
- Superior tissue penetration
- Unique clinical and subclinical label
- Only lactating product for mastitis

**INDICATIONS**
- Treatment of clinical mastitis
- Treatment of subclinical mastitis

**AVAILABILITY**
- Pirlimycin hydrochloride (Pirlimycin®)
- Ceftiofur hydrochloride (Spectramast® LC)

**PRODUCT OVERVIEW**

**PIRSUE** should not be used in animals found to be hypersensitive to the product. Pirlimycin should not be used in animals found to be hypersensitive to pirlimycin. Pirlimycin should be excluded from PILE/SUSUE.

**SPECTRAMAST LC** is indicated for the treatment of clinical mastitis in lactating dairy cattle and is specially formulated to successfully treat modern mastitis pathogens. Spectramast LC is effective against:
- *Escherichia coli*
- *Coagulase-negative staphylococci*

**Benefits Beyond Efficacy:**
- *A day dosing*—convenient for you, convenient for your milking crew.
- *Short 36-hour milk discard—more milk and less risk of human error*
- *Superior tissue penetration—its unique flexible label allows you to treat for two to up to eight days to achieve a bacteriological cure*
- *Effective drug concentration maintained longer in the udder*

**Important Safety Information**
- PIRLSUE should not be used in animals found to be hypersensitive to the product. Pirlimycin should not be used in animals found to be hypersensitive to pirlimycin. Pirlimycin should be excluded from PILE/SUSUE.

**TREATMENTS**

**Identifying Subclinical Mastitis and Matching the Treatment to the Bug**

The easiest way to identify subclinical mastitis is through monitoring of individual cow somatic cell counts (SCC). If you are on a monthly testing program to measure individual cow SCC, you should test those animals with a count greater than 200,000/ml. This cut off will be different from herd to herd and should be identified through conversations with your veterinarian. Even above this cut off point a cow potentially has subclinical mastitis. Monthly monthly testing is ideal. Once monthly testing is ideal for early detection to achieve a bacteriological cure.

**The California Mastitis Test (CMT)**. Spectramast LC is a post-label directions treatment candidate. It is the only lactating product for mastitis. A milk sample should be taken from infected quarters to determine bacterial organism identification and aid in treatment decisions.

**Evaluating the Herd**

**Identifying Subclinical Mastitis**

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**Identifying Subclinical Mastitis**

The easiest way to identify subclinical mastitis is through monitoring of individual cow somatic cell counts (SCC). If you are on a monthly testing program to measure individual cow SCC, you should test those animals with a count greater than 200,000/ml. This cut off will be different from herd to herd and should be identified through conversations with your veterinarian. Even above this cut off point a cow potentially has subclinical mastitis. Monthly monthly testing is ideal. Once monthly testing is ideal for early detection to achieve a bacteriological cure.

**The California Mastitis Test (CMT)**. Spectramast LC is a post-label directions treatment candidate. It is the only lactating product for mastitis. A milk sample should be taken from infected quarters to determine bacterial organism identification and aid in treatment decisions.

**Evaluating the Herd**

**Identifying Subclinical Mastitis**

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**CLINICAL MASTITIS PROTOCOL**

**TREATMENT OF**

**2-8 days IMM**

**SPECTRAMAST LC**

**CULTURE QUARTER**

**NOT SWOLLEN**

### CONSIDERATIONS IN IDENTIFYING SUBCLINICAL TREATMENT CANDIDATES

- **Number of previous clinical mastitis cases**
- **Stage of lactation**
- **Other persistent health issues**
- **Milk production**

**PIRSUE APPROVED FOR USE AGAINST THE FOLLOWING PATHOGENS**

- **Staph. aureus**
- **Strep. agalactiae**
- **Strep. dysgalactiae**
- **Strep. uberis**
- **Strep. bovis**
- **Strep. mastitis**
- **E. coli**
- **Mycoplasma spp.**

**PIRSUE NOT APPROVED FOR USE AGAINST THE FOLLOWING PATHOGENS**

- **Yeast**
- **A. pyogenes**
- **Klebsiella spp.**

**SUBCLINICAL MASTITIS PROTOCOL**

**EVALUATE INDIVIDUAL COW SCC**

**SCC < 200,000**

- **Continue to monitor monthly**
- **Establish herd appropriate SCC level with herd veterinarian**

**SCC > 200,000**

- **2 consecutive months**
  - CMT at quarterly to identify potentially colonized quarters.
  - Positive CMT score should be considered potentially colonized.
  - Perform culture to identify mastitis pathogens proved in quarter(s) identified as having a positive CMT score.

**THE FOLLOWING PATHOGENS**

- **Staph. aureus**
- **Strep. agalactiae**
- **Strep. dysgalactiae**
- **Strep. uberis**
- **Strep. bovis**
- **Strep. mastitis**
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**CONSIDERATIONS IN IDENTIFYING SUBCLINICAL TREATMENT CANDIDATES**

- **Number of previous clinical mastitis cases**
- **Stage of lactation**
- **Other persistent health issues**
- **Milk production**
CLINICAL MASTITIS MANAGEMENT

1. Take milk sample, culture and/or freeze
   - It may be important to speculate cultures to identify contagious minor mastitis pathogens such as Mycoplasma, yeast, A. pyogenes.
2. Grade infection according to these guidelines:
   - Grade 1 = Cow not systemically sick
   - Grade 2 = Cow not systemically sick
   - Grade 3 = Cow systemically sick
3. Consult your veterinarian and use decision tree to select proper treatment

Other supportive treatments

- Systemic
- Antimicrobial therapy
- Supportive
- Antibiotics
- IV fluids
- Corticosteroids
- Physical exam
- Systemic
- Discontinue
- Evaluate

Recommendations

- Consult your veterinarian for recommendations
- Also consider anti-inflammatory therapy
- Follow protocol as for Grade 1

CLINICAL MASTITIS PROTOCOL

SUBCLINICAL MASTITIS PROTOCOL

CONSIDERATIONS IN IDENTIFYING SUBCLINICAL TREATMENT CANDIDATES

- Number of previous clinical mastitis cases
- Chronicity of mastitis cases
- Parity
- Stage of lactation
- Other persistent health issues
- Milk production

PIRUS® is approved for use against the following pathogens:

- E. coli, A. pyogenes
- Staph. aureus, Strep. agalactiae, Strep. dysgalactiae
- Mycoplasma spp., Klebsiella spp.
- C. bovis
- Other persistent health issues

PIRUS® is approved for use against the following pathogens:

- Staph. aureus, Strep. agalactiae, Strep. dysgalactiae
- Mycoplasma spp., Klebsiella spp.
- C. bovis
- Other persistent health issues

SCC: 200,000-

2 consecutive months

SCC: <200,000

- Continue to monitor monthly
- Establish herd appropriate SCC level and hard intervention

CMT at quarters to identify potentially culture-negative quarters with a positive CMT score should be considered potentially contagious.

Perform culture to identify mastitis pathogens present in quadrants identified as having a positive CMT score.

SUBCLINICAL TREATMENT CANDIDATES

- Staph. aureus
- Strep. agalactiae
- Strep. dysgalactiae
- Strep. uberis
- Yeast

THE FOLLOWING PATHOGENS

AGAINST THE FOLLOWING PATHOGENS

- Staph. aureus
- Strep. agalactiae
- Strep. dysgalactiae
- Strep. uberis
- Yeast

Conferences and decisions are for information purposes only. They are not intended to be a substitute for the advice of a qualified veterinarian. It is important for the veterinarian to determine the cause of mastitis and select a treatment protocol.
Ceftiofur Hydrochloride

Microcrystalline Wax...................................................................700 mg
Ceftiofur Equivalents (as the hydrochloride salt) .......................125 mg

In case of accidental skin exposure, wash with soap and water. Remove
situated individuals. Topical exposures to such antimicrobials, including

MENT in 24 hours. For extended duration therapy, once daily treatment
by mastitis should receive other appropriate therapy under the direction

SPECTRAMAST LC

Escherichia coli
Staphylococcus aureus

CLINICAL MICROBIOLOGY

isolated (μg/mL) (μg/mL)

0.06 to 4.0

Strep. dysgalactiae

NADA# 141-238, Approved by FDA

As demonstrated in the pivotal target animal safety study, even with adequate pre-treatment preparation,

in kidney, 2.0 ppm in liver and 1.0 ppm in muscle.

Method. Kidney residues were less than the established tolerance (0.4

Three different definitions for cure were used for analysis purposes: 1)

In vitro studys in dairy cattle following intramammary infusion of ceftiofur and

observations were seen in quarters where bacteria were also isolated.

scores occurred in six pirlimycin-treated cows (9 quarters). Most of the abnormal udder and strip cup

EFFECTIVENESS

Pirlimycin hydrochloride is a lincosaminide antibiotic.

Collection (ATCC) Reference Strains

MIC90*

0.06—0.05

0.06—1.0

ANIMAL SAFETY

Two pivotal studies addressing the safety of pirlimycin administered at dosages of 50 mg or 200 mg (4X)

An additional study was conducted to determine the safety of extended duration therapy. Twenty lactating

For extended duration of therapy, a second tissue residue study was conducted. Each lactating cow

Revised February 2008

PIRSUE Sterile Solution is available in unbroken packages of 12-10 mL Plastet Disposable Syringes with

Store at controlled room temperature 20° to 25°C (68° to77°F). Store plastets in carton or pail until used.

the same cow. Prepare the teats using the above instructions, and then infuse PIRSUE Sterile Solution

The established tolerance for pirlimycin in liver (the target tissue) is 0.5 ppm. A pivotal tissue residue study

When using extended duration therapy with PIRSUE Sterile Solution, failure to thoroughly clean quarters

Syringes with 12 individually wrapped 70% isopropyl alcohol pads. The Plastet Disposable Syringes are packaged in

and sanitation, can result in elevated somatic cell counts and/or clinical mastitis, which can result in animal

The active ingredient, pirlimycin hydrochloride, is a chemically synthesized, water-soluble lincosamine.

Pirlimycin hydrochloride acts on the bacterial 50S ribosomal unit to inhibit protein synthesis. It is an antibiotic.

Three enzymatic mechanisms of resistance to lincosamides have been reported: 1) modification of the ribosomal

To determine antimicrobial susceptibility, the Kirby-Bauer method was employed. A minimum inhibitory

In extended duration therapy studies, pirlimycin administered by mastitis therapy at 50 mg or 200 mg (4X)

as any treatment period longer than 2 days (up to 8 consecutive days) of therapy.

of the treated cows (8 quarters) had a concurrent bacterial infection attributable to a mastitis

Of these, six treated cows (8 quarters) had a concurrent bacterial infection attributable to a mastitis

EFFECT ON MILK MANUFACTURING STARTER CULTURES

the study. Cows were assigned to one of three treatment groups: non-

secretion) or if udder swelling, heat, pain or redness were present and

milk production was not affected by treatment. SCCs of treated cows were statistically

Intramammary infusion was well tolerated by the cows, as no adverse effects were seen in the treatment

The study was designed to be an open label study with observation to detect clinical mastitis, and the

EFFECTIVENESS

In the study, a total of 164 cows (212 quarters) were enrolled.

exacerbation of all clinical and subclinical mastitis, occurring from initiation of treatment.

To assess clinical mastitis, two different criteria were employed: 1) mastitis without secretion and 2)

A randomized, antemortem clinical mastitis study was conducted to evaluate the efficacy of PIRSUE

FACTORIAL RESPONSE SURFACE ANALYSIS

anaphylactic reaction. In this study, no abnormal animal behavior was observed, including changes in

In the study, PIRSUE was administered by intramammary infusion as a single 125 mg bolus to a total of

In the study, pirlimycin was administered as a single 125 mg bolus to a total of 139 lactating cows (212

As demonstrated in the pivotal target animal safety study, even with adequate pre-treatment preparation,
Ceftiofur hydrochloride is a cephalosporin antibiotic. Its spectrum of activity includes staphylococci (CNS), streptococci, and enterococci. The susceptibility of these organisms is shown. Gently insert the full cannula into the teat canal; carefully infuse the product.

**Table 4. Acceptable Quality Control Ranges for Ceftiofur**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td>≤0.0039</td>
<td>≤0.01</td>
<td>≤0.06</td>
</tr>
<tr>
<td>Coagulase (-)</td>
<td>≤0.06</td>
<td>≤0.5</td>
<td>≤8.0</td>
</tr>
</tbody>
</table>

**SPECTRAMAST**

PIRSUE Sterile Solution is a clear solution. It is intended for use in the treatment of clinical mastitis in lactating dairy cows. The suspension is designed to provide the choice of either insertion of the white caps or a straight up insertion as shown.

Important Considerations for Extended Therapy:

- Repeated infusion during extended duration therapy regimens, even with adequate teat end preparation and sanitation, must not be used for food and must be discarded.
- Kidney residues were less than the established tolerance (0.4 ppm) by 2 days after the last infusion. These data collectively support the assignment of a 2-day pre-slaughter withdrawal period regardless of treatment duration.

**STORAGE CONDITIONS**

The material safety data sheet contains more detailed occupational safety information on the product and its use.

**ADMINISTRATION**

The syringe is designed to provide the choice of either insertion of the white caps or a straight up insertion as shown. Gently insert the exposed white tip straight up as shown. Gently insert the full cannula into the teat canal; carefully infuse the product.

In 1999 to 2000, the efficacy of ceftiofur was demonstrated in a pivotal clinical field efficacy study in 971 lactating dairy cows. In two clinical field efficacy studies in 971 lactating dairy cows, the treatment groups achieved a cure rate of 67.8% (602/888) and 66.9% (617/920) for the 62.5 mg and 125 mg treatment groups, respectively. The non-treated control group compared to 69.4% (75/108) for the 62.5 mg treatment group.

Table 1 summarizes the clinical signs of mastitis seen in treated dairy cows. The table shows a statistically significant improvement in clinical signs (udder swelling and abnormal milk) in treated cows compared to non-treated cows. The table also shows a statistically significant improvement in SCCs of treated cows compared to non-treated cows.

Table 2 summarizes the clinical signs of mastitis seen in treated dairy cows. The table shows a statistically significant improvement in clinical signs (udder swelling and abnormal milk) in treated cows compared to non-treated cows. The table also shows a statistically significant improvement in SCCs of treated cows compared to non-treated cows.

**MILK AND TISSUE RESIDUE DEPLETION**

Two pivotal milk residue decline studies were conducted. In these studies, residues of ceftiofur were determined in the kidney (the target tissue) using the official analytical method. Kidney residues were less than the established tolerance (0.4 ppm) by 2 days after the last infusion. These data collectively support the assignment of a 2-day pre-slaughter withdrawal period regardless of treatment duration.

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MASTITIS IS THE MOST EXPENSIVE DISEASE ON THE DAIRY

When running a business, it’s important to look at ways to reduce costs and improve efficiencies—even the ones that aren’t as easy to detect. One such cost in the dairy industry is mastitis, both clinical and subclinical. The National Mastitis Council estimates mastitis costs U.S. dairy producers nearly $200 per cow.

Additionally, lowered milk production, reduced milk quality, extra labor, increased replacement cow costs, veterinary fees and treatment costs all reinforce the importance of implementing a mastitis detection protocol on your farm.

Despite current management advancements, mastitis continues to rob the U.S. dairy industry of $1.7 billion per year.

As demand for higher milk quality standards increases, dairy producers are urged to improve efforts to control mastitis through prevention and treatment.

Working with your veterinarian, it’s important to develop a mastitis protocol for your farm. Not only should you know how to treat a mastitis infection, but you should know how to identify it. There are two types of mastitis: clinical and subclinical. Clinical mastitis is easily recognized—the milk has flakes, clots or clumps; the cow may have a temperature or be off feed. However, subclinical mastitis—often called hidden mastitis—can widely infect a herd without you even being aware there is a problem. For every case of clinical mastitis, experts say there are 15 to 40 cases of subclinical in the herd.

FOLLOW THESE STEPS FOR PROPER INFUSION

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Intramammary infusions are an important part of mastitis treatment and control. Proper aseptic infusion procedures are necessary to maximize treatment effectiveness and prevent contamination of the quarter.

The hand washing described is in conjunction with other standard hand hygiene measures to reduce the incidence of new intramammary mastitis infections, including appropriate rolling procedures, good rolling equipment sanitation and teat dipping. The antibiotic therapy, on sterile latex gloves, use disposable aprons and with the support of sound mastitis management practices.

Equipment needed:

- 70% alcohol (isopropyl rubbing alcohol)
- Cotton balls or gauze pads
- Paper towels
- Prepared, single-dose antibiotic tubes
- Germicidal teat dip
- Leg band or other means of temporary identification
- Permanent record sheet

1. Udder should be clean and dry. Be sure quarter is completely milked out.
2. At the end of each teat with a gross past or cotton ball swab in 70% alcohol. Allow alcohol to dry on skin for 30 seconds. Avoid touch after final drying.
3. Remember the cap from the infusion tube without contaminating the tip. Note the recommended partial insertion depth on tube.
4. Partially insert the cannula into the teat end. Udder normally feels firm; then tube feels flexible.
5. Gently slide the contents of the infusion tube.
6. Dip or spray teat in an approved germicide, post-milk ing teat dip.
7. Identify the cow to avoid contaminating the milk supply. Follow withdrawal recommendations.
8. Record treatment information in permanent records.

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EARLY INTERVENTION EARLY DIAGNOSIS EARLY TREATMENT RESULT IN BETTER EFFICACY

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