Guard your clients' productivity like gold.

2009 Lactating Intramammary Campaign Detailer
Mastitis has different causes at different times. All your clients want to know is that you have the right tools to manage it.

Mastitis always threatens dairy profitability – causing unwanted time out of the vat and lost production. Mastitis management during lactation requires the right tools at the right time, whatever the cause and whenever it strikes. Prescribing proven therapies as part of a milk quality management plan is vital for successful treatment.

That’s why Intervet/Schering-Plough Animal Health has a portfolio full of proven mastitis therapies – effective from dry off right through lactation. Your clients’ productivity is in your hands, so you need complete confidence in what you offer them.

This season, maximising production will be an even greater priority for your clients
Penalone: The obvious choice for early lactation, and ideal when environmental challenge is high

Penalone’s unique formulation delivers a high 1000mg dose of procaine penicillin.
- Hard hitting formulation ensures good udder penetration, rapid absorption and long lasting activity.
- Ideal for getting on top of infections early and achieving a first-time cure.

Potency of penicillin.
- Often more potent than the newer semisynthetic penicillins.
- More active against non-beta lactamase producing, Gram-positive mastitis pathogens than ampicillin and nafcillin, and far more so than cloxacillin¹.

 Provision of a high concentration of penicillin increases first-time cure.
- Peri-calving and early lactation clinical cases are often due to infections acquired during the dry period, meaning infection is well established and harder to cure.
- Chances of achieving cure are diminished with each successive treatment.

Penicillin, the drug of choice for Streptococcal mastitis.
- *S. uberis* is the major mastitis pathogen in early lactation²,³,⁴.
- 99.5% of NZ Streptococcal isolates are sensitive to penicillin.

Penalone, effective bacteriological and clinical cure throughout lactation⁵.

![Figure 1: Clinical cure proportions for Penalone (90%) vs. Streptopen HP (88%) were not statistically different.](image1)

![Figure 2: Bacteriological cure proportions for Penalone (84%) vs. Streptopen HP (85%) were not statistically different.](image2)

A recent large, multi-centre NZ trial⁵ run over the entire lactation, confirms confidence in Penalone.
- There was no difference in cure proportion between Penalone and Streptopen HP overall or when broken down by bacterial species; including *S. aureus* and CNS isolates, which were likely to be penicillin resistant.

Penalone is ideal against mastitis early in lactation. It also achieves excellent cure throughout lactation due to its unique, hard hitting formulation, getting on top of infections first time.
Spectrazol delivers 250mg cefuroxime sodium, a second generation cephalosporin, in a rapid release base.

- Effective broad-spectrum mastitis control.
- Works rapidly to achieve deep udder penetration.
- Optimises efficacy while reducing milk discard.
- Flexibility of standard or extended therapy.

Laboratory data indicates Spectrazol is highly effective against the major mastitis pathogens. Including penicillin resistant Staphylococci and *E. coli*.

Because the variety of bacterial species increases as the season progresses, broad-spectrum mastitis cover is necessary.

Rapid action.

- Spectrazol's synthetic, rapid release base works fast.
- Deep udder penetration is achieved rapidly, easily exceeding MICs of common mastitis pathogens.

Optimise efficacy while reducing milk discard.

When milk production is in full swing, Spectrazol can minimise milk discarded while maximising efficacy. Spectrazol gets cows back into the milking herd without delay.

- Milk is discarded for 8 days during a course of cloxacillin.
- With a standard (3 syringe) course of Spectrazol, milk is only discarded for 3.5 days.

Spectrazol provides effective bacteriological and clinical cure.

*Figure 3: Comparative efficacy of Spectrazol vs. 200mg cloxacillin (Wraight, 2002).*

- Spectrazol, given every 12 hours vs. cloxacillin given every 48 hours produced similar overall clinical and bacteriological cures and,
- a significantly higher clinical cure against *E. coli*.

For quarters treated with Spectrazol, McDougall demonstrated a clinical cure in line with other studies (83%, 85%) of 83% and a bacteriological cure of 81% which was similar to Penalone or Streptopen HP.
Extended mastitis treatment increases bacterial cure due to the extended contact time between antimicrobials and mastitis pathogens. The benefits of extended therapy must be balanced against potential drawbacks, including the cost of therapy, more discarded milk, and increased labour.

In a 2007 study, Spatz-Shelgren et al. showed that more sub-clinical S. aureus infections were cured as the number of intramammary treatments with Spectrazol increased.

Using a sub-clinical treatment model, Swinkels showed that treating S. uberis infections with a traditional 3 syringe course, and S. aureus with an extended course, had the best cost/benefit. McDougall ran this model with NZ data including the above trial results. He demonstrated an extended course of treatment with Spectrazol is more economical when dealing with S. aureus.

<table>
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<tr>
<th>Standard Spectrazol Therapy</th>
<th>Extended Spectrazol Therapy</th>
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<tr>
<td>3 treatments after successive milking</td>
<td>6–8 treatments after successive milking</td>
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<tr>
<td>Minimal downtime with proven efficacy</td>
<td>Maximise efficacy for hard to cure mastitis (especially S. aureus)</td>
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<tr>
<td>Withholding Period: 4 milkings (48 hours)</td>
<td>Withholding Period: 6 milkings (72 hours)</td>
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Spectrazol extended treatment – now ACVM approved

Spectrazol is ideal during peak lactation. It delivers effective broad-spectrum mastitis control, getting cows back in supply without delay, with the flexibility of extended treatment.
Nafpenzal MC: The broad-spectrum approach to clinical mastitis, with once daily convenience

Nafpenzal delivers a combination of nafcillin, penicillin and dihydrostreptomycin in a quick release base.

- Extended spectrum of activity.
- 24 hour treatment interval is suitable for treating cows milking once a day.
- Ideal for targeting clinical infections later in the season without any compromise.

Nafillin is a unique active for mastitis treatment.

- A semisynthetic penicillin with excellent stability in the face of beta lactamase.
- Excellent activity against Staphylococci while retaining a greater potency against Streptococci than cloxacillin1.
- Good efficacy against penicillin resistant Staphylococci.

A combination that provides an additive and potentially synergistic effect.

- An extended spectrum of activity compared to either drug alone.
- Activity against Gram-positive organisms is largely driven by nafcillin (Staphylococci) and penicillin (Streptococci).
- Synergistic action between penicillin and nafcillin against penicillin sensitive and penicillin resistant S. aureus shown in vitro.
- Potential synergy between nafcillin and dihydrostreptomycin against Staphylococci shown in vitro.
- Dihydrostreptomycin adds activity against Gram-negative bacteria, including coliforms and Klebsiella.

Figure 5: MICs for nafcillin and penicillin against S. aureus isolates.

Milk concentration.

- Delivery of antibiotic at 24 hour intervals offers a longer period of activity against mastitis pathogens.
- Maintenance of supra-MICs throughout the period of treatment is vital for beta lactam drugs.
- Concentration vs. time profile indicates that supra-MICs are maintained over the 24 hour period while milking twice per day16.

Nafpenzal MC delivers effective broad-spectrum mastitis therapy over a 72 hour period with a combination of complementary antibiotics.
Cobactan LC: The choice for aggressive mastitis, allowing a quick return to quality milk

Cobactan LC delivers 75mg of cefquinome in a rapid release, non-irritant base.
- A 4th generation cephalosporin for veterinary use only.
- A quick return to quality milk.
- Very high bacteriological cure against all the main causes of mastitis.
- Excellent syringeability, even at low temperatures.

Outstanding efficacy against Gram-positive, and Gram-negative bacteria.
- Kinetic studies in milk show a rapid onset of activity, allowing a rapid decrease in inflammation and cell counts.
- Uniform drug particle size (<15µm) and ointment base reduces irritation and ensures excellent distribution and penetration deep into udder tissue.

Figure 6: Cobactan LC is highly effective against Streptococci species16.

Figure 7: Cobactan LC is highly effective against S. aureus, with a very low relapse rate16.

Cobactan LC can be used concurrently with Cobactan 2.5% Injection to increase cure, without increasing the withholding period.

Figure 8: Bacterial cure proportions against E. coli mastitis17.

Cobactan is ideal when acute or severe mastitis requires a very fast and well tolerated broad-spectrum treatment to get a quick return to quality milk.
Lactating Intramammary Campaign Resources.

Fact Sheets

- Penalone
- Spectrazol Milking Cow
- Nafpenzal MC
- Cobactan LC

Lactating Checklist

Managing Mastitis throughout Lactation
Administration of Lactating Intramammary Therapy
Client Brochure Treatment of Mastitis during Lactation
Mastitis Technical Bulletin, 2009

Intervet/Schering-Plough is committed to successful mastitis management and treatment. Our team of territory managers and five veterinarians are here to assist your clinic in providing farming clients with the best evidence, recommendations and support.

References