### Checklist: Managing mastitis throughout lactation

Your cows are under constant challenge from infections that can spell mastitis for them and trouble for you. Helping them negotiate their way safely through a season of uninterrupted production requires good understanding and careful management.

**How does your mastitis management during lactation stack up? Can you tick most or all of these boxes? If you can, then the chances are you’ll be keeping production on track.**

**At calving**
- Cows calve onto clean pasture, avoiding mud or stand-off areas.
- Once newborn calves have received a good feed of colostrum, suckling is minimised.
- All quarters of all cows are milked out twice daily from first milking onwards.
- Teat damage is minimised.

**Colostrum milking**
- Colostrum cows are kept as a separate mob.
- Cows are milked out carefully and thoroughly for at least 8 milkings, (10 for heifers).
- Cows are checked frequently for signs of clinical mastitis.
- Milk is tested for subclinical mastitis (using RMT or conductivity meter) before cows join the main herd.

**During lactation**
- Bulk tank somatic cell counts are monitored; any increases are investigated.
- Effective teat spraying is practised after every milking – from season start to season finish.
- Signs of clinical mastitis are watched for and cases are treated promptly.
- Milk is tested for subclinical mastitis before cows join the main herd.

**Dealing with clinical cases**
- Mastitis cases are marked and separated from the main mob during the entire treatment and withholding period.
- All mastitis cases and treatments are carefully recorded.
- Cows are treated with a mastitis product as per your vet’s recommendation.
- Repeat offenders that do not respond to treatment are culled.
- withholding periods are strictly observed.
- Mastitis treatment and prevention programme is discussed with your veterinarian.

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**Intervet Schering-Plough:** committed to successful mastitis management and treatment.
Mastitis means significant costs in treatment, labour, lost productivity and reduced returns from lower quality milk. Prevention of new infections by decreasing the new infection rate is always the most economical approach to mastitis. However, once the cows are infected, the duration of infection is reduced by treatment or culling. Prompt identification and treatment of mastitis in lactation is crucial in minimising the impact of the disease on the cow and on the herd.

The number of infected cows in your herd at any one time, represented by the size of the red box in the diagram below, depends on the number of new mastitis cases that occur (i.e. the infection rate) and how long each case of mastitis lasts (i.e. the duration of infection).

The preventative measures available are listed at the left of the diagram. These decrease the new infection rate or, in other words, slow down how quickly cows enter the red box.

Once cows are infected, the aim is to reduce the duration of infection by treatment or culling; that is, empty the red box as a fast as you can. Effective and timely treatment of mastitis throughout the season with Lactation Therapy (LCT) or Dry Cow Therapy (DCT) at the end of the season is vital.

Factors contributing to amount of mastitis in a herd.

Preventative measures
- Nutrition
- Teat spraying
- Optimal machine function
- Preventive DCT
- Good milking hygiene
- Mastitis cow management
- Environment management

Cure
- Spontaneous cure
- Antibiotic assisted (LCT/DCT)

Detection of mastitis.

The first indication of clinical cases in the herd may be the appearance of clots on the filter sock or an increase in bulk tank somatic cell count (BTSCC).

An individual case of clinical mastitis is usually detected by a swollen quarter that is sensitive or hot to the touch (she kicks a lot when you touch her udder) and clots or flakes in the milk.

Subclinical mastitis (infection without clinical signs) can be detected with a number of aids – Rapid Mastitis test, Conductivity Meter, BTSCC, ICSCC – herd test. Detection of subclinical cows with the use of an RMT should be considered before cows enter the milk supply for the first time. RMT positive cows should be given more time or treated with an appropriate antibiotic.
Selection of appropriate treatment

Consultation with your veterinarian will give you a “plan of attack” and he or she can prescribe first line treatment for new mastitis cases. This decision is based on the following:

- The likely bacteria causing mastitis. Ideally the cause should be identified by milk culture.
- Time of the season e.g. certain bacteria (especially *Strep. uberis*) are likely to be more prevalent around calving and milk discard may be less of an issue early in the season when you are feeding calves.
- Age of the animals e.g. treatment for heifers may differ to that for an old cow.
- Clinical presentation e.g. single quarter therapy may differ to multiple quarter infections or very swollen udders.

Regardless, as illustrated in the table below, it is critical to remember the best chance to cure a case is the first time. After this time the chances of success decline rapidly.

<table>
<thead>
<tr>
<th>Treatment number</th>
<th>Cure rate</th>
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<tbody>
<tr>
<td>1st time</td>
<td>75%</td>
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<tr>
<td>2nd time</td>
<td>45%</td>
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<tr>
<td>3rd time</td>
<td>12%</td>
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</tbody>
</table>

Table from Lacey-Hulbert J. Descel, Who Controls Mastitis – You or the Bugs?

Antibiotic treatment

Ensure the gland is milked out as completely as possible.

This removes millions of bacteria, milk (which is the primary growth medium for the bacteria) and clots and debris that can hinder the spread of antibiotic treatment.

Some bacteria produce toxins that can make the cow very sick. In these cases of toxic mastitis, milking the cow out also removes these toxins. Note in severe cases it is recommended to milk the cow more frequently than twice daily.

Oxytocin stimulates milk letdown and contraction of muscle cells that ‘squeeze’ milk from the glands and into the udder. This drug can help the cow milk out completely especially if she is being stripped out in between regular milking.

Administration of intramammary therapy

1. Strip out the quarter fully before infusing antibiotic into the quarter. This may be assisted by the injection of 2 - 3 mL of oxytocin into the muscle prior to milking. Milk samples should be taken before the cow begins treatment. These can be frozen and cultured later if needed.

2. Ensure the treated cow is clearly marked. Record treatment date, product used, withholding periods and when the cow will be clear to go back into the vat.

3. Clean all teat ends thoroughly (wipe all teat ends with teat wipes followed by spraying with 70% alcohol.)

4. Hold the barrel of the syringe in one hand and remove cap by gently twisting. Do not bend the nozzle. Take care not to contaminate the nozzle.

5. Partially insert (3mm) the nozzle of the intramammary into the teat canal and apply steady pressure on the syringe until the full dose has been delivered into the quarter. Massage the infusion up into the udder.

5. Teat spray carefully with a concentrated, high quality product.
**Good mastitis management**

**Withholding periods.**

The withholding period on the label is the minimum period that needs to elapse before milk from the treated animal can contribute to supply for human consumption. The milk withholding period is listed both as the number of hours and the number of milkings. As treatments for mastitis are intended to achieve high levels of antibiotic in the udder and milking is the major route of antibiotic removal, the number of milkings is most important. Unless stated otherwise, once a day milking will double the length of time a cow is withheld from supply. The converse does not apply however, and milking three times daily cannot be used to reduce the time milk is withheld.

**Records.**

A written record should be kept for each cow treated to avoid inhibitory substance grades and to allow for evaluation of treatment outcomes. All treated cows should be clearly identified.

**Treatment protocols.**

Veterinary recommendations should be used to generate a written treatment protocol. Everyone who administers antibiotic treatments should be trained on, and carefully follow, this protocol.

The treatment protocol should describe the conditions to be treated, the drug to use, its dosage and route of administration, the milk and meat withholding periods, and what is to be recorded.

**Monitoring.**

Monitoring is necessary to know the mastitis status of your herd and the efficacy of the mastitis management practices you have in place. Monitoring the factors in the box below allows early detection of potential problems.

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**Injectable therapy**

In some cases an injectable preparation may be recommended, either alone or in conjunction with an intramammary infusion. For example if there is significant swelling in the udder or if the cow is noticeably ill and there is a chance bacteria have spread from the udder into the general circulation.

If you are using an injection in conjunction with an intramammary, check with your vet that the combination is compatible – some drugs will work together well, some don’t and some (for example an injectable oxytetracycline combined with a penicillin intramammary) can even work against each other.

When using injectable mastitis preparations remember it is still important to strip the quarter(s) as this removes bacteria and increases the concentration of antibiotic in the udder. Use clean syringes and sterile, sharp needles in the area directed on the product label.

**Treating subclinical cows**

The best cure rates for subclinical mastitis are achieved with Dry Cow Therapy. However there is evidence that antibiotic treatment can be successful during lactation – if you select the cases carefully!

Talk to your veterinarian regarding treating subclinical cows and decide which cows are candidates for treatment. As a general rule, the longer an infection has been present the harder it will be to cure. A cow with a high cell count consistently over two seasons, despite Dry Cow Therapy, is not likely to be a good candidate for lactation treatment. Trials have shown increasing the length of treatment past the traditional three treatments increases the chance of curing the infection.

Talk to your vet about the drugs you should use if you wish to treat subclinical cases, how long for and what withholding period you should apply after treatment.

**Non-responding cases**

In spite of the natural resistance mechanisms of the cow, antibiotic treatment and other methods, such as frequently stripping out the milk, some cows are unable to eliminate infection. These cows are chronically infected, often with Staph. aureus, but other infections (e.g. Strep. uberis) can also become chronic. The bacteria, despite being susceptible to antibiotics, are hidden inside cells or within abscesses or scar tissue. Chronic infections are a source of infection for other cows. Culling chronically infected cows is often the only way to effectively control spread of mastitis in the herd.

Not all non-responders are chronically infected; some cows are more prone to mastitis and become re-infected after successful treatment. Re-infections can also be common in cases where the underlying causes of mastitis are not corrected e.g. a poorly functioning milking machine.

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<table>
<thead>
<tr>
<th>Monitor</th>
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<tbody>
<tr>
<td><strong>Clinical cases</strong></td>
<td></td>
</tr>
<tr>
<td>◀ How many cases occur in heifers and how many in older cows?</td>
<td></td>
</tr>
<tr>
<td>◀ How successful was treatment?</td>
<td></td>
</tr>
<tr>
<td>◀ How many cases are repeat offenders?</td>
<td></td>
</tr>
<tr>
<td><strong>Somatic cell counts</strong> – cow and bulk tank</td>
<td></td>
</tr>
<tr>
<td><strong>Milk culture</strong> – clinical cases, high SCC cows</td>
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