Nordic Guidelines for Mastitis Therapy

Agreed in unanimity at The NMSM Annual Conference
June 12, 2009, Ideon Science Park, Lund, Sweden

General policy

• Only acute clinical mastitis cases should be chosen for treatment decision.

• Subclinical mastitis in general has too high self-cure or too low cure rate in proportion to the treatment costs during lactation.*

• Subclinical mastitis should instead be treated during the dry period.

• Pronounced restrictive use should be regarded for cephalosporins and quinolones.

* Exception from this rule could be made in herds during eradication of Streptococcus agalactiae.
Actions that always should be made regardless of treatment decision

**Evaluate prognosis**
- If replacement animals are at hand culling should always be considered an alternative if prognosis is doubtful (ex. several quarters infected).
- A comparison between the cost for culling vs. the estimated cost for treatment should always be made.

**Biosecurity actions**
- Analyze if future effective segregation is possible if the case is a contagious mastitis.
- Drying of chronically infected teats could be used, if remembering it is not the same as segregation.

**Bacteriologic culturing**
- The main purpose is to continuously monitor the mastitis pattern of the herd.

**Supportive treatment**
- Milk the cow, using the milking machine, once or twice more per day.
- Move cows in loose housing to a sick pen for optimal cow comfort, cubical hygiene, watering and feeding.

**Additional treatment on demand**
- Oxytocin injections for enhancing milk let-down.
- Fluid therapy intravenously or orally.
- Non-Steroid Antiinflammatory Drugs.

**Animal Welfare**
- Cows with highly affected physical conditions and great pain should be treated as soon as possible with the drugs available.
- Also, in these cases the same principles for antibiotic choice as presented in this policy should be considered as far as possible.

**Treatment follow-up**
Evaluation of treatment outcome by the veterinarian:
- Should always take place within 4-8 weeks.
- Repeat the calculation of long-time prognosis and cost for culling.
- Decide further bio-security actions.

**Antibiotics needed for mastitis therapy in the Nordic countries**
- Penicillin G.
- A β-lactamase resistant antibiotic.*
- An antibiotic with effect on gram-negative bacteria legal in the country.

* Only in case of severe animal welfare conditions.
## Antibiotic Treatment

<table>
<thead>
<tr>
<th>Gram-positive bacteria, β-lactamas-</th>
<th>First choice</th>
<th>Treatment with Penicillin G.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second choice</td>
<td>Only supportive therapy, no antibiotics.</td>
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</table>

| Gram-positive bacteria, β-lactamas+ | First choice | Only supportive therapy, no antibiotics. |
| Second choice                      | Treatment with a β-lactamase resistant antibiotic.*,** |

| Gram-negative bacteria (E. coli) | First choice | Only supportive therapy, no antibiotics. |
| Second choice | Treatment with an antibiotic effective against gram-negative bacteria.* |

| Gram-negative bacteria (Klebsiella spp.) | First choice | Treatment with med Quinolones.* |
| Second choice | Treatment with Trimetoprim Sulfa.* |

* Supportive treatment should be added.  
** Only in case of severe animal welfare conditions

### Treatment length

- **S. aureus*** and **Str. uberis** 5 days  
- Other gram-positive bacteria 4 - 5 days according to severity and herd.  
  *** If the clinical symptoms in the udder are considered better but not cured after 5 days, the treatment could be extended for another 1 - 2 days.  
- **Klebsiella spp.** 3 days  
- Other gram-negative bacteria 3 days  
- No growth Stop the antibiotic treatment

### Remark

If the animal does not respond to the chosen treatment despite correct antibiotic and dose and protocol, the diagnosis should be confirmed at a certified mastitis laboratory as soon as possible.

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*The Nordic Health Profile comprises restrictive use of antibiotics, disinfectants and hormones.*
The Nordic Guidelines for Mastitis Therapy

The Nordic Health Profile:

- A well-designed data base for correct registration of milk production and animal health.
- Preventive health service and breeding strategy based on this database.
- Stall design and management according to highest possible animal welfare demands.
- Restrictive use of antibiotics, disinfectants and hormones.
- Climate concern and economically sound market rules.
- Zero-tolerance for use of growth stimulating substances.

Seminars: NMSM Annual Conference, June 11-13, Molde 2008¹
NMSM Animal Health Group Meeting, December 10-11, Oslo 2008²

Decision: NMSM Annual Conference June 10-12, Lund 2009³

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² Participants: Liv Sølverød, Knut-Ove Hennum and Anne Cathrine Whist NO, Jørgen Katholm and Erik Rattenborg DK, Laura Kulkas FIN, Ylva Persson and Håkan Landin SE.

³ Participants: Liv Sølverød and Anne Cathrine Whist NO, Jørgen Katholm and Erik Rattenborg DK, Laura Kulkas FIN, Charlotte Sandgren, Jonas Carlsson and Håkan Landin SE.

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The NMSM Animal Health Group, Manifest 2005-04-25
NMSM Animal Health Group has defined The Nordic Health Profile.
This profile is aiming to secure an ethically sound dairy milk production from healthy cows.

These Guidelines fully corresponds to the mastitis policy proposed by the Swedish Society of Veterinary Medicine, officially accepted at the annual conference of the Swedish Veterinary Association, May 19th 2011.