

Clinical mastitis

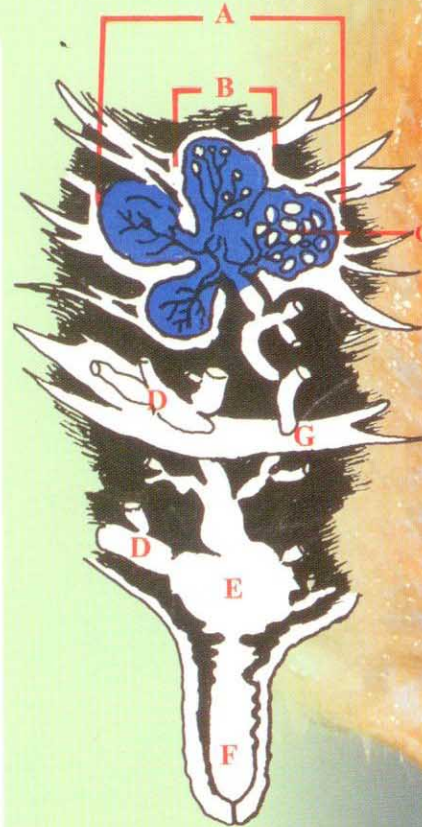
Several types of mastitis

- **Subclinical mastitis**
There are no visible signs, but the disease is very harmful.
- **Clinical mastitis (visible)**
Inflammation. Flakes and clots in the milk.
- **Acute clinical mastitis**
A red, swollen and painful udder, hard udder tissue, abnormal milk and reduced milk production. Indications of: fever, loss of appetite, less rumen activity, rapid pulse, dehydration, weakness and listlessness.
- **Chronic mastitis**
Inflammation over a long period. More damaged udder tissue. Drop in milk yield. Clinical symptoms may last for a long time.

The economic loss caused by a case of mastitis consists of four items. Reduced production is the biggest loss.

Reduced production:	43%
Early culling:	23%
Milk not delivered:	16%
Treatment:	18%

Study by Dijkhuizen et al. (1992)



Schematic drawing of vascular system and lymphatic system in the udder

- | | |
|---|------------------|
| A. primary collection of alveoli | C. alveoli |
| B. alveoli shaped like a bunch of grapes (glandular tissue) | D. milk cisterns |
| | E. mammary gland |
| | F. teat duct |
| | G. tissue |



Left quarter is infected and shows many somatic cells

Prevention important

An objective goal is:

- < 250,000 somatic cells/ml. This is an indication of restricted subclinical mastitis in the herd.
- < 25 cow cases of clinical mastitis per 100 milkcows per year. A cow with two mastitis infections in one year counts as two cases.
- < 1.4 cases of clinical mastitis per infected cow per year. This number gives an indication of the quality of the treatments.
- < 5% of culls due to mastitis or other health problems (as a proportion of all cows in the herd).

The following diagram shows the interrelationship of the risks of mastitis: influencing incidence of mastitis

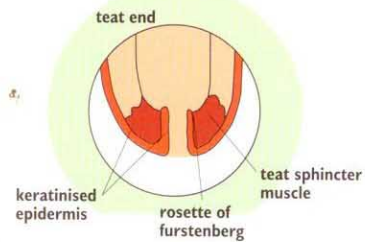


Bacteria that cause mastitis

Name	Streptococcus agalactiae	Streptococcus dysgalactiae	Streptococcus uberis	Staphylococcus	Staphylococcus non aureus	Coliforms (E-coli)	Arcanobac pyogenes
Place	udder, often in teat canal	udder tissue, skin	skin, udder, environment	udder skin, teats	skin, colonies in teat canal	environment, bedding	festering wounds
Caused by	milking, high cellcount	milking, high cellcount	milking, subclinical infect	infected milk and hands	infected milk and hands	bacteria on teats	flies
Control by	treatment penicilline	treatment antibiotic	antibiotic, dry cow therapy	antibiotic, udder + tissue	antibiotic, variable SCC	quick treatment + infusion	prevent by fly control

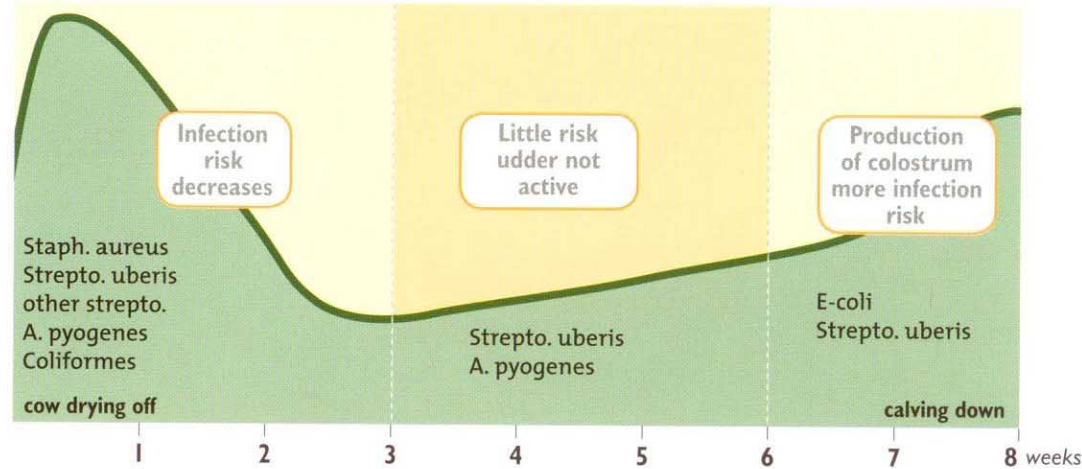
Keratin plug

- Keratin disappears 7-10 days before calving
- While producing colostrum, lactoferrin declines and Fe increases
- Lymphocytes produce fewer antibodies
- Lower activity of lymphocytes means less killing of bacteria



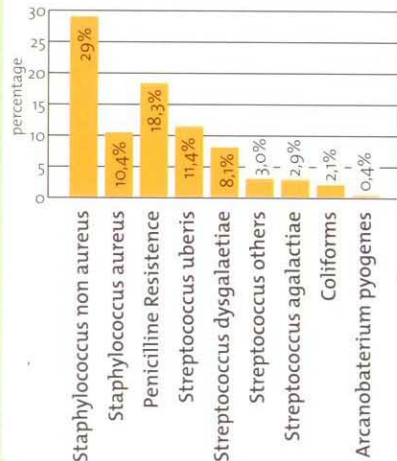
Subclinical mastitis

Infection risk in dry period

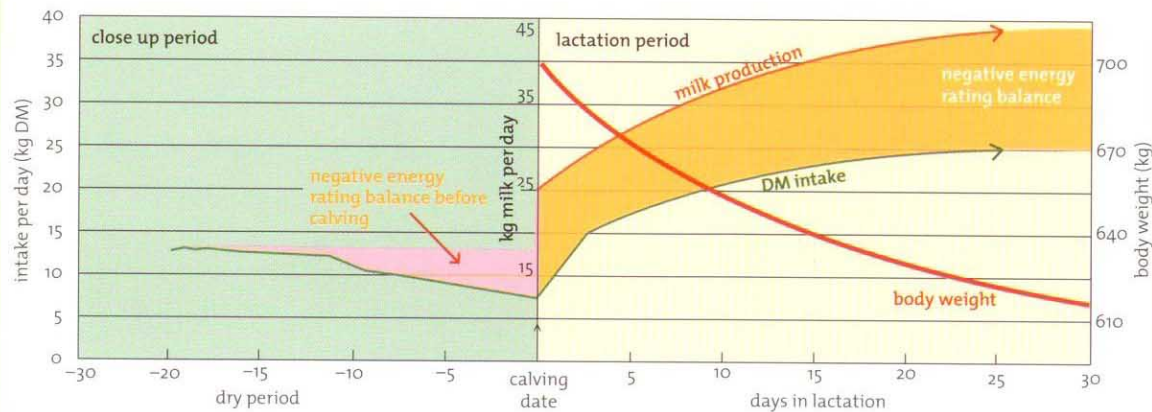


Successful treatment

Chances of successful recovery also depend heavily on the type of micro organism that caused the subclinical mastitis. A study by Animal Health in the Netherlands (first half of 2006) mentions the following pathogens:



Negative energy balance and roughage intake



Teepol method

An indirect method to check the amount of cells in milk is to determine the viscosity of the milk. An often used method is the CMT test (California Mastitis Test). This simple test shows which quarter of the udder is mastitic.



Draw two or three streams from each quarter into the four corresponding cups. (Don't use the first stream.)



Add an equal amount of Teepol to the milk in each cup.



Mix the Teepol and the milk. Then stir for half a minute.



Leave the mixture to settle.



After about ten seconds you can observe the thickening of the four samples.

Conclusion

One quarter with 1,000,000 cells/ml

Scoring of the test

Mixture	Cells/ml
A liquid, no thickening	100,000 – 300,000
B slight thickening	300,000 – 400,000
C distinct thickening	500,000 – 1,000,000
D thickens immediately	1,000,000 – 2,500,000
E viscous and thick	> 2,500,000



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