Clinical Mastitis
Information Leaflet

GROW WELL

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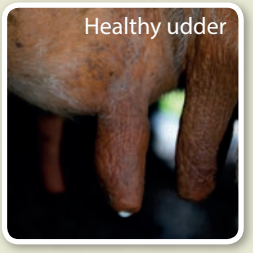
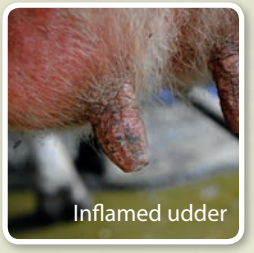
What is clinical mastitis?

Clinical mastitis is inflammation of the udder or mammary tissue that results in visible changes to the milk. These include milk being watery, changing from a white colour or having clots (see Fig)



This Inflammation also presents as visible clinical symptoms including udder heat, redness, pain and swelling.



Inflammation is the cow's immune system responding to bacteria entering the udder via the teat's opening, going through the teat canal, and then higher into the udder.

Finding and treating mastitis early helps keep somatic cell counts low. Healthy udders with low somatic cell counts produce more milk and therefore are more profitable.

Apart from the clinical signs, a cow's behaviour may change with clinical mastitis. Signs could include:

- Cows kicking more as the cups are applied due to pain from inflammation
- Cows may alter their normal position in a herd and present later
- If offered supplementary feed in the dairy, a cow's appetite may be reduced

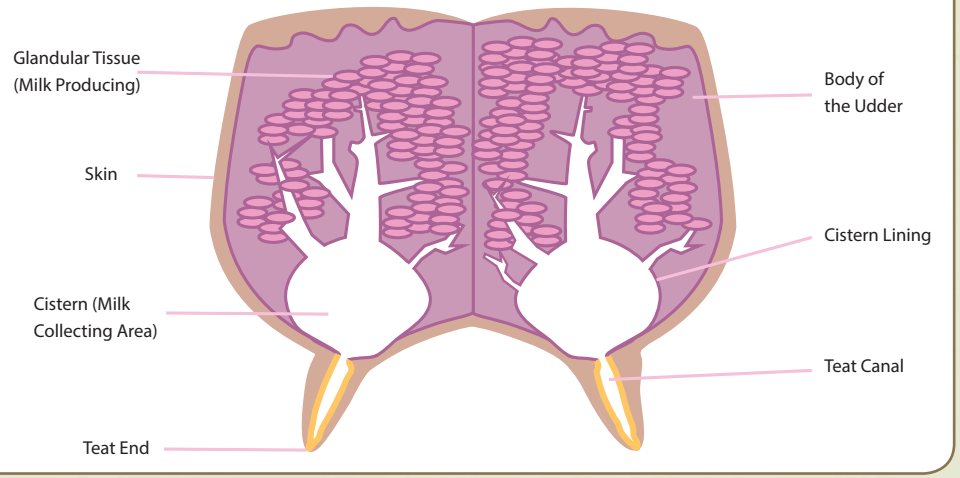
A bacterial infection may be present without any clinical or behavioural symptoms, this is called subclinical mastitis. This is measured by the number of white blood cells in milk – known as the individual cow cell count (ICCC). A high ICCC above 250,000 indicates an infection is present in the udder.

Subclinical mastitis can be evaluated by:

- Direct ICCC measurements
- Rapid mastitis test
- Electrical and pH devices

The udder's natural defence

Anatomy of the Udder



Skin of teat

If the skin is healthy, the only major route for bacterial invasion is through the teat end and canal. Skin's natural defences are reduced when the teat remains wet. This results in rough ends or the skin cracking, more bacteria around the teat end and contributes to mastitis.

Teat end and canal

The teat opening is a muscular ring, called a sphincter, which closes shortly after being milked to form a physical barrier to bacterial entry. Further inside the teat is a lining made of keratin, that traps bacteria. It is shed during the milking process defending the udder by removing any attached bacteria. Together these are the major barriers to bacterial entry into the udder.

Flushing

The process of milking results in the mechanical flushing and clearing away of any bacteria inside the milk collecting area.

Immune system

White blood cells are the cow's final defence against bacteria. Noted as an elevated ICCC this immune response results in inflammation and pain as the cow attempts to cure the bacterial infection.

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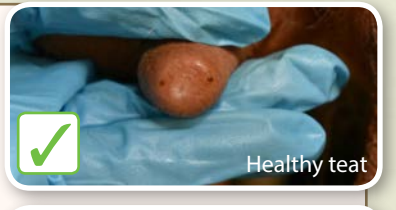
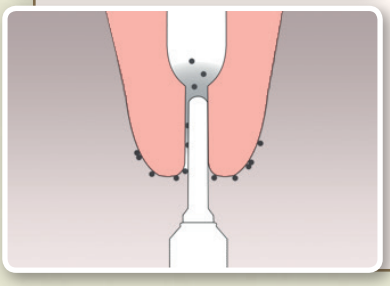
Teat end damage

Mastitis control in cattle is largely about preventing bacteria from entering the teat. Healthy skin is an important defence to bacteria colonising the teat end. Skin damage may be caused by wet environmental conditions, over milking, poor maintenance and function of milking machines and ineffective use of the emollient in teat sprays.

Following skin colonisation, the major barrier to bacteria getting inside the teat and into the canal is the muscular teat sphincter at its opening. Keeping the teat end healthy and functioning correctly is critical for preventing mastitis.





Teat end challenge

Bacterial entry to the udder predominantly occurs when the teat ends are open, either because of teat end damage, around milking time or during the dry period. Bacteria on the surface of the teat end mirror that of the environment. Therefore there will be a greater challenge to the teat opening when the environmental conditions are wet and the teats contaminated with mud and effluent.

Poor technique administering a tube into the teat can also introduce bacteria past the teat end defences. Always follow best practice sterile administration techniques described later in this booklet.

Milking machine function

Poor milking machine function will also contribute to mastitis. Milking machine faults can spread bacteria between cows, damage teat ends, and push bacteria into the teat canal during milking. Routine monitoring and maintenance of milking equipment will minimise the risk of new infections and the spread of contagious infections in a herd.

Lack of hygiene

Environmental and management factors that result in mud or effluent covering the teat end increase the risk of mastitis. This may include the use of water, effluent irrigation near cattle or stock movement through areas which result in dirty udders.

Cleaning and drying mud and manure from each teat before milking when required reduces the risk of bacteria reaching the teat end.

The highest risk of entry is when the teat remains open following the milking process or after an intramammary treatment is administered. Teat spray is used to ensure bacteria are minimised at the teat opening. Ensure all directions are followed in regards to mixing and using teat spray so it effectively disinfects the teat end.

Lack of hygiene in shed

Bacteria may be transmitted between cows during milking by our hands and milking equipment. Using gloves significantly reduces the number of bacteria on our hands when we touch cows compared to bare hands. If milking equipment is used on a cow with clinical mastitis it should be rinsed with clean water after. Segregating cows with mastitis and milking them last can minimise the chance of spreading bacteria from an infected cow to another cow.

Calving

Cows naturally have a reduction in their ability to fight infection in the period around calving. Most seasonal calving occurs in periods of high rainfall. The resulting management and environmental conditions contribute to increased teat end challenge from bacteria in the environment. Speak to your veterinarian about the use of internal sealants over the dry period if clinical mastitis around calving is common on your property.

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Types of mastitis

Contagious Mastitis

Contagious mastitis is spread mostly during milking when bacteria are transferred in milk from an infected cow to an uninfected cow.

Staphylococcus aureus is the most common cause of contagious mastitis and is often a cause of sub clinically infected cows.

A less common but serious second cause of contagious mastitis is Strep ag. This bacteria rapidly spreads within a herd when conditions allow resulting in a rapid increase in BMCC. The dry period is the optimum time to cure cows sub clinically infected with a contagious bacteria.

Environmental Mastitis

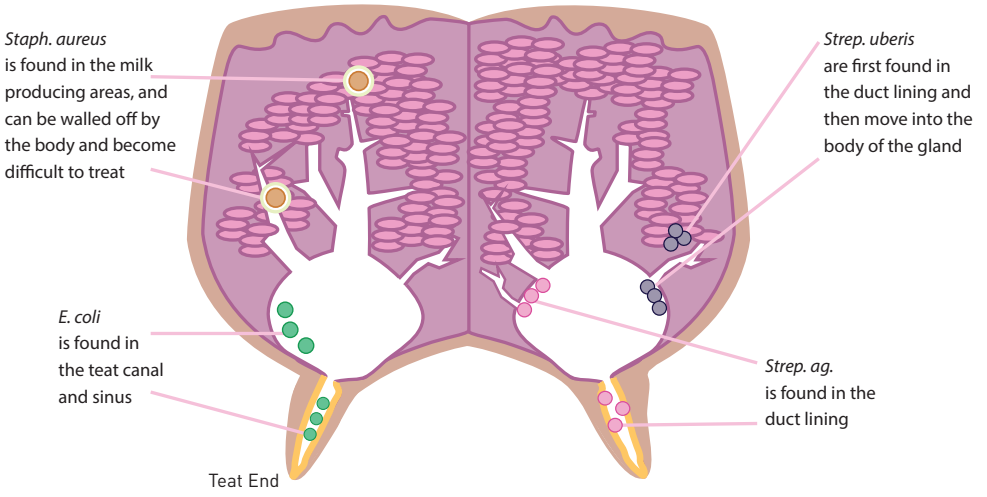
Environmental mastitis bacteria are opportunistic causing infection by high challenge or when the teat is open around milking or during the dry period.

Streptococcus uberis is the most common cause of environmental mastitis with most new infections occurring during the dry period. This results in clinical and subclinical mastitis early in the following lactation.

E.coli is also a common cause of environmental mastitis and is the result of challenge from a highly contaminated area..

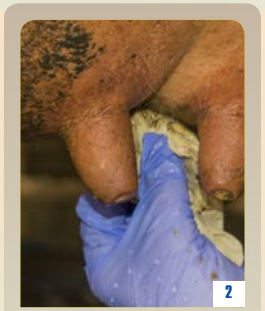
Teat sealants should be used over the dry period to minimise the risk of environmental mastitis.

Typical targets for the common causes of mastitis.



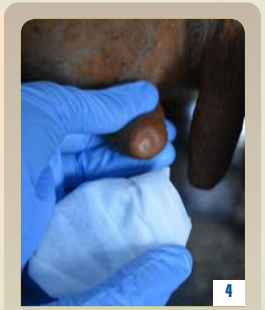
Best practice administration of an intramammary

Milk the cow out.
This helps to clear large quantities of bacteria from the udder and also clears away clots and debris that can hinder antibiotic distribution.



Clean any gross contamination from teats prior to focusing on the teat end.
Dry the teat prior to disinfection.

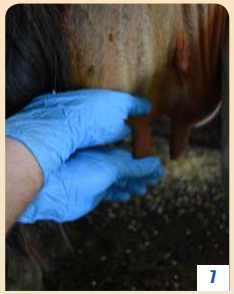
Thoroughly disinfect only the teat end with 70% alcohol. Use only a single side of the teat wipe.



Disinfection should be continued until the teat wipe comes away clean. Multiple wipes may be needed to achieve a clean teat end. Take a sample for culturing, using best practice guidelines found on the back cover.

Taking care not to contaminate the nozzle, insert the syringe tip up to 3mm into the teat if the cow is behaving. Never use an intramammary syringe if it is dropped, touches the cow or the nozzle becomes contaminated in any way.

Gently depress the syringe plunger until fully depressed and all antibiotic has been administered.



Gently pinching the teat end, strip the antibiotic up the teat into the udder. Follow this by massaging the udder to distribute the antibiotic.

Apply a post milking teat disinfectant.
Mark the cow clearly and isolate from the milking herd to ensure her milk does not enter the vat until her milk withhold is completed. Record the treatment for future reference.

Minimise the risk of residues by clearly marking and separating any cows treated with antibiotics from the remaining milking herd.

For more information about best practice use of lactating cow intramammary treatments please ask your vet for a copy of Norbrook's wall chart.

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Taking a milk sample

1 Once mastitis has been found, take the sample BEFORE any treatment begins.

2 ALWAYS wear clean gloves and use a sterile container.

3 Wash/clean the teat and dry the teat thoroughly with a clean paper towel. Disinfect the teat with 70% alcohol, focusing on the teat end.

4 Hold teat at 30° angle toward you, strip foremilk two to three times.

5 Remove the cap from the container in a sterile fashion i.e. Not touching inside or top of the container.

6 Hold the collection tube with unscrewed cap as horizontal as possible. Lift the lid up as if attached to the top of the sample pot like a hinge.

7 Take two or three direct streams of milk into the sampling pot. Replace the lid tightly.

8 Write the cow number and the date that the sample was taken on the pot.

Storage of Clean Samples

To prevent deterioration of the samples they should be placed in a refrigerator and maintained at, or below 4°C during transit to the laboratory (use ice packs).

Freezing Milk Samples

Milk samples can be frozen and still provide useful bacteriological information. Collecting and freezing samples on a regular basis allows reference samples should a mastitis problem occur.

Always interpret mastitis culture results with your veterinarian to discuss treatment plans, the risk factors involved and to develop a management plan.

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