



Disease name: **Bovine mastitistoes**

			
<p>Healthy Jersey cow</p>	<p>Swollen right side of the udder</p>	<p>Other symptoms of mastitis</p>	<p>Mastitis milk showing colour changes on the left side and normal milk on the right side</p>
<p>Disease</p>	<p>Bovine mastitis</p>		
<p>Description</p>	<p>Bovine mastitis is a swelling (inflammation) of the mammary glands of a cow and is caused by both infectious and non-infectious agents. The main agents that cause mastitis are infectious microorganisms especially bacteria. Mastitis causes major losses through decreased milk production, veterinary costs, premature culling of cows usually the high yielding ones, cost of replacement as well as discarding and down-grading of milk. High occurrence of mastitis is a major challenge to the dairy sector in Kenya and globally and is related with lack of a mastitis control programme, tracking and poor hygiene during milking.</p>		
<p>Symptoms</p>	<p>Bovine mastitis is seen in three main forms depending on the seriousness of the inflammation; subclinical, clinical and long-lasting forms. Subclinical mastitis is difficult to spot due to lack of obvious signs and is more shocking for most farmers. Clinical mastitis presents itself with observable signs which include discoloration and presence of clots in milk with swelling, pain and heat on the udder. Chronic mastitis is rare but results in persistent inflammation of the mammary gland.</p>		
<p>Disease diagnosis</p>	<p>Clinical mastitis is easy to identify by examining the udder (to detect hardening, heat and pain), pressing the teats to get some milk which is then observed for changes in evenness (clots and flakes) and in colour. Serious mastitis is usually accompanied with fever. Early stages of clinical mastitis can also be detected using a strip cup. Detection of subclinical mastitis</p>		

require use of diagnostic kits such as California Mastitis Test (CMT) for indirect estimation of somatic cell count (SCC) in milk , somatic cell count milk analyzer, pH based indicator strips, microbiological culture and drug sensitivity tests.



Strip cup



CMT plate and reagent



Milk Somatic Cell analyzer



Microbial culture and sensitivity tests

Control & Prevention

Control refers to stopping the spread of mastitis in a dairy herd. Measures used are:

1. **Dry Cow Therapy:** This is treatment run after the last milking of the cow before the dry period.
2. **Post-Milking Teat Dipping:** Most effective in stopping the spread of mastitis in a herd. Dip every quarter.
3. **Culling chronic mastitis cows:** The rule of thumb is to get rid of cows having five episodes of mastitis in one lactation period.
4. In cows with some healthy and some infected quarters, the chronically infected quarter should be **cauterized/killed** and then one will continue milking the healthy ones.
5. **Proper order of milking cows:** Always start with the clean animals/herd. Cows with mastitis should be milked last and the same should apply to any infected quarter.
6. **Hygienic milking:**

a) Milkers to wash their hands thoroughly before and after milking each

	<p>cow.</p> <p>b) Use of a separate clean udder cloth or a disposable tissue for cleaning of each cow.</p> <p>c) During milking constant running of water over the floor of a milking shed is recommended.</p> <p>7. Regular testing for mastitis in the herd.</p> <p>8. Scrapping and removing old mud and replacing it with new dirt at least once a year. This will reduce the bacterial load of environmental organisms.</p>
<p>Treatment</p>	<p>Methods of Treatment</p> <ul style="list-style-type: none"> • Effective treatment is by use of antibiotics: Administration of the antibiotics is either through injection (systemic) or infused into the teat canal (Intramammary). Milk from cow under medication is not marketable due to drug residues until the recommended milk withdrawal period is completed. Such cows may be marked with a tape to alert dairy farm workers and their milk is discarded. • Treatment should be evidence based targeting particular bacteria. This requires culture and sensitivity testing prior to initiating therapy. However, for acute case treatment is based on experience and herd history • Use of narrow-spectrum antibiotics is preferred; use those with bactericidal other than bacteriostatic activity. • Avoid too short duration of treatment by administering treatment for at least 3 days. <p>Steps of intramammary infusion include:</p> <ul style="list-style-type: none"> • Milk the udder until it is empty • Clean the end of the teat • Put the tip of the tube into the teat and squeeze the antibiotic up into the udder • Massage the teat and udder
<p>Good Practice</p>	<p>Good Practice based on Current Knowledge</p> <p>Milking time hygiene should always be sustained to keep mastitis away from the milking herd.</p> <p>During milking the young and clean cows should be milked first.</p> <p>Regular testing of mastitis using pen-side tests is recommended to enable</p>

	<p>early diagnosis of mastitis and prompt treatment.</p> <p>Cows having five episodes of mastitis in one lactation period should be culled.</p> <p>During treatment, antibiotic sensitivity testing is essential in order to avoid haphazard use of antibiotics which may lead to development of resistance.</p>
Special instructions	<p>It is very important to observe the recommended withdrawal periods for milk following treatment against mastitis. Milk containing drug residues can affect people with allergies and also cause antibiotic resistance in affected individuals.</p>
Prevention of disease	<p>Prevention means the measures aimed at ensuring that the cow does not get infected with mastitis causing organisms (MCO).</p> <ol style="list-style-type: none"> 1. Feeding techniques: <ol style="list-style-type: none"> a) Reducing amount of concentrate feeds and grains given to a cow a few days before weaning or drying the cow. This lowers the cows' ability to produce milk. b) Reducing water intake one day prior to drying off or weaning is a good suggestion. c) Feeding low quality forage or hay shortly after drying off will help dry the cow. 2. Cows that have lost a calf, may be given an orphan calf to nurse or reduce her feed intake immediately, and milk her slightly for the few first days. This is mainly for beef cattle or those cattle not milked by hand. 3. Precautions when purchasing cows: <ol style="list-style-type: none"> a) Note shape of the udder. Avoid cows with swinging udders. b) Avoid older cows as they are prone to mastitis 4. Bedding areas should always be kept clean and dry. 5. Use of teat dips: Dip cow teats in antiseptic before and after milking. A pre-milking teat dip or spray, such as an iodine spray, is applied which is followed by wiping teats dry before milking. Then after milking the teats are cleaned again and a post-milking dip, such as iodine-propylene glycol dip, applied to act as a disinfectant and a barrier between the open teat and bacteria in the environment.

	<p>6. Proper hand-milking technique: Squeeze and do not pull the teats when milking. This minimizes internal teat injuries which may act as entry points for MCO.</p> <p>7. Maintaining a regular milking interval or time.</p> <p>8. Completely empty the udder during milking. Retained milk predisposes cows to mastitis:</p> <p>a) milk-let-down is well stimulated (music and routine practices are used to achieve this)</p> <p>b) Cows should be moved quietly and gently. Avoid rough handling of cows.</p> <p>9. Since the teat canal remains open for 45 minutes after milking, cows should not be allowed to lie down in that time. Hence give feed supplements after milking or if given at milking enough should be provided to allow the animal to stand for the next 45 minutes.</p> <p>10. Keeping a closed herd to reduce risk of introducing contaminated/infected cow.</p> <p>11. For calves allowed to suckle their mothers, horned calves should not be left on the cow for too long, usually not more than 6 months.</p> <p>12. Vaccination: This is not always effective since vaccines covering the whole range of mastitis causing organisms are not available.</p>
Referral Centres	KARI, Veterinary Research Centre, Muguga North
Reference Links – book, journal paper, magazine, brochure, bulletin, fact sheet, web etc	
Geographic Coverage	Include map of Kenya with counties (use dots to show disease /pest occurrence)