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**Mastitis in Sheep**

Mastitis, or inflammation of the udder (usually one half), is a less serious flock problem where ewes have sufficient clean pasture on which to drop and nurse lambs. It may become a major health problem where ewes are kept in barns, yards, and corrals. In either case management continues to play a major role in its control, as new breakthroughs in control and eradication are unlikely. Early detection, prompt counter-measures, and culling of affected ewes are essential.

**THE DISEASE**

Mastitis is found most commonly in ewes 2 to 3 years of age. Many organisms have been implicated as causes of mastitis in sheep; however, staphylococci and pasteurellas are cited most frequently. Both these organisms commonly are found in or on sheep. The bacteria enter the udder through the teat canal and multiply, causing inflammation. Skin conditions, such as sore mouth in ewes and lambs, help the organisms penetrate the udder more easily. Following entrance into the udder the organisms spread rapidly throughout the gland, usually involving one half of the udder. The ewe becomes sick and depressed and may have a high fever. In staphylococcal mastitis, toxins are formed which cause gangrene of the affected gland. Pieces of the dark, smelly udder may slough off. In nongangrenous pasteurellal mastitis the infection finally localizes and forms abscesses in the udder which may burst through the skin. These may eventually get hard and heal. Mastitis of mixed infections is common.

**SIGNS**

One or 2 days following infection the ewe may run a fever of 105°F or more, separate from the flock, stop eating, and refuse to suckle her lamb(s). The pain from the swollen udder may cause her to remain standing, move cautiously, or appear stiff or lame in the hindquarters. Death losses in non-treated, affected ewes commonly exceed 50 percent.

Surviving ewes may not show all these signs; nevertheless, their milk production is reduced and half or all of the udder may become nonfunctional. Their lambs must be fed or they may die of starvation or toxemia.

**CONTROL**

Examination of the udder is important in the control of mastitis. Tight udders should be examined immediately and should be treated if mastitis is suspected. The entire udder, but especially its upper portions and the lymph nodes above the udder, should be palpated for heat, hypersensitivity, and

swelling. The involved half in acute infections may be larger than the normal side. In chronic infections the involved half may be smaller and contain hard lumps of various sizes. The skin of the udder and teats should be examined for cuts and wounds that may predispose the ewe to mastitis.

A strip-plate or strip-cup examination of the milk should be made in cases not showing obvious signs of mastitis. Watery, yellowish, or bloody discolorations, flakes, clots, and pus can be detected this way.

Ewes affected with the disease should be separated from the flock and treated immediately. Their lambs should be cared for, as they may attempt to nurse other ewes and thereby help spread the disease. Ewes with gangrenous mastitis should be marked for culling, as should those with hard, fibrous udders.

Cow mastitis preparations are used in the udder; however, the user assumes responsibility for their use. Massage the udder after treatment. One half of the contents of a tube is probably enough. The tip of the tube or syringe should be small enough so as not to damage the ewe's teat opening. Table 1 lists these preparations.

**Table 1. Dairy Cattle Intramammary Infusion Drugs**

Active ingredients	Withdrawal (days)	Milk discard milkings (hrs)	Brand name examples
<i>Dry cow use</i>			
Nitrofurazone	—	6 (72)	"FURACIN SOLUTION VET"
Novobiocin	30	—	"BIORY"; "NOVO-DRY"
<i>Lactating cow use</i>			
Cephapirin sodium	4	8 (96)	"CEFA-LAK"; "TODAY"
Procaine penicillin G	3 4	5 (60) 5 (60)	"FORMULA A-34" "HANFORD'S FOUR PEN"; "HANFORD'S AQUA-PEN"
Penicillin (100K) and novobiocin (150mg)	15	6 (72)	"ALBACILLIN"; "SPECIAL FORMULA 17900-FORTE"
<i>Dry or lactating use</i>			
Erythromycin	—	3 (36)	"GALLIMYCIN 36"
Furalfadone	—	8 (96)	"VALSYN GEL"
Oxytetracycline	4	8 (96)	"LIQUAMAST"; "TERRAMYCIN"

Source: H.E.W. Pub. No. (FDA) 78-6014



Systemic treatment of the ewe may be necessary to save her life. Intramuscular or oral treatment with several antibiotic and sulfonamide products gives satisfactory results when used early in the course of the disease and at the higher recommended levels. See product label or package insert for all necessary details. Table 2 lists these drugs.

**Table 2. Sheep and Goat Drug List**

Active ingredients	Withdrawal (days)	Milk discard milkings (hrs)	Brand name examples
<i>Injectable use</i>			
Dihydrostreptomycin Sulfate	30	—	"DIHYDROSTREPTOMYCIN"
Erythromycin (Sheep only)	3	—	"ERYTHRO-100"
Procaine penicillin G	5	6 (72)	"PRO-PEN G"
Procaine penicillin G and dihydrostreptomycin (Sheep only)	30	—	"COMBIOTIC" "MYCILLIN-V" "PRO-PEN IN DIHYDROSTREPTOMYCIN"
Procaine penicillin G and dihydrostreptomycin (Sheep only)	30	4 (48)	"DISTRYCILLIN A.S." "PENSTREP"
Sulfamethazine (Sheep only)	10	—	"SULMET 12.5%"
<i>Oral use</i>			
Sulfaquinoxaline	10	—	"SUL-NOX CONCENTRATE"
Sulfisoxazole (Sheep only)	10	—	"SOXISOL"

Source: H.E.W. Pub. No. (FDA) 78-6019

## PREVENTION

Very little new information has been reported in the last decade about the prevention of mastitis in sheep. The flock owner should nevertheless keep in mind that, although not contagious, mastitis is infectious and is caused by environmental organisms associated with other disease conditions such as abscesses, dermatitis, arthritis, and pneumonia. *Thus, general health and sanitation are most important.* For example, pens or "jugs" used by ewes isolated because of mastitis and other

diseases should be cleaned and disinfected after use. Sheep that are confined should be supplied with ample clean, dry bedding. The flock owner also should keep in mind that the ewe with mastitis produces less milk and that the affected gland is permanently damaged. The owner always should be on the lookout for unusual behavior in his nursing ewes. Be quick to take corrective measures for both ewe and lambs. Above all, keep in mind that the ultimate answer to mastitis, with today's knowledge, is the culling of all ewes with a history of mastitis. The udders of all ewes in the flock should be examined at least once a year before breeding. Any ewes with hard or abnormal udders should be culled.

## ORPHAN AND "BUMMER" LAMBS

Young lambs denied milk for whatever reason soon will starve to death. They should have colostrum within a few hours after birth if they are to survive. If none is available from their dam it should be provided from another ewe or cow (either fresh or preserved by freezing).

Lambs will do well on "top of the line," commercially prepared lamb milk replacers. Cow's milk or calf milk replacers will do for short periods of time until lamb milk replacers are obtained.

Nipple pails, bottles, and self feeders should be kept scrupulously clean whether or not the milk replacer contains high levels of antibiotics. Formalin inhibits the growth of most organisms. When added to milk at a ratio of 1 part to 4000 parts of milk (1 ml formalin per gallon of milk), it can keep bacterial growth to a minimum at barn temperatures. This tends to prevent scours and allow satisfactory daily gains.

The information given in this publication is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Minnesota Agricultural Extension Service is implied.

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