Drug Administration in Dairy Cows:

Intramammary Treatment

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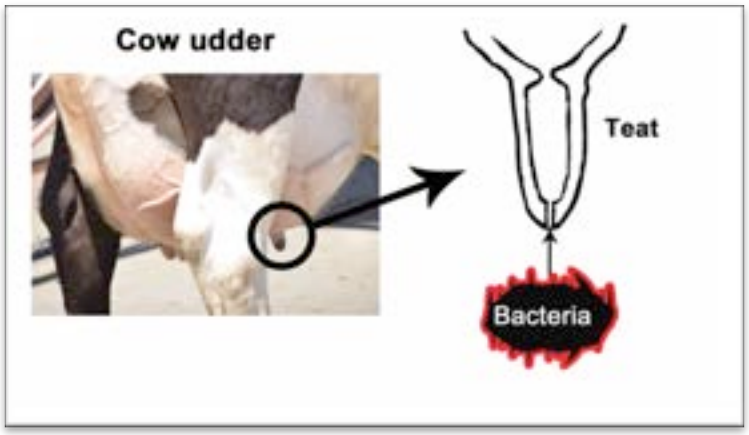
Overview

In this video we will discuss the treatment and prevention of mastitis in dairy cows. By definition, mastitis is inflammation of the mammary gland. And in dairy cows, the most common cause of this inflammation is bacterial infection. To understand the treatment and prevention of mastitis, it is helpful to understand the basic anatomy of the cow's mammary gland and teat.



The dairy cow's udder has four teats and at the very end of each teat is a small opening. When bacteria gain entry into the teat through this opening an infection of the mammary gland can result, and this infection can cause the condition known as mastitis. In dairy cows, most cases of mastitis are classified as being subclinical meaning that the cow does not show outward signs of disease. With subclinical mastitis, the infection can be thought of as a low-grade infection that causes decreased milk production over the life of the cow. A smaller subset of mastitis cases are classified as clinical, meaning that there are outward signs of disease, either in the udder, the milk or systemically throughout the cow's body. Both clinical and subclinical mastitis result in high economic losses to dairy producers and control programs to prevent mastitis are common on most dairies.

Intramammary delivery of an antibiotic into the mammary gland, by way of an intramammary infusion, is one of the most effective and commonly used methods to treat and/or prevent mastitis. There are two different types of intramammary antibiotic infusions and it is important to understand the differences between them. Lactating cow therapies are administered to cows during the normal lactation and are indicated for mastitis treatment. Following antibiotic treatment milk must be withheld from being used for human consumption for various times depending on the antibiotic preparation. Dry cow therapies are administered at the end of the lactation just before the 60 day dry period, and usually have label indications for both mastitis treatment and prevention. Lactating and dry cow intramammary infusions differ with respect to drug concentration and carrier in the product. Lactating treatments typically have a shorter duration of action and a much shorter milk withholding and meat withdrawal period as compared to dry cow treatments. At the end of a lactation when a cow stops being milked, she will be at risk for developing bacterial mastitis because the normal daily removal of milk from the udder stops.This daily removal of milk from the udder during the lactation helps to flush any bacteria out of the mammary gland if they

are present and can help to prevent mastitis. Because a dairy cow is not milked during the dry period, the daily removal of milk does not occur and dairy cows are often administered intramammary dry cow therapy at the beginning of the dry period to treat and/or prevent mastitis during the 60 dry period.

To prevent farm workers from inadvertently administering a dry cow product to a lactating cow, drug manufacturers typically market dry cow treatments with red plastic tips as a warning to workers that they are using a dry cow product. The incorrect administration of a dry cow product to a lactating cow can result in extremely prolonged drug residues in both milk and meat and can result in financial losses as milk containing antibiotics cannot be sold for human consumption. The process of drying a cow off involves milking the cow one final time prior to the beginning of her 60 day dry period. In this video a Holstein dairy cow that is just starting her dry period will be milked, dry treated and then a teat sealant will be applied.

Prior to milking the cow, the cow's teats are dipped with a disinfectant to help remove debris and bacteria from the teat end. This process is called predipping. Next the farm manager uses a paper towel to clean and dry each teat. In this example since only one cow is being milked and the farm manager does not want this cow's milk to enter into the bulk tank, a portable milk tank has been set up to collect milk from the cow. Next the milking apparatus or "claw" is applied to the udder and the cow's udder is milked completely out. During milking the flow of milk from the udder can be monitored from the claw and through the collecting tubes. When the cow's udder has been completely milked out, the suction is discontinued and the milking unit comes off of the udder.

Following milking, the cow's teats are again disinfected; since this disinfection is taking place after milking, it is referred to as "post-dipping." After the disinfectant has been allowed time to contact the teat skin, it is wiped off with a paper towel. Before an antibiotic is infused into the mammary gland, the teat ends must be disinfected to prevent the introduction of bacteria into the gland during the procedure. To do this, the teat end is thoroughly disinfected with an alcohol swab. Next the antibiotic is injected into the teat. The teat end is disinfected a second time, and finally a teat sealant is infused.