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Klebsiella Can Cause Severe Mastitis

The following is a summary of an article in *The Progressive Dairyman* written by Angela Rowson and Paul Virkler.

Klebsiella is a type of bacteria that can cause severe clinical mastitis in dairy cows.

Klebsiella mastitis commonly causes a severe mastitis that results in abnormal milk; hard, swollen, painful quarters, and sick cows that sometimes die. Cows that survive clinical *Klebsiella* mastitis often develop chronic mastitis. Milk may appear normal, but somatic cell counts are high, and repeated clinical cases may occur.

Cows that survive the illness are often culled due to low milk production. In a study performed by Iowa State University, only 43% of cows with *Klebsiella* mastitis stayed in the herd after recovering from the disease.

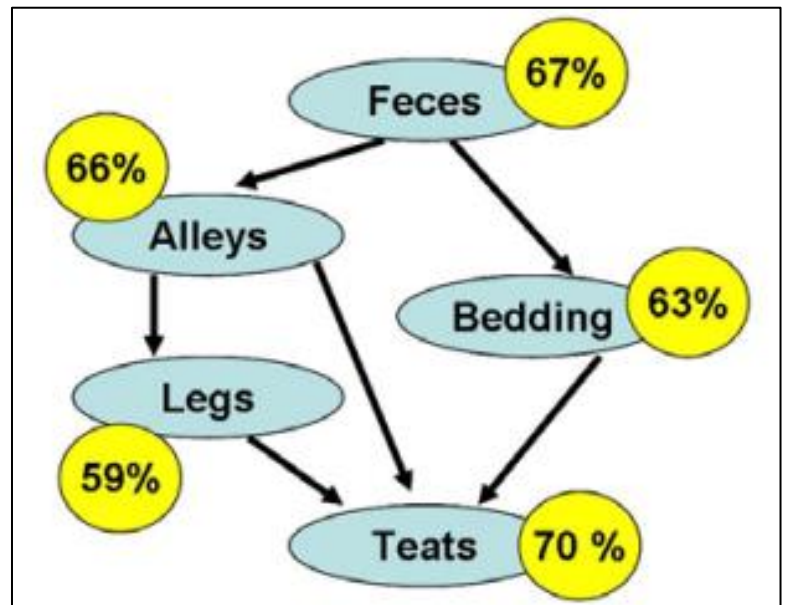
The remaining 57% either died or were culled. Cases of *Klebsiella* mastitis typically occur throughout the lactation cycle. *Klebsiella* mastitis usually occurs more often in older cows.

Cows shed *Klebsiella* intermittently in their manure. Research by Cornell University showed that 80% of fecal samples collected from healthy dairy cows contained *Klebsiella*.

Fecal shedding of *Klebsiella* can result in contamination of the entire farm, including freestalls, walkways, the parlor, waterers and holding pens. Wherever you see manure, *Klebsiella* is likely to be present. *Klebsiella* mastitis usually peaks in summer because of two reasons. *Klebsiella* bacteria grow better in warm moist conditions. Heat stress lowers the immune defenses which make cows more susceptible to the bacteria.

Careful monitoring of the milking parlor, cow traffic areas, freestall management, teat disinfectant, teat skin health, vaccinations and nutrition can aid in fighting against *Klebsiella* mastitis.

On MacConkey agar, *Klebsiella* appears as large, mucoid, pink to red, convex colonies due to its ability to ferment lactose, giving it a distinct "slimy" appearance compared to other bacteria on the same medium; this characteristic is often used to identify *Klebsiella* in a clinical setting.



The chart above shows how often *Klebsiella* is found in different places and how it moves around.

Milking Parlor

Improperly laundered cloth towels can be a source of *Klebsiella*. Towels should be washed using hot water and detergent and thoroughly dried before use. Chlorine bleach can be added in the rinse cycle to help kill bacteria. It's imperative not to overload the washer during the laundering process.

Milking equipment performance should be evaluated on a routine basis. Claw vacuum is especially important. Too high of levels can cause edema to build up in the teat during milking which can greatly delay

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closure of the teat canal when the cow is back in the pen.

Reducing water use in the parlor can help prevent "splash" from occurring. Splash is when manure-contaminated water splatters onto cows' teats, udders or legs. It can occur when deck manure is sprayed toward cows that have just exited the parlor stalls or when butt pan channels are flushed while cows are still in the parlor.

Using a short-handled squeegee to move manure on the immediate deck area during active milking and only hosing the entire deck between groups when no cows are present helps prevent splash.

Cow Traffic Areas

Manure and manure-contaminated water in alleyways and holding pens are significant sources of *Klebsiella*, especially during summer months when sprinklers and soakers are used for cow cooling. To help control manure levels, holding areas and return lanes should be scraped multiple times during milkings if manure is accumulating.

Freestall Management

Proper cow positioning is key to lowering *Klebsiella* counts in the back one-third of stalls. Any bedding material, including new sand, can quickly become contaminated with *Klebsiella* once placed in the stall. To keep stall bedding clean and dry, it should be groomed and refilled often.

Manure should be scraped from the backs of stalls at each milking. Bedding should be stored under a cover to keep it dry while waiting to be added to stalls. All unused and used bedding can be tested for *Klebsiella*.

Teat Disinfection

Teat disinfection, both before and after milking, is critical in reducing cases of *Klebsiella* mastitis. Teat end cleanliness prior to milking unit attachment is an important area to monitor when trying to prevent *Klebsiella* mastitis.

Teat Skin Health

Researchers observed a relationship between herds with dry teat skin (scaly, flaky and rough) with open lesions (cracks, cuts, incisions and burns) and *Klebsiella* mastitis.

Vaccination

Research performed at the Iowa State University dairy farm demonstrated that cows given a commercially available *Klebsiella* vaccine (Vaxxon SRP *Klebsiella*) had 76% fewer cases of *Klebsiella* mastitis, and 55% fewer cases of mastitis caused by any coliform bacteria than



*Pictured above is a down cow with *Klebsiella* mastitis. *Klebsiella* is a type of bacteria that can cause severe clinical mastitis in dairy cows.*

cows given a placebo. Producers should work with their veterinarian to determine if vaccinating for *Klebsiella* mastitis is right for their herd.

Fecal Shedding, Gut Health and Nutrition

Subacute ruminal acidosis (SARA) and rations with higher starch levels may increase *Klebsiella* shedding in manure.

During heat stress, cows are at an increased risk of developing SARA because they often eat erratically, sometimes engaging in slug feeding and sorting, which can cause changes in rumen pH.

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