

Down Cow Series – Part 3: Toxic Mastitis

It is always important to check a down cow's udder and milk (and post-dip them after). Not only can certain types of mastitis be the cause of a cow going down, being down puts a cow at risk for developing mastitis because of the contact with the dirty ground and not being milked out. Either way, a down cow with mastitis needs prompt treatment.

The most common cause of mastitis that will result in a down cow is coliform mastitis. This type of mastitis is caused by coliform bacteria, such as *E. coli* or *Klebsiella*. These bacteria have an outer covering that contains a deadly toxin called LPS. When this toxin is released by the bacteria into the cow's blood stream it will cause the cow to become very sick and often go into septic shock. This condition can result in the cow being down. Another term for this condition is endotoxemia, which is why we call it "toxic mastitis".

Clinical Signs of Toxic Mastitis

- Fever: Rectal temperature >102.5
- Mucous membranes (gums, vulva) being dark red-purple or having pronounced blood vessels
- Udder may have a hard, hot, or red quarter. Milk usually watery-bloody and foul smelling. However, early coliform mastitis may not have obvious milk changes.
- Sunken eyes caused by dehydration
- Off-feed
- Watery diarrhea
- Endotoxemia can result in low calcium, which is part of the reason toxic mastitis cows go down. Therefore, cows with toxic mastitis may also show signs of milk fever (S-shaped neck, trembling, weak, cold ears)

Mainstays of Treatment for Toxic Mastitis

Often these cows are very sick and need to be seen by a veterinarian immediately unless you have a written protocol for treating these cows on your farm. The mainstays of treatment for these cows are as follows:

- *Anti-inflammatory drugs*: Flunixinamine or Banamine in the vein (IV) directly counteracts the LPS toxin in the blood, decreases inflammation in the udder, and lowers their fever
- *Fluid therapy*: Hypertonic saline IV and oral fluids will help support their cardiovascular system which is affected by endotoxemia. It is important to note that any time hypertonic saline is given, the cow needs fluids by mouth immediately after either by drinking or drenching. Drenching a down cow is risky so contact your veterinarian to do so.
- *Calcium*: Since endotoxemia can result in low calcium, calcium should be given. If the cow is down, a bottle of 23% calcium can be given IV slowly. Once standing, they can be given an oral calcium supplement such as BoviKalc.
- *Antibiotics*: Often these cows need systemic antibiotics (given IV or in the muscle) to fight the infection. Contact your veterinarian to discuss antibiotic options.

Prevention of Toxic Mastitis

Coliform mastitis is an environmental mastitis, meaning that cows get the infection when their open teats come in contact with the bacteria in the environment. Since coliform bacteria are commonly found in manure, this mastitis will occur when cows are exposed to an environment with excessive manure. For this reason, cleanliness and teat hygiene are the mainstays of prevention of toxic mastitis.

- Cleanliness: The areas where a cow lays (stall, bedded pack, pasture, dry lot) should be cleaned often. Bedding in stalls should be changed daily to prevent build up of bacteria in it. Hydrated lime can be used as a tool to keep areas dry and decrease bacteria load in the environment.
- Hygiene and milking procedure: Using proper teat dips pre and post milking, wearing gloves during milking, and properly cleaning teats prior to milking are all important parts of preventing coliform mastitis.
- Milking machine maintenance: Make sure your milking machines are in good working order to prevent liner slip and teat damage.
- Teat sealants: These products help keep the teat protected during the dry period to help prevent coliform bacteria from entering the udder.
- Post-milking environment: After milking, a cow's teat remains open for up to 30 minutes, sometimes longer. At this time, bacteria can easily make their way into the udder. For this reason, it is important that cows should remain standing for the period of time after milking. This can be done by offering fresh feed and water immediately after milking so they will stand to eat/drink.
- Vaccination: There are certain vaccines that can aid in the prevention of toxic mastitis. Talk with your veterinarian about these products.

Down cows with toxic mastitis need immediate attention and treatment, because without proper treatment endotoxemia can quickly result in death. All of the previously discussed management tips for a down cow also apply for a cow with toxic mastitis. As always, please contact us with any questions regarding a cow with toxic mastitis, especially if you are seeing more cases than normal.

Remember, always check a down cow's udder for mastitis!