Bacillus spp.: A Practical Summary for Controlling Mastitis

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Bacillus spp. are environmental, Gram-positive, endospore-forming pathogens that can cause mastitis. Bacillus spp. will grow large, slightly gray colonies with irregular edges that are often surrounded by a clear zone of hemolysis when grown on blood agar. Some Bacillus spp. can cause acute and potentially fatal gangrenous mastitis. Spores from Bacillus are heat- and chemical-resistant.

Information in this publication was summarized from the National Mastitis Council’s Laboratory Handbook on Bovine Mastitis (Hogan et al. 1999).

Where are these organisms found? Bacillus spp. are typically found in soil, water, dust, feces, air, vegetation, and wounds or abscesses.

How does Bacillus spp. spread to the mammary gland? Bacillus spp. are introduced into the udder via contaminated treatment or treatment devices and as a result of improper teat sanitation prior to intramammary treatment.

How can you prevent and control mastitis caused by Bacillus spp.? Aseptic infusions are important for preventing these infections. When infusing the mammary gland either for mastitis treatments during lactation or at the time of dry cow therapy, only single-dose sterile treatment tubes should be used, and teat ends must be scrubbed clean with 70 percent alcohol prior to infusion. During intramammary infusion, partial insertion of the cannula will help to prevent the introduction of Bacillus spp. into the mammary gland.

When are Bacillus spp. mastitis infections most likely to occur? New infections can occur at any time during lactation, but most occur when cows have access to pasture. Furthermore, dirty infusions could force Bacillus spp. into the mammary gland when using intramammary products either for mastitis treatment or dry cow therapy.

How likely is Bacillus spp. mastitis to be cured? Some Bacillus spp. will respond well to broad-spectrum antibiotic therapy. However, bacterial spores are resistant to heat and chemical disinfectants, which could allow for recontamination of the environment.

Quick Notes
- Bacillus spp. are environmental pathogens that can be found in soil, dust, air, manure, and vegetation.
- Bacillus spp. could infect the mammary gland when cows have access to pasture or through dirty infusions prior to intramammary treatment or dry cow therapy.
- Aseptic infusion is the primary way to prevent infection by this pathogen.
- Broad-spectrum antibiotics should be capable of curing some Bacillus spp. infections.

References