



**Wisconsin Veterinary
Diagnostic Laboratory**
UNIVERSITY OF WISCONSIN-MADISON

Klebsiella species

Background

Klebsiella species are Gram-negative coliform bacteria that can cause mastitis, leading to significant economic losses on dairy farms. *K. oxytoca* and *K. pneumoniae* are the species that are responsible for causing mastitis.

Source and Transmission

Like other coliforms, *Klebsiella* are found in manure, and manure easily contaminates the environment of the dairy cow. Drinking water, feed, other cows, and bedding (especially wood by-products) are some sources of environmental *Klebsiella*. Infection through the teats can lead to spread of the pathogen during milking as milk from an infected cow contaminates the milking unit and transmits the infection to the next cow that is milked.

Disease

Of all *Klebsiella* cases, approximately a third are mild (abnormal milk), a third are moderate (abnormal milk and swollen udders), and a third are severe (systemic signs, including fever, off feed, decreased milk production, shock, or recumbency). *Klebsiella* invades deep into the secretory tissue of the udder, compromising the secretory capacity of the mammary gland. Consequently, some *Klebsiella* infections become chronic, and infected cows suffer a long-term reduction in milk production.

Treatment

Once a cow is tested positive for *Klebsiella*, the somatic cell count (SCC) history of the cow should be reviewed to decide whether a treatment may be needed. One or more months of a SCC exceeding 200,000 cell/mL is an indication of a chronic infection and antimicrobial treatment would be warranted. However, no intramammary antimicrobials are labeled for the treatment of *Klebsiella* infections in the U.S., so any intramammary antimicrobial use for *Klebsiella* infections is extra-label usage and must be supervised

by a veterinarian. In severe cases of *Klebsiella* mastitis, treatment consists of fluids, anti-inflammatories, and systemic antimicrobial therapy.

Prevention and Control

Identification of chronically infected cows is crucial in the control of transmission; an effective on-farm culturing program should be implemented for the early detection of infected cows. Cows with chronic mastitis should be segregated and milked last, and culled when possible. Proper milking practices, including pre- and post-milking teat disinfection, are important for good udder hygiene and minimizing spread of the infection during milking. Maintaining a clean, dry environment is important in reducing teat-end exposure to manure. Since *Klebsiella* is associated with certain types of bedding, the bedding should also be taken under consideration. Finally, coliform mastitis vaccines have proven to be effective at lessening the severity of clinical cases.

References

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