

Sources of Intramammary Infections from *Staphylococcus aureus* in Dairy Heifers at First Parturition

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The study objective was to identify probable sources and modes of transmission of 91 *Staphylococcus aureus* isolates obtained from the colostrum of 76 heifers at parturition. Sources cultured were milk (including colostrum), heifer body sites (teats, muzzle, rectum, vagina, and lacteal secretions), and environmental sites (bedding, insects, housing, water, feedstuffs, humans, nonbovine animals, air, and equipment). *Staphylococcus aureus* isolates were characterized by 63 phenotypic traits. A similarity coefficient was calculated by herd to identify the *S. aureus* that most closely resembled the *S. aureus* obtained from heifer colostrum. *Staphylococcus aureus* from a heifer's colostrum was compared with all preexisting *S. aureus* isolates from that heifer's herd. Isolates that were $\geq 90\%$ similar were considered to be identical. Because 30 (of the 91) *S. aureus* isolates from heifer colostrum were collected prior to environmental sampling, only 61 *S. aureus* isolates from heifer colostrum were available for comparison among all three sources. Possible sources of *S. aureus* from heifer colostrum at parturition were milk (70%, 43 of 61 isolates), heifer body sites (39%, 24 of 61), environmental sites (28%, 17 of 61), or no identified source (16%, 10 of 61). Three heifers with intramammary infection (IMI) from *S. aureus* at parturition had the same *S. aureus* on their teats prior to parturition. Milk was the only source identified for 41% (25 of 61) of isolates from heifer colostrum. Isolates from heifer body sites were the only source identified for 5% (3 of 61) of heifer colostrum isolates. *Staphylococcus aureus* from the environment was never the sole possible source for *S. aureus* from heifer colostrum. Data suggest that the major sources of *S. aureus* IMI in heifers at parturition are milk and heifer body sites. Contact among heifers may be an important mode of transmission of *S. aureus* leading to IMI in heifers at parturition.

Key Words: heifer mastitis • *Staphylococcus aureus* • mastitis sources • transmission

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