Variation in clinical mastitis detection frequency and etiology among milkers

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Introduction

Early detection of clinical mastitis cases is considered key for the success of therapy and to maintain milk quality. Often times, milkers detect clinical cases by observing milk appearance during forestripping, the process by which the first streams of milk are expressed from each teat prior to milking. Individual milkers' motivation and training may have an important role on their sensitivity to detect new cases. Therefore, it is expected to observe variation on clinical cases detection frequency among milkers. Also, etiology of clinical cases may vary depending on intensity of detection. Our objectives were to describe variation in 1) clinical mastitis detection frequency among milkers; 2) cases with bacterial growth among milkers; and, 3) etiology of clinical mastitis among milkers with low and high levels of detection.

Materials and Methods

Clinical mastitis records from 712 clinical mastitis cases occurring during summer 2014 from 1 large dairy herd in the California Central Valley were available to us. Cows were milked twice a day in 2 separate parlors by 2 different milking crews in each parlor (AM and PM). Milking procedures included forestripping with observation of milk appearance on the parlor floor. When abnormal milk was observed a milk sample was collected, labeled with the milker ID, and cultured on-farm following the Minnesota Easy Culture system. Culture results were classified as no-growths when bacteria were not isolated, gram-negatives, gram-positives, and, mixed culture when gram-negatives and gram-positives were isolated from the same sample. The study database included the date samples were collected, ID of the cow and quarter affected with clinical mastitis, ID of the milker collecting the sample, and, culture results. Also, work hours for each milker were available from an electronic clocking system. Finally, milkers were classified in low and high detection rate groups according with the number of cases detected in 100 working hours.

Results

The total number of cases detected among 10 milkers ranged from 21 to 113, and the number of working hours from 817 to 987. The number of cases detected per 100 working hours ranged from 2 to 12 among milkers. Milkers 1 to 5 detected 2 to 7 cases/100 hours and were classified as low detection milkers. Milkers 6 to 10 detected 9 to 12 cases/100 hours and were classified as high detection milkers. Of all milk samples collected, 67% of them were collected by the high detection rate group and the other 33% by the low detection rate group. The percentage of samples from which bacteria were isolated ranged from 38% to 71% among milkers. However, milker's clinical mastitis detection rate did not affect the percentage of samples with bacterial growth or etiology. Bacteria were isolated in 58% of cultures from samples collected by the 2 clinical mastitis detection rate groups. Gram-positive were the bacteria most commonly isolated from both groups with 32% of the samples; gram-negative bacteria represented 21% and 16% of isolates in groups low and high, respectively; and, mixed cultures 5% and 10% in groups low and high, respectively.

Significance

There was a large variation among milkers in clinical mastitis detection rate and in the percentage of samples with bacterial growth. However, neither the percentage of samples with bacterial growth nor the etiology were influenced by the level of detection. Therefore, it appears that high clinical mastitis detection rates can be achieved without increasing the percentage of cases without bacterial growth.