Dairy cows and udder infection - Does standing after milking help?

**What is this research about?**
It is important to reduce the number and severity of udder infections in cows. It is widely believed that the longer a dairy cow stands after milking, the less likely bacteria can cause unwanted intramammary infection (IMI). One possible reason is due to the increased diameter of the teat canal in dairy cattle immediately following milking. Preventing the teat end from touching the ground after milking could potentially reduce the incidence of IMI in dairy cattle.

Some previous studies suggest that longer standing times after milking reduces the occurrence of IMI. This research was designed to better understand the tendency of dairy cows to lay down following milking. This research was also aimed to determine if fresh feed given to dairy cows closer to the time of milking encouraged longer standing times after milking. The relationship of post-milking standing times and the frequency of IMI was also assessed.

**About the Researchers:**
Trevor DeVries is an Associate Professor with the Department of Animal and Poultry Science at the University of Guelph, Kemptville Campus. It is published in DeVries, T. J., Dufour, S., Scholl, D.T. (2010). Relationship between feeding strategy, lying behavior patterns, and incidence of intramammary infection in dairy cows. *Journal of Dairy Science*, 93, 1987-97. tdevries@uoguelph.ca

**What you need to know:**
This study found a direct connection between standing time after milking and intramammary infection (IMI) incidence in cows. The results suggest that feeding cows within thirty minutes of their milking time, before or after, altered their standing behaviour. On average cows stood for 15 minutes longer after milking when fed during that time frame. The results of this study also confirm the findings of previous studies regarding the vulnerability of a cow’s teat canal to infection in the immediate time period after milking. The results also suggest that standing for extended time periods may also put cows at risk of IMI.

**How can you use this research?**
Dairy farmers can use this research to formulate new strategies to prevent IMI in their cows. Feeding dairy cows within 30 minutes of milking altered their tendency to stand by 15 minutes. This may help prevent cows from lying down immediately after milking, a time period where they may be at higher risk of IMI. The results also suggest that producers need to be wary of those cows that spent very long periods of time standing after milking, as they may be at higher risk of infection.

**Keywords:**
Intramammary infection, dairy cows, teat diameter, lying behavior, feeding strategy

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What did the researchers do?
The researchers used 15 lactating cows from each of the six tie stall dairy farms in the study. From each farm, five of the dairy cows had most recently calved and 10 were randomly chosen. Samples were taken and resampled twice at 3-week intervals for a total of 3 samplings from June 2008 to August 2008.

Using the samples, bacterial analysis was performed to identify pathogens found in the milk. In order for a sample to be considered IMI free, there had to be two consecutive IMI free samples over a 3 week observation period.

The researchers used a data logger, which is a device that measures leg orientation in cows at 1-minute intervals. This allowed for all of the standing and lying behaviour of the cows to be collected electronically. This data was useful in determining the standing and lying times, both frequency and length.

Along with data from the cows’ lying behaviour, the daily times of individual milking were recorded in addition to the timing of feed delivery. The cleanliness of each cow was also scored. All other relevant information was gathered from DHI records. Also, on farm observations provided even further relevant information, which included a validated health, housing, and management questionnaire.

To determine the association between post-milking standing time and incidence of IMI, the cows’ average standing time was determined during the last 7 days of each sampling period to highlight any differences.

What did the researchers find?
Dairy cows that were fed 30 minutes before to 60 minutes after milking had the longest post milking standing time. The greater delay between milking and food delivery resulted in shorter post-milking standing times.

There was a clear non-linear relationship between post-milking standing time and IMI incidence. The IMI incidence rate decreased with cows standing up to 45 minutes after milking. The statistical model also suggested that there was an increased risk of acquiring a new IMI as post milking standing time increased beyond 60 minutes.

The presence of feed around the time of milking (between 30 and 60 minutes after milking), resulted in the longest post milking standing times. While there were no specific measurements of teat canal diameter, IMI incidence can be associated with the teat canal’s change in diameter post milking. Earlier studies on the teat canal diameter of cows identified two potential periods of time where cows are most susceptible to IMI. Immediately following milking and after 2-4hrs. Results from this study suggest that the period 2-4hrs after milking, IMI incidence is the greatest and thus dairy cows are most susceptible during that period. It is conceivable that freshly applied teat dip protects cows with an increased teat diameter during the 30 minute period following milking.

Cite this work:

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