Afimilk Technology a Front-Line Defense for Early Detection of H5N1 in Dairy Cows

Since its first detection in U.S. dairy cattle in 2024, highly pathogenic avian influenza (H5N1) quickly proved to be a costly problem. One of the first infected herds studied showed that 32% of cows were affected within 45 days resulting in a 7% milk yield decline overall with some days' production losses reaching 22%. The financial losses on this herd totaled nearly $80,000 – roughly $500 per affected cow – with 92% of that loss coming from reduced milk output (Rodriguez et al., 2025, *J. Dairy Sci.*).

While the per cow cost is comparable to other major production diseases such as mastitis, the impacts of H5N1 are compressed into a shorter and more intense time period. With no cure currently available, early detection is the most powerful tool for protecting a dairy's herd, milk and profitability.

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The Impact of Early Detection

While there is still much to learn about H5N1 in dairy cows, we do know it can spread quickly through shared milking equipment, feed and dairy personnel moving between barns. Therefore, it's agreed that the sooner an infected animal is identified, the sooner it can be isolated to keep the virus from moving between cows, farms, or into nearby poultry or wildlife.

Early detection can also:

- ***Support cow welfare and recovery.*** While the death rate is low, many infected animals experience a lose of appetite, drop in production, or develop fever and lethargy. Early intervention provides the chance for supportive care that minimizes losses and prevents prolonged suffering.
- ***Protect milk safety.*** Early diagnosis ensures contaminated milk is withheld from the supply chain to help maintain consumer trust, which is critical for market stability.
- ***Reduce human transmission risk.*** Human H5N1 infections linked to dairy cattle have been documented, primarily in farmworkers. Quick detection limits exposure, reduces the risk of the virus adapting to mammals, and helps safeguard farm personnel.

A Close Look at H5N1 on an Ohio Dairy

A group of researchers from Cornell University recently studied the impact of an H5N1 outbreak on a 3,800-cow dairy in Ohio, focusing on the risk factors associated with clinical disease and the consequences of infection on production. The dairy was a long-time Afimilk customer that managed the dairy using the Afimilk MPC (milking point controller) and milk meter, AfiCollar for cow monitoring and the AfiCollar Feed Efficiency service. The rumination, eating and milk production data collected with these technologies would prove to be crucial for the findings of this study.

Technology's Role in H5N1 Diagnosis

In this study, H5N1 diagnosis was confirmed using PCR milk testing. However, researchers found that health sensor data told the story earlier – often long before a cow looked sick.

Afimilk's milk meter and AfiCollar rumination/activity monitors deliver continuous, objective health data. What Cornell researchers found was that Afimilk technology caught subtle shifts in rumination activity and milk yield in sick cows **5 to 7 days before veterinary diagnosis** (Charts 1 and 2).

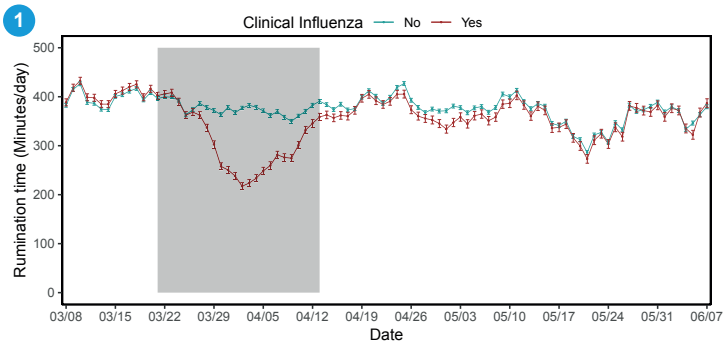
In fact, Cornell researchers stated that "farms utilizing monitoring systems should closely track individual cow rumination times and milk production, as decreases in these parameters can serve as early warning indicators" of H5N1.

There were a number of key findings that Afimilk technology helped to uncover:

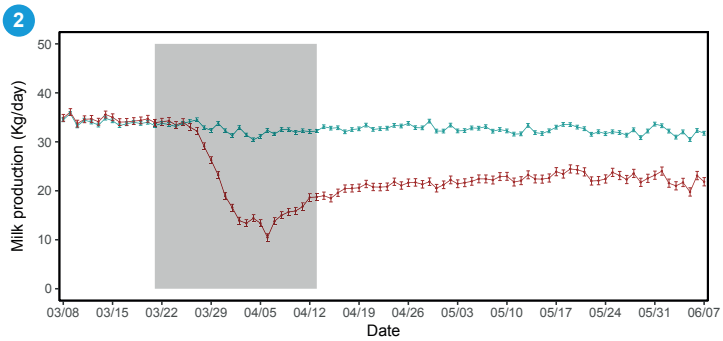
- Individual cow rumination and dry matter intake changes were seen 5 to 7 days prior to clinical diagnosis with AfiCollar and AfiCollar Feed Efficiency data.
- Milk production started dropping considerably 5 days before diagnosis and reached its lowest point 2 days after clinical influenza diagnosis. Within two weeks of clinical H5N1 detection, milk production in clinically affected animals decreased by nearly 73%.
- The risk of clinical influenza diagnosis increased as lactation progressed

Due to these declines, Cornell researchers estimated the total cost of the influenza outbreak on this Ohio dairy to be $932 per clinically affected cow.

1



2



Charts 1 and 2: **Rumination time and milk production in cows with and without clinical influenza.** *(The shaded area represents the period (March 21 to April 13, 2024) with at least one cow having a new clinical diagnosis of influenza in the study herd.)*

Detect Flu Earlier with Afimilk

H5N1 is a high-stakes challenge for today's dairy farms. An early warning could mean the difference between a contained case and a herd-wide outbreak. Earlier diagnosis allows for faster isolation, targeted testing, and quicker implementation of biosecurity protocols to help producers limit losses and protect both their herd, their personnel and their profitability.

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Automating Dairy Farms

*Peña-Mosca, F., Frye, E.A., MacLachlan, M.J. *et al.* The impact of highly pathogenic avian influenza H5N1 virus infection on dairy cows. *Nat Commun* 16, 6520 (2025). https://doi.org/10.1038/s41467-025-61553-z