

Highly Pathogenic Avian Influenza H5N1 Genotype B3.13 in Dairy Cattle: National Epidemiologic Brief



Overview

On March 25, 2024, USDA [announced](#) unpasteurized, clinical samples of milk from sick cattle collected from two dairy farms in Kansas and one in Texas, as well as an oropharyngeal swab from another dairy in Texas, have tested positive for highly pathogenic avian influenza (HPAI). USDA’s National Veterinary Services Laboratories confirmed the detection as HPAI H5N1 clade 2.3.4.4b, genotype B3.13. Phylogenetic analysis and epidemiology support a single introduction into this novel host followed by onward transmission.

This report provides field epidemiologic summaries using data collected from epidemiologic questionnaires for H5N1 affected dairy herds.

Objectives

- Better understand the H5N1 emerging health event in dairy cattle;
- Explore potential risk factors and transmission routes for infections in dairy cattle; and,
- Identify specific areas for future follow-up.

Epidemiologic questionnaires

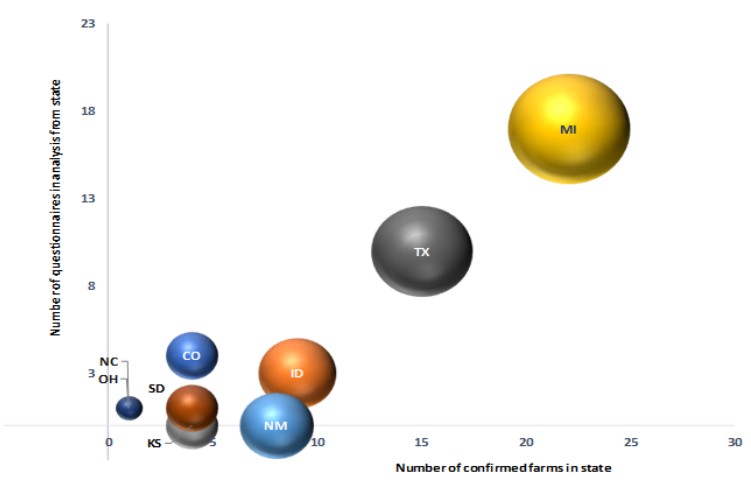
- Epidemiologic questionnaires were voluntary prior to the Federal Order (effective April 29);
- State-specific questionnaire information is integrated into the USDA questionnaire, where possible; and,
- Analyses focus on key epi questionnaire data.

Key Takeaway

Epidemiologic information is currently available for 54% of confirmed premises.

Key Messages

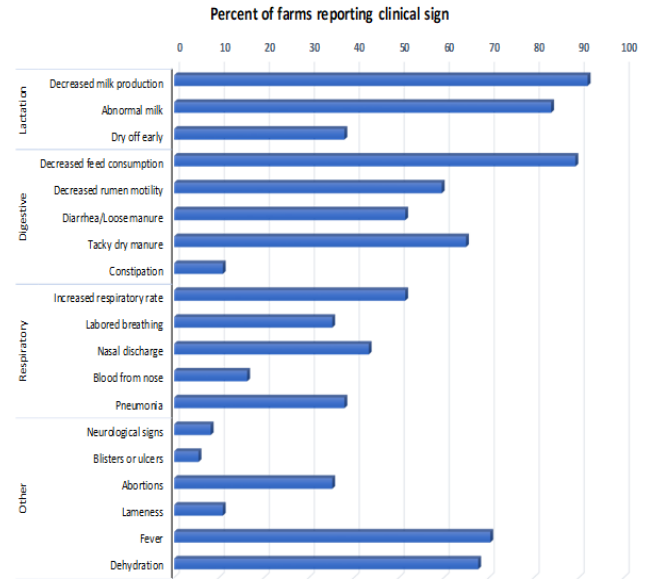
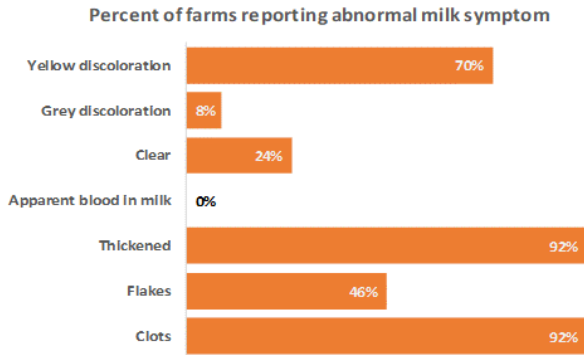
- The spread of H5N1 between states is linked to cattle movements (versus independent wild bird introduction) with further local spread between dairy farms in some states.
- Disease spread between dairy cattle farms is likely multi-factorial (direct and indirect transmission routes).
- **Biosecurity** is key to mitigate the risk of disease spread.



The Clinical Picture

Clinical Observations

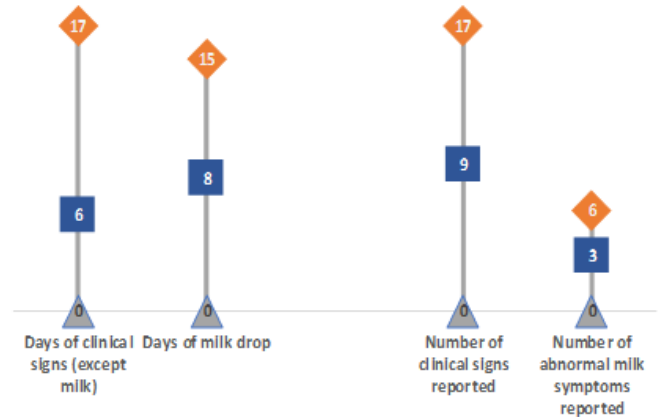
- >80% of farms report abnormal lactation and decreased feed consumption; and,
- >90% of farms reported thickened or clotted milk.



Morbidity and Mortality Overview

Key Takeaways

- The clinical picture is based on observations gathered soon after clinical onset;
- Impact varies significantly between farms;
- Lactating cows are most highly affected;
- Morbidity is <10% on average; and,
- Mortality and culling is 2% or less on average.



Cattle class	Farms % reporting animals exhibited clinical signs	Percent of animals that exhibited clinical signs (average)	Percent of animals that recovered (average)	Percent of animals culled (average)	Percent of animals that died (average)
Preweaned calves	0	0	0	0	0
Weaned unbred dairy heifers	0	0	0	0	0
Bred dairy heifers	4	0	0	0	0
1st lactation dairy cows	96	4	2	0	0
2nd lactation dairy cows	93	7	3	1	0
3rd or high lactation dairy cows	100	9	4	1	0
Dry dairy cows	35	5	3	2	1
Beef animals	0	0	0	0	0
Dairy bulls	0	0	0	0	0

Potential Transmission Links

Animal movement

- >20% of farms received cattle within 30 days of clinical signs; and
- >60% of farms continued to move animals off the farm after onset of clinical signs.

Key Takeaway

Animal movement is a known and recognized risk for disease transmission.

Other species present on dairy farms

- >80% of farms have cats present
 - >50% of farms with cats observed sick or dead cats; and
- >20% of farms have chickens or poultry present
 - Nearly all farms with poultry observed sick or dead poultry.

Key Takeaway

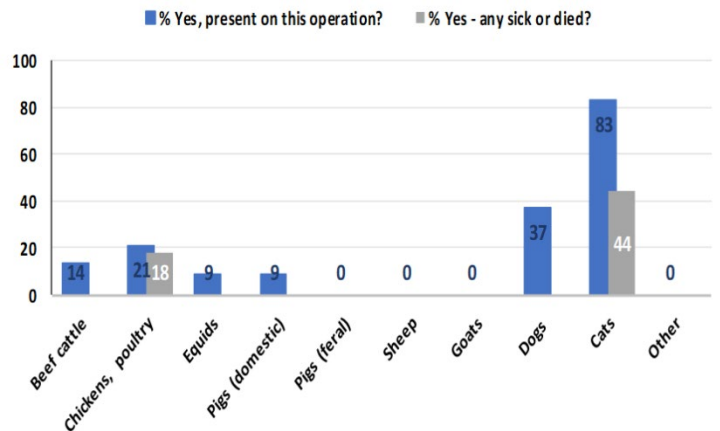
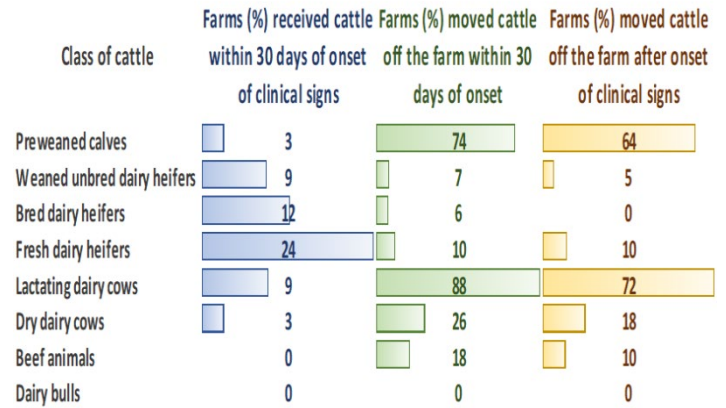
Other species present on a farm can become infected and potentially serve as a fomite or indicate disease status on farm.

Wild birds

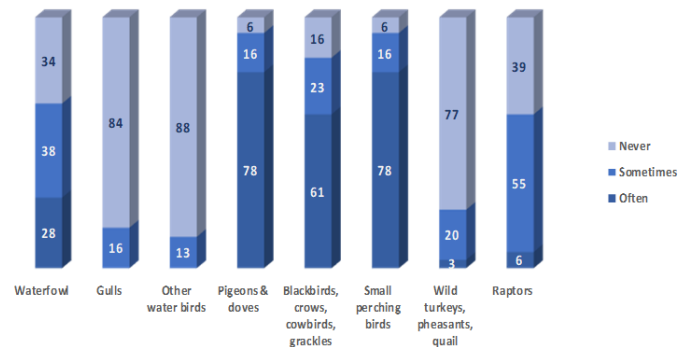
- All farms observe some type of wild birds near cattle; and
- 29% of farms observed sick or dead wild birds within 30 days prior to onset of clinical signs.

Key Takeaway

No genomic or epidemiologic evidence that **wild birds** are spreading H5N1 to cattle but cannot be ruled out.



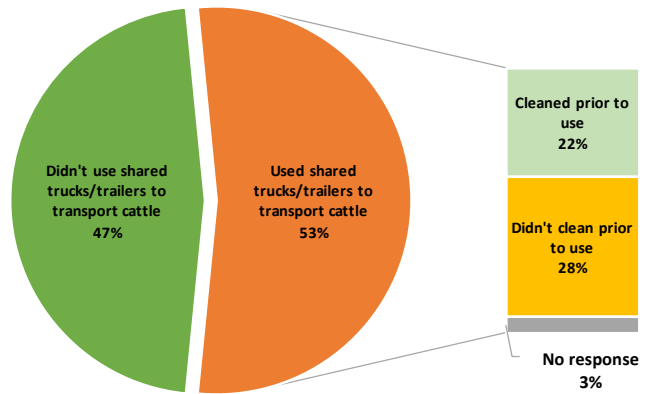
Percent of farms who observed birds on farm and within 100 feet of cattle, by type of bird and frequency



Potential Transmission Links

Shared transportation vehicles

- >50% of farms used trucks and trailers that are shared with other farms to transport livestock within 30 days prior to onset of clinical signs; and
- >50% of farms that used shared vehicles do not clean vehicles prior to use.



Key Takeaway

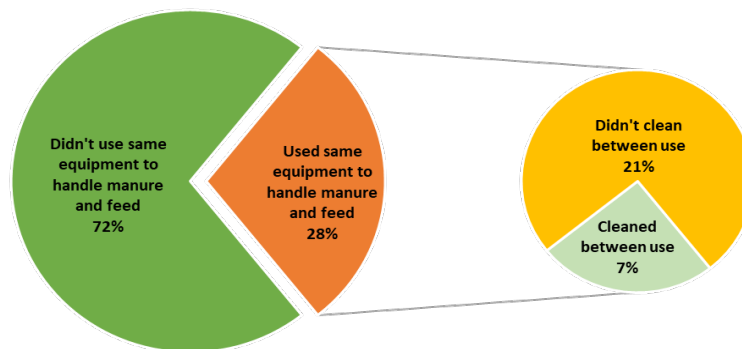
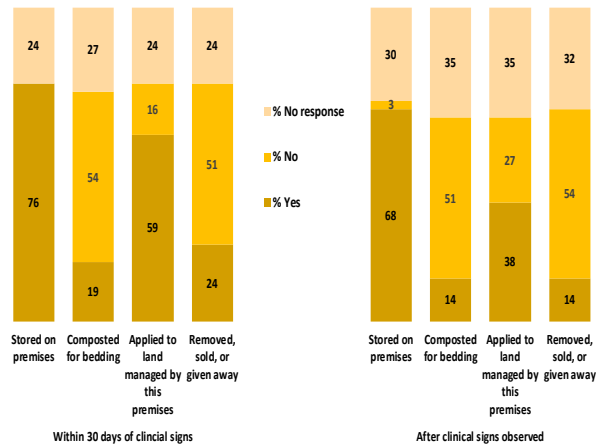
Shared equipment that is not cleaned between farms is a recognized risk for disease transmission.

Manure/Handling Equipment

- Majority of farms store manure on the farm;
- >25% of farms use the same equipment to handle manure and animal feed.

Key Takeaway

Risk from **manure** appears low based on individual cow manure samples, but more research is needed. Contaminated equipment is a recognized risk for disease transmission.



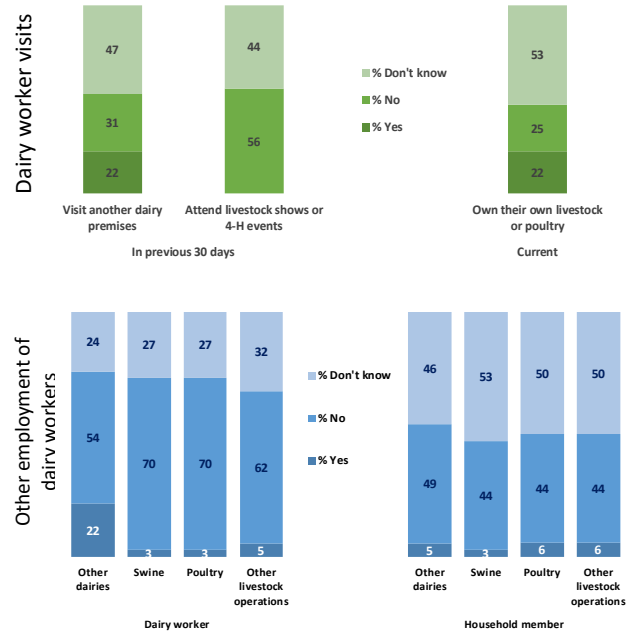
Potential Transmission Links

People: Shared Personnel

- >20% of dairies' employees visit other dairies within 30 days of onset of clinical signs;
- >20% of dairies' employees own livestock or poultry at their personal residence;
- >30% of dairies' employees work at another farm with livestock; most of these employees work on another dairy; and
- 20% of dairies' employees have family members who work at another farm with livestock.

Key Takeaway

Shared personnel are a recognized risk for disease transmission.

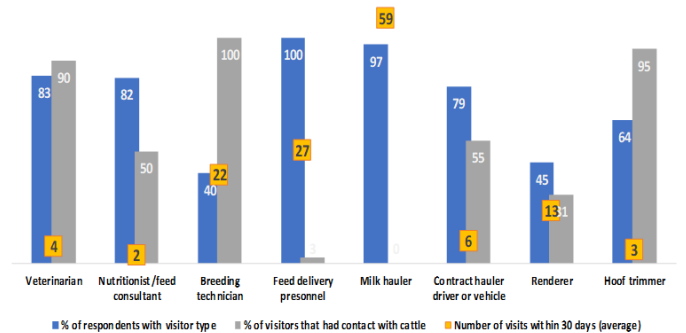


People: Support Services

- >60% affected farms have regular visitors who have contact with cattle; and
 - Veterinarians
 - Nutritionists/feed consultants
 - Contract haulers
 - Hoof trimmers
- >40% of farms use renderers and breeding technicians.
 - Frequent visitors
 - Most have contact with cattle

Key Takeaway

Frequent visitors with access to animals is a recognized risk for disease transmission.



For more information

Please visit USDA's [Highly Pathogenic Avian Influenza \(HPAI\) Detections in Livestock](#) website.