Understanding and Addressing Avian Influenza (H5N1) in Newcomer Populations

6/24/2025

Minnesota Center of Excellence in Newcomer Health

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IN NEWCOMER HEALTH
MINNESOTA

Acknowledgment

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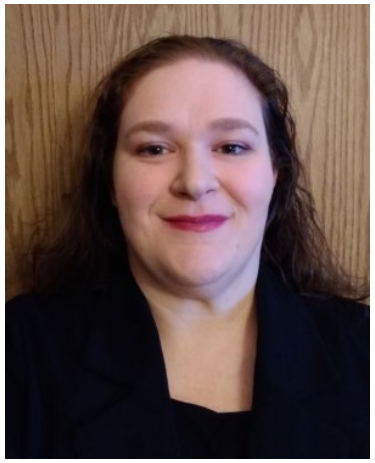
No financial conflicts of interest.

Learning Objectives

- Identify how novel/variant strains of influenza can develop and how these can be an occupational risk for newcomers.
- Recognize the risk factors for human infections of Avian Influenza (H5N1) and when human testing is recommended.
- Describe the importance of key partnerships and resource mapping to implement H5N1 preventative health education.
- Identify at least three strategies to deliver H5N1 health education to newcomers, including farmworkers.

Today's Speakers



Melissa McMahon, MPH, PhD

Minnesota Department of Health

Rosa Kandil Pérez

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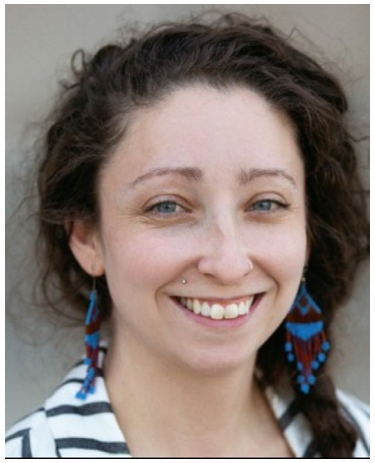

Lily Rubenstein, RN, BSN, PHN

Minnesota Department of Health

(Moderator)

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Agenda

- Background and epidemiology of H5N1
- Current outbreaks and human risk
- Clinical guidance
- Building partnerships & delivering H5N1 health education to farm worker newcomers
- Q&A

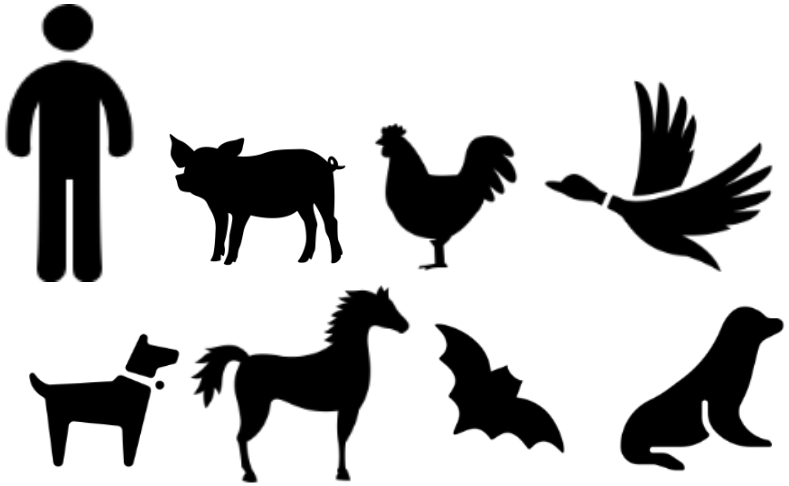
Avian Influenza (H5N1)

Melissa McMahon, MPH, PhD (she/her/hers)

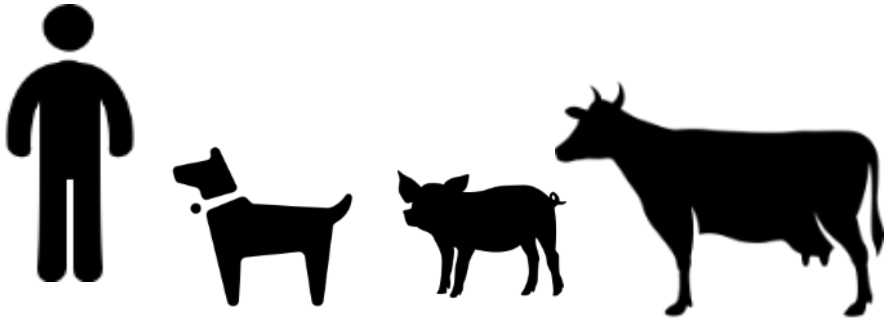
Supervisor, Influenza Surveillance Unit

Influenza is Alphabet Soup

Influenza A



Influenza C



Influenza B

Influenza D

NASPHV & CSTE Zoonotic Influenza Guide

slide by: Paige Palomaki

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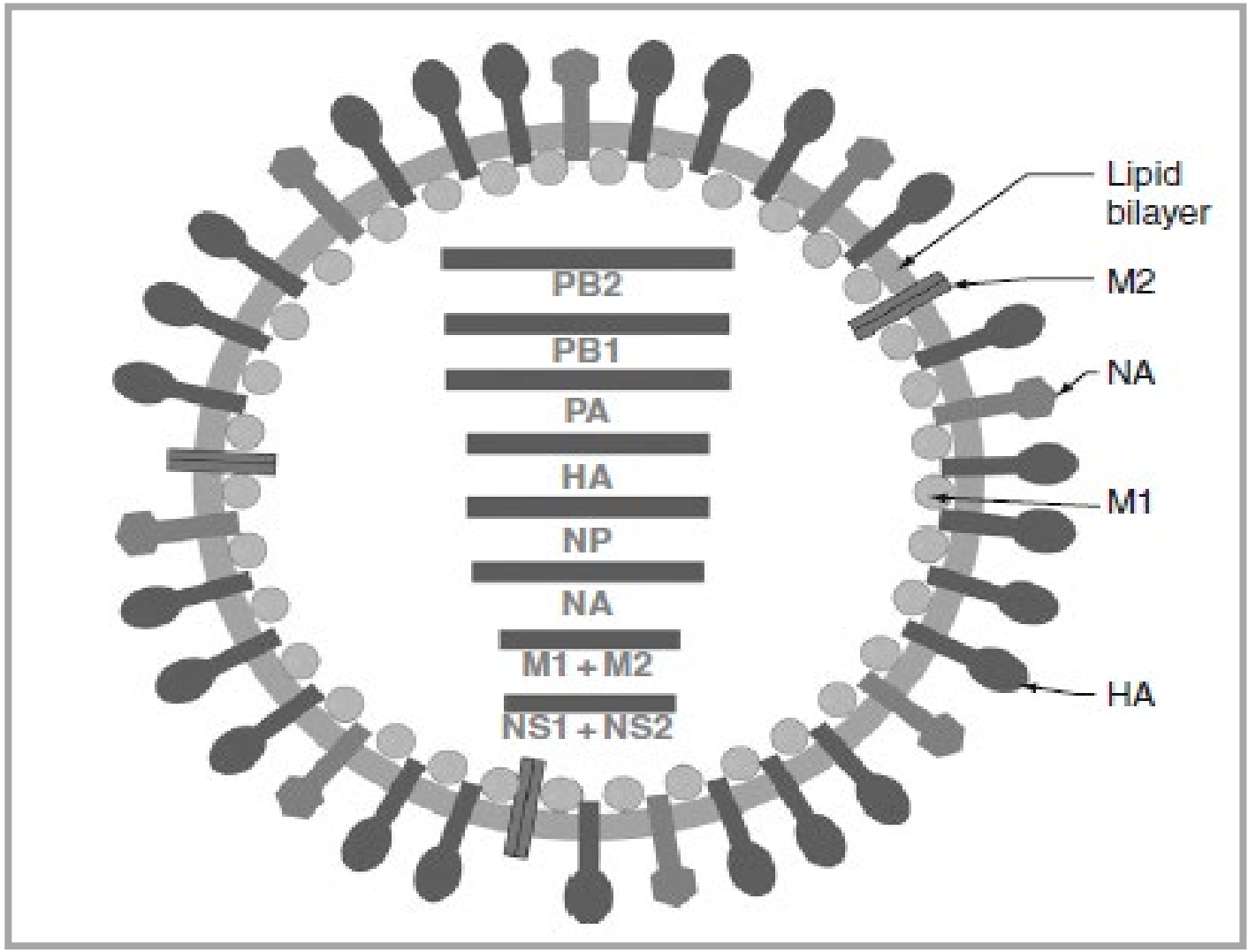
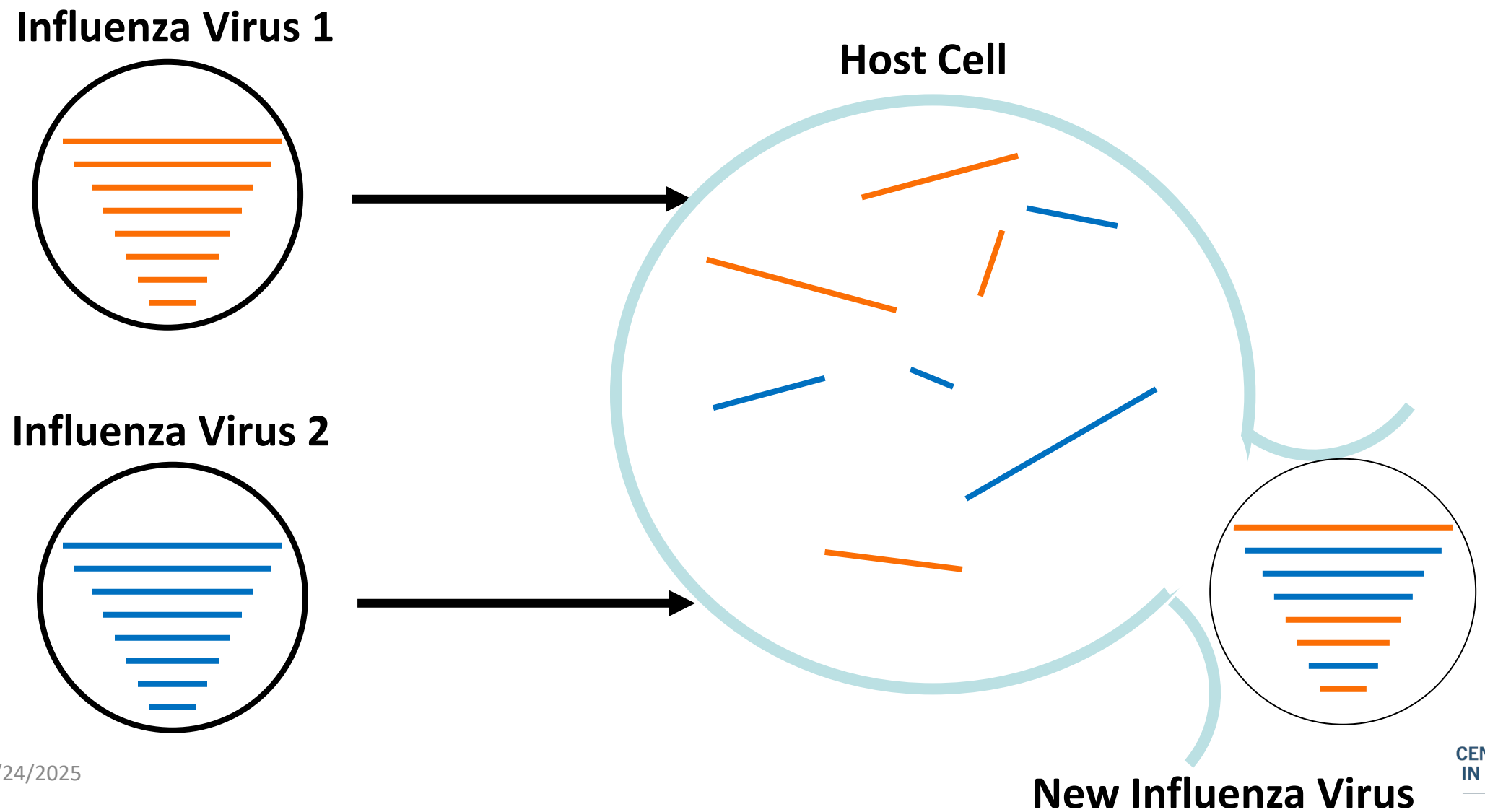
Influenza A Viruses

- Enveloped, segmented RNA viruses
- Infect multiple species
  - Many host adapted viruses
- Evolution of viruses:
  - Antigenic drift (point mutations)
  - Antigenic shift (gene reassortment)



Antigenic Shift or Reassortment



Finland reports H5N1 avian flu in blue foxes on fur farm

Lisa Schnirring, July 13, 2023

Topics: Avian Influenza (Bird Flu)

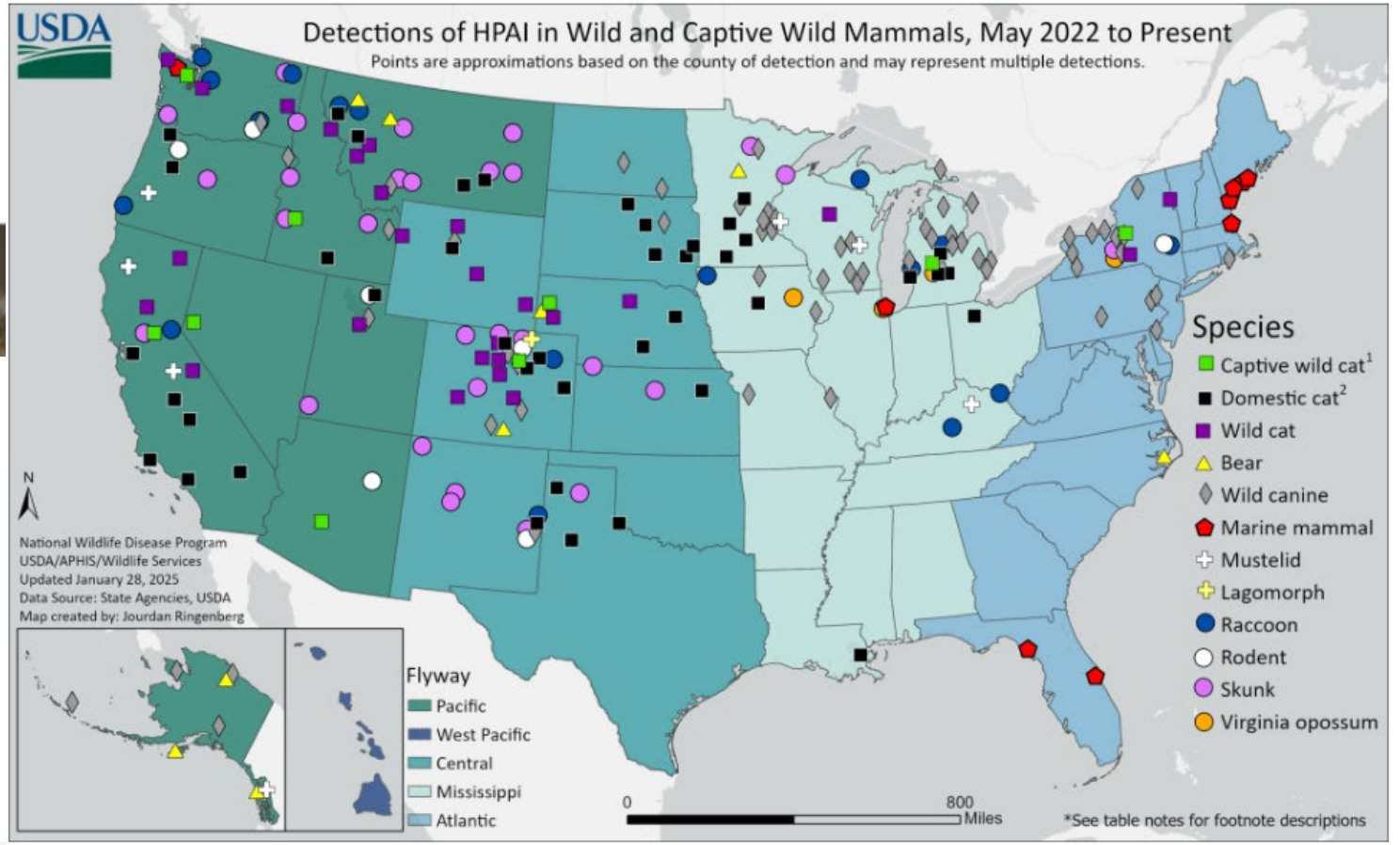
Cats suffer H5N1 brain infections, blindness, death after drinking raw milk

Mammal-to-mammal transmission raises new concerns about the virus's ability to spread.

BETH MOLE - APR 29, 2024 5:41 PM

Korea confirms avian influenza cases in cats for first time in 7 years

Mass Mortality at Punta Delgada: H5N1 Decimates Argentina's Elephant Seal Population



Avian influenza death of Alaska polar bear is a global first and a sign of the virus' persistence

PUBLISHED Jan 2, 2024

Explosion of sea lion deaths in Peru amid deadly bird flu outbreak

By CNN's Philip Wang and CNNE's Abel Alvarado

2 minute read · Published 7:16 PM EST, Mon March 6, 2023

Contribute Content

'Incredibly concerning': Bird flu outbreak at Spanish mink farm triggers pandemic fears

Spread among captive mink could give the H5N1 strain opportunities to evolve and adapt to mammals

2022 – 2025 H5N1 Positive Flocks and Herds

Nationally

- 1,676 Poultry Cases
  - 981 commercial poultry operations
  - 695 backyard flocks
- 1,000 Livestock Cases
  - 1 goat herd; 1 alpaca herd; 1 pig
  - 998 dairy cattle herds
- 106 Companion Animals
  - 106 cats

Minnesota

- 186 Poultry Cases
  - 142 commercial poultry operations
  - 44 backyard flocks
- 10 Livestock Cases
  - 1 goat herd
  - 9 dairy cattle herds
- 5 Companion Animals
  - 5 cats

H5N1 Avian Influenza Viruses and Human Risk

- H5N1 avian influenza viruses can be spread to people through direct contact with infected animals or their environments
  - Person-to-person spread is rare and limited
- Low risk to general public at this time
  - Risk is primarily occupational

Animal and Human Health Response

- Animal health monitoring is conducted by USDA (APHIS), local animal health agencies and departments of agriculture, and veterinarians
- Animals identified and reported by farmers/owners, and exposed persons compiled and sent to public health agencies
- Initiate active surveillance for 10 days for respiratory symptoms, or “Monitoring”
- Interview poultry workers/responders for work duties, flock contact, PPE usage, and illness history
- Test symptomatic poultry workers and responders in coordination local public health departments

MDH 2022-2025 Human Monitoring Experience

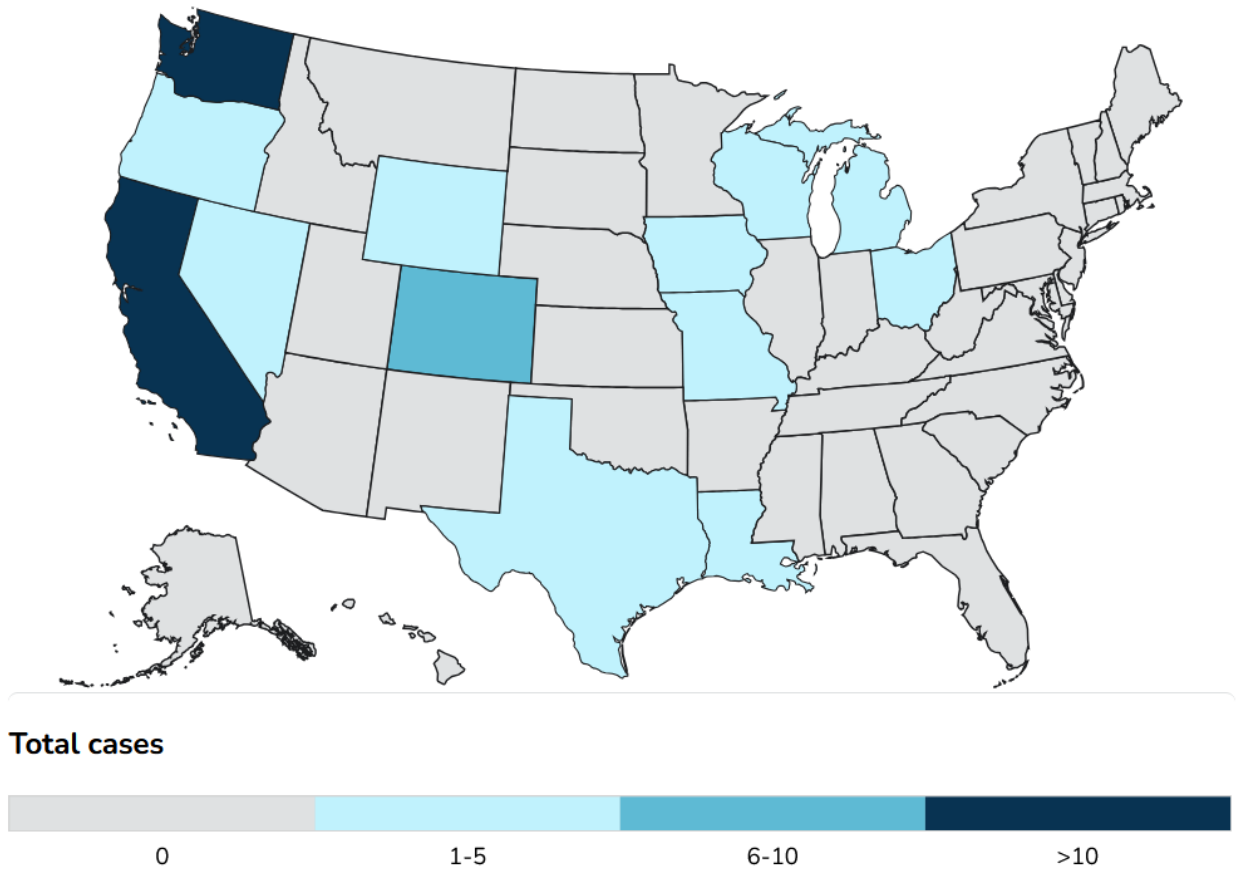
- People associated with 186 flocks, 9 dairy herds, 1 goat herd, and 5 cats interviewed, evaluated, monitored
- ~2,500 exposures reported to MDH
  - ~2,300 poultry exposures
  - 129 dairy exposures
  - 24 companion animal exposures

MDH 2022-2025 Human Testing Outcomes

- 108 people have reported symptoms and testing was recommended
  - Includes poultry workers, dairy workers, and responders
- 75 poultry workers, 2 dairy workers and 4 people exposed to positive cats have been tested
  - No human infections with H5N1
  - 30% tested had seasonal respiratory pathogens detected
    - Human metapneumovirus, SARS-CoV-2, seasonal coronavirus, rhinovirus, and parainfluenza virus-3

U.S. H5N1 Human Cases

- Human cases in U.S.: 70
  - Poultry farm/processing exposures: 24
  - Backyard poultry flock: 2
    - One patient death after extended hospitalization
  - Dairy cattle exposures: 41
  - Routine influenza surveillance: 3 (exposures unknown)
  - No new human cases identified since February 2025



CDC: H5N1 Bird Flu Surveillance and Human Monitoring (www.cdc.gov/bird-flu/h5-monitoring/index.html)

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Possible Exposure Sources and Symptoms – Human Cases

- **Exposures of concern for humans:**
  - They were exposed to sick birds (e.g., poultry workers, backyard flock owners), dairy cattle (dairy workers, hobbyists), or other H5N1-positive animals (including cats, goats, etc.)
  - They have recently consumed unpasteurized animal products, including raw milk
  - They have direct contact with the environments of animals who have been ill, including cleaning barns/animal bedding/etc.
- **Symptoms of concern following an exposure:**
  - Flu-like illness after exposure, including fever, cough, sore throat, runny nose, congestion
  - Fatigue, headaches, muscle/body/joint aches
  - Conjunctivitis/eye redness/itchiness

Testing and Evaluating Humans for H5N1

- Persons are recommended for testing if they are willing and meet criteria for exposure and symptom presentation
- Patients will have a NP swab collected, as well as a conjunctival swab if they are experiencing conjunctivitis
- Infection prevention recommendations are essentially the same as COVID recommendations (droplet and contact [N95] + eye protection)
- Tamiflu is recommended for high-risk contacts and symptomatic persons (testing not required)

Guidance for Providers

- Risk to the general public is very low, and there is no general recommendation for H5N1 testing for persons who do not have close, extended contact with ill animals.
- For persons/patients with concerns about H5N1
  - Please take a comprehensive patient history, including any close contact with poultry, cattle, or other farm animals or their environments, and any consumption or handling of unpasteurized animal products (such as raw milk).
  - Please call your health department to discuss need for H5N1 testing and specimen collection.
    - If you are in MN, call MDH at 651-201-5414.
  - Current information regarding H5N1 infections in animals: USDA: H5N1 Influenza (www.aphis.usda.gov/h5n1-hpai)
  - Current information regarding H5N1 infections in humans: CDC: H5 Bird Flu: Current Situation (www.cdc.gov/bird-flu/situation-summary/index.html)

Influenza A Subtyping

- For summer influenza surveillance (roughly mid-May through end of September):
  - Please continue to submit influenza positive specimens to your local Public Health Laboratory (PHL) for all Influenza A unsubtypeable (influenza A that types as neither H3 or 2009pdmH1N1)
  - Please continue to submit influenza positive specimens to your PHL for all hospitalized patients, especially for ICU patients
  - Submit influenza A positive outpatient specimens to your PHL per state/local recommendations
    - MN is accepting up to 5 influenza A positive PCR specimens per week from each outpatient facility in MN during summer months

Human Health Messages

- CDC print materials:
  - [CDC: Avian Influenza (Bird Flu) Resources (www.cdc.gov/bird-flu/print-materials/index.html)]
- MDH resources:
  - [MDH: Novel and Variant Influenza Resources (www.health.state.mn.us/diseases/flu/poster.html#novel)]
  - Human health sheets
  - PPE one-page infographic
  - Spanish worker video
    [Guía de Influenza A(H5N1) para Trabajadores de Granjas Lecheras y Avícolas (https://youtu.be/e1Ar8IqXb9Y)]
  - All are available for distribution

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Building Partnerships & Delivering H5N1 Health Education to Farm Worker Newcomers

Rosa Perez (she/her/hers)

Farmworker Liaison, Infectious Disease Equity and Engagement Unit

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CDC’s H5N1 Program for Farm Workers

- Special program offering **free seasonal flu vaccines** to farm workers in selected states. Minnesota being one of the first states to receive funds.
- CDC has provided more than 100,000+ doses of seasonal influenza vaccine to 12 states affected by H5 bird flu outbreaks in animals.

- **Program Goals**:
  - Prevent the spread of seasonal flu in these communities.
  - Safeguard public health by reducing flu transmission.
- **Key Benefits**:
  - Prevent potential co-infection with seasonal flu and other diseases.
  - Increase access and awareness of vaccines among farm workers.

Why Focus on Newcomer Farm Workers?

Farmworkers are uniquely at risk for H5N1 due to their increased exposure from their agricultural setting and are often left out of traditional health education channels.

Many barriers identified by community:

- Language and communication
- Mistrust of government and/or health care systems
- Access and logistics
- Lack of employer support
- Health literacy and awareness
- Cultural factors
- Resource and workforce limitations
- Data collection challenges

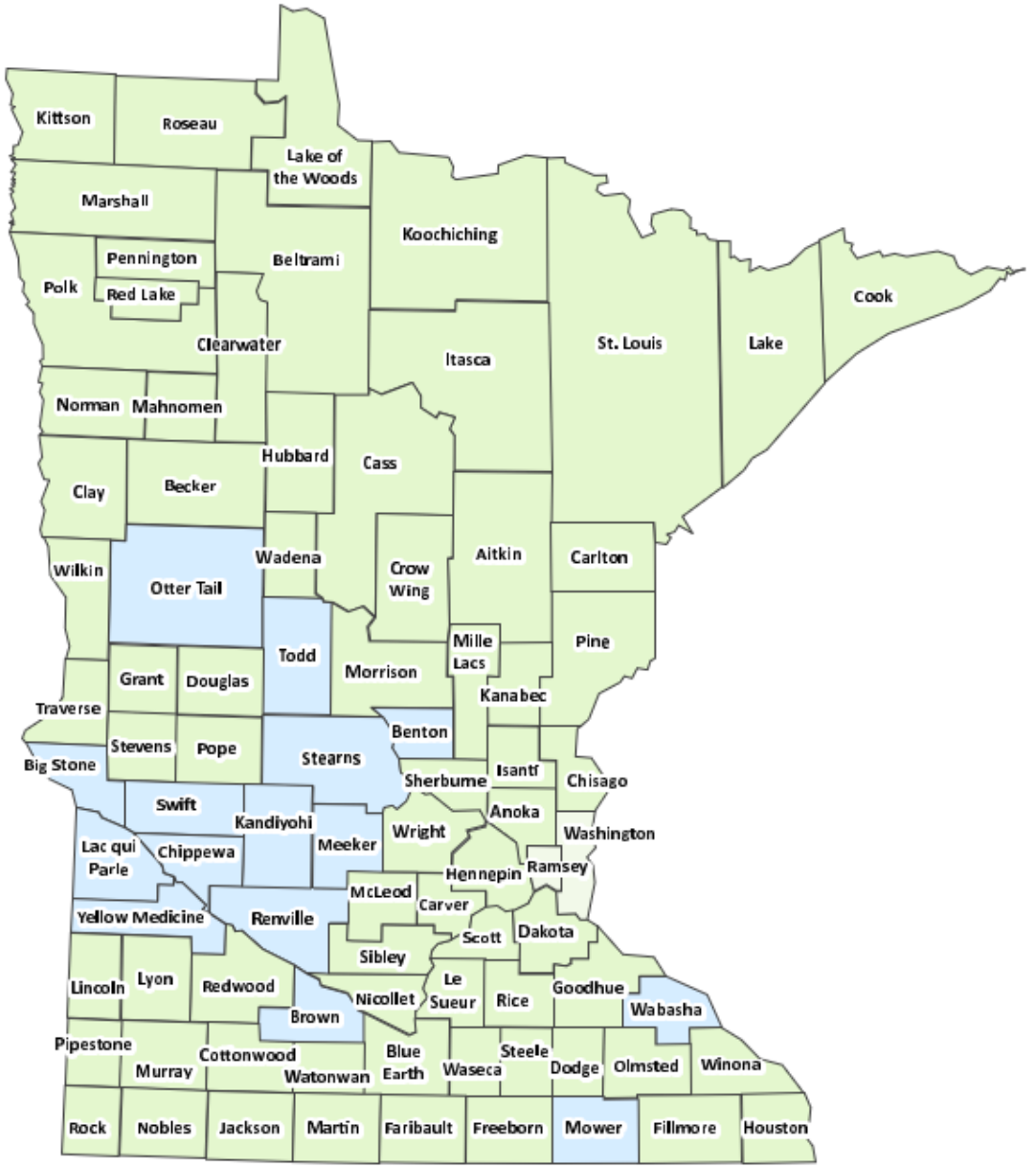
Framework

- **Need**: Rural health outreach for H5N1 education and flu vaccines
- **Strategy**:
  - Identify key partners
  - Map resources
  - Identify barriers
  - Tailor delivery approach and materials to community
- **Goals:**
  - Increase H5N1 awareness
  - Increase flu vaccine uptake
  - Improve trust and engagement through providing culturally sensitive services
  - Reduce barriers, including transportation
  - Real-time data collection
  - Build capacity
- **Timeline:** 3-6 weeks from initial contact to vaccine and educational events

Minnesota Response: Farm Worker Influenza Vaccine Outreach

At-risk Population Calculation Summary

- Zoonotic Diseases Section provided statistics and key data on poultry and dairy farms
- Counties with affected dairy herds and high population of dairy herds or poultry identified
- Additional data - dairy worker population to assess human exposure risks



Light blue=areas of initial outreach

Community-Based Prevention Matters

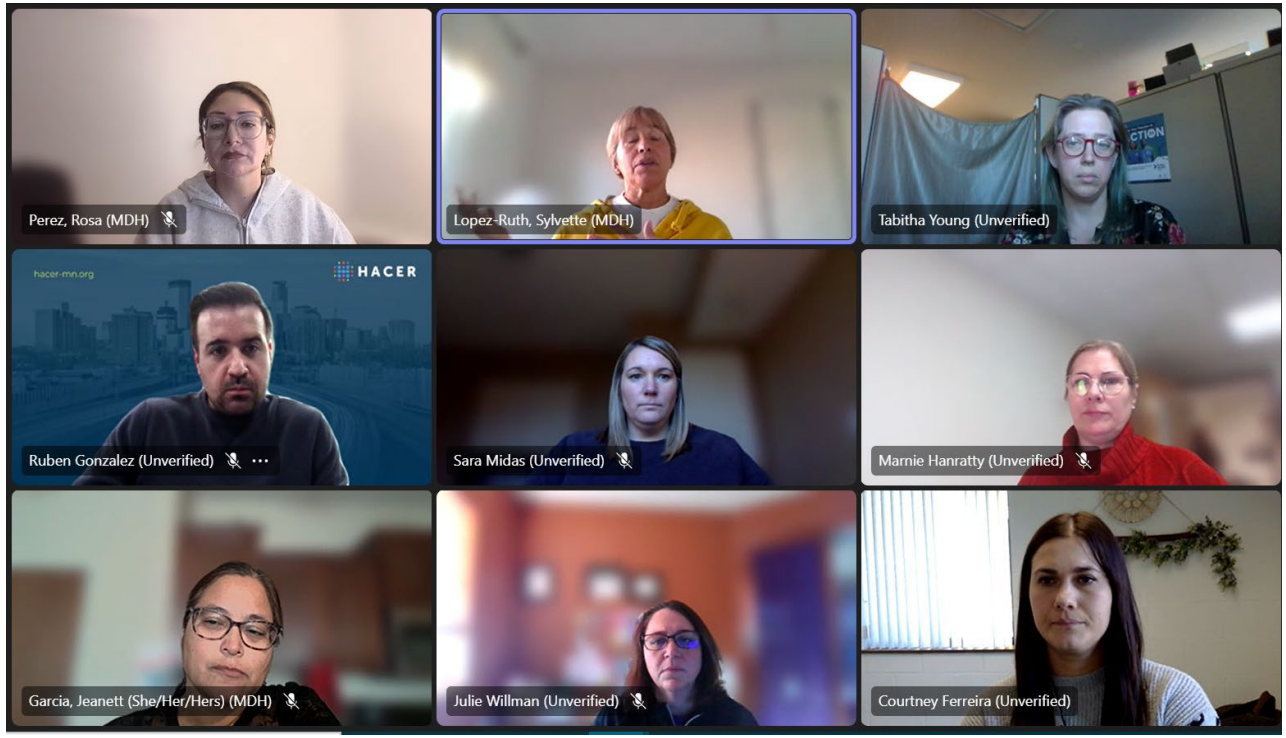
- Extend reach and trust into communities
- Leverage existing networks and relationships
- Share knowledge, resources, and responsibilities
- Ensure culturally and linguistically appropriate outreach
- Increase program credibility and sustainability

Building Partnerships: Farm Worker Influenza Vaccine Outreach

Building partnerships through **Community Collaboration**

- MDH hired bilingual farm worker liaison
  - Partnering with LPH and community-based organizations

- External partners
  - 25+ Local Public Health agencies
  - 20+ Community-based orgs: Fe Y Justice, HACER, Agape, and Copal
  - Minnesota Department of Agriculture, Minnesota Department of Employment & Economic Development, and Governor's Office



County-Level Meeting

PH Supervisor, Disease Prevention and Control Nurse, Emergency Preparedness Coordinator, and Case Aide

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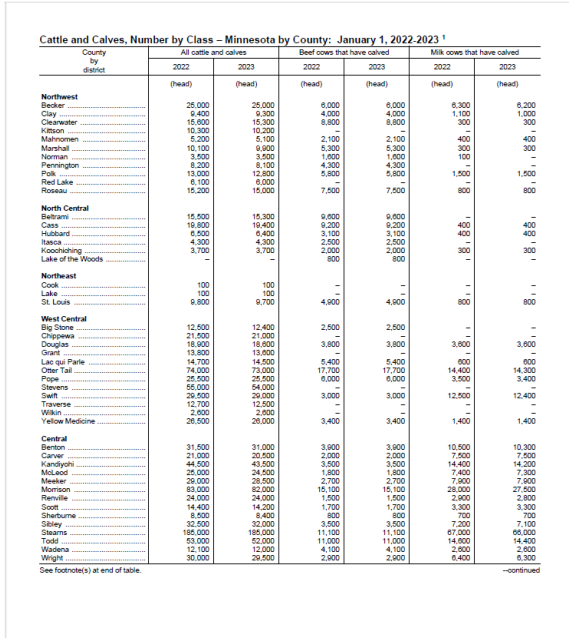
Resource Mapping Benefits

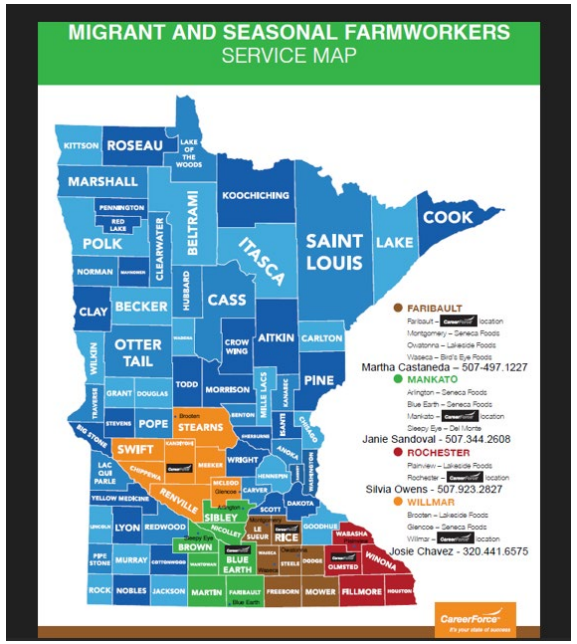
- **Go to the community and create partnerships with community and religious leaders**
- Understand who's doing what and where to prevent duplication of services
- Support coordinated planning and action
- Foster more efficient use of funding and time



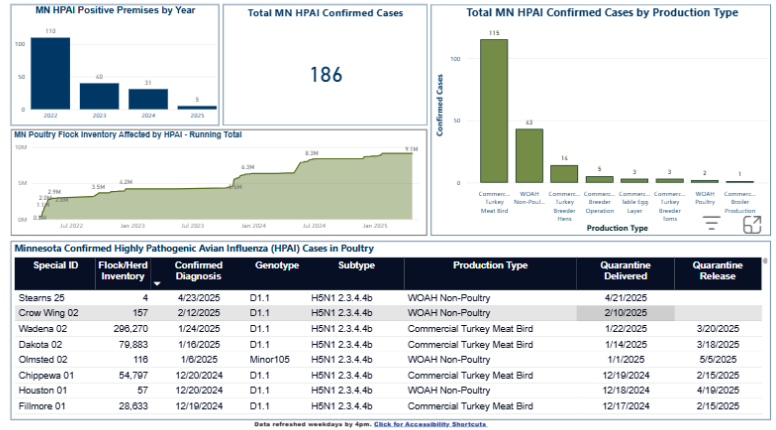
Cattle and Calves, Number by Class – Minnesota by County: January 1, 2022-2023 [1]

County by district	All cattle and calves		Beef cows that have calved		Milk cows that have calved	
	2022	2023	2022	2023	2022	2023
	(head)	(head)	(head)	(head)	(head)	(head)
Northwest						
Becker	26,000	25,000	6,000	6,000	6,300	6,200
Clay	9,400	9,300	4,000	4,000	1,100	1,000
Clearwater	15,600	15,300	8,800	8,800	300	300
Kittson	10,300	10,200	–	–	–	–
Mahnomen	5,200	5,100	2,100	2,100	400	400
Marshall	10,100	9,900	5,300	5,300	300	300
Norman	3,500	3,500	1,600	1,600	100	–
Pennington	8,200	8,100	4,300	4,300	–	–
Polk	13,000	12,800	5,800	5,800	1,500	1,500
Red Lake	6,100	6,000	–	–	–	–
Roseau	15,200	15,000	7,500	7,500	800	800
North Central						
Beltrami	15,500	15,300	9,600	9,600	–	–
Cass	19,800	19,400	9,200	9,200	400	400
Hubbard	6,500	6,400	3,100	3,100	400	400
Itasca	4,300	4,300	2,500	2,500	–	–
Koochiching	3,700	3,700	2,000	2,000	300	300
Lake of the Woods	–	–	800	800	–	–
Northeast						
Cook	100	100	–	–	–	–
Lake	100	100	–	–	–	–
St. Louis	9,800	9,700	4,900	4,900	800	800
West Central						
Big Stone	12,500	12,400	2,500	2,500	–	–
Chippewa	21,500	21,000	–	–	–	–
Douglas	18,900	18,800	3,800	3,800	3,600	3,600
Grant	13,800	13,600	–	–	–	–
Lac qui Parle	14,700	14,500	5,400	5,400	600	600
Otter Tail	74,000	73,000	17,700	17,700	14,400	14,300
Pope	25,500	25,500	6,000	6,000	3,500	3,400
Stevens	56,000	54,000	–	–	–	–
Swift	29,500	29,000	3,000	3,000	12,500	12,400
Traverse	12,700	12,500	–	–	–	–
Wilkin	2,600	2,600	–	–	–	–
Yellow Medicine	26,500	26,000	3,400	3,400	1,400	1,400
Central						
Benton	31,500	31,000	3,900	3,900	10,500	10,300
Carver	21,000	20,500	2,000	2,000	7,500	7,500
Kandiyohi	44,500	43,500	3,500	3,500	14,400	14,200
McLeod	25,000	24,500	1,800	1,800	7,400	7,300
Meeker	29,000	28,500	2,700	2,700	7,900	7,900
Morrison	83,000	82,000	15,100	15,100	28,000	27,500
Renville	24,000	24,000	1,500	1,500	2,900	2,800
Scott	14,400	14,200	1,700	1,700	3,300	3,300
Sherburne	8,500	8,400	800	800	700	700
Sibley	32,500	32,000	3,500	3,500	7,200	7,100
Stearns	186,000	186,000	11,100	11,100	67,000	66,000
Todd	53,000	52,000	11,000	11,000	14,600	14,400
Wadena	12,100	12,000	4,100	4,100	2,600	2,600
Wright	30,000	29,500	2,900	2,900	6,400	6,300

See footnote(s) at end of table. --continued



Minnesota Cases Dashboard



Minnesota Confirmed Highly Pathogenic Avian Influenza (HPAI) Cases in Poultry

Special ID	Flock/Herd Inventory	Confirmed Diagnosis	Genotype	Subtype	Production Type	Quarantine Delivered	Quarantine Release
Stearns 25	4	4/23/2025	D1.1	H5N1 2.3.4.4b	WOAH Non-Poultry	4/21/2025	
Crow Wing 02	157	2/12/2025	D1.1	H5N1 2.3.4.4b	WOAH Non-Poultry	2/10/2025	
Wadena 02	296,270	1/24/2025	D1.1	H5N1 2.3.4.4b	Commercial Turkey Meat Bird	1/22/2025	3/20/2025
Dakota 02	79,883	1/16/2025	D1.1	H5N1 2.3.4.4b	Commercial Turkey Meat Bird	1/14/2025	3/18/2025
Olmsted 02	116	1/6/2025	Minor105	H5N1 2.3.4.4b	WOAH Non-Poultry	1/1/2025	5/5/2025
Chippewa 01	54,797	12/20/2024	D1.1	H5N1 2.3.4.4b	Commercial Turkey Meat Bird	12/19/2024	2/15/2025
Houston 01	57	12/20/2024	D1.1	H5N1 2.3.4.4b	WOAH Non-Poultry	12/18/2024	4/19/2025
Fillmore 01	28,633	12/19/2024	D1.1	H5N1 2.3.4.4b	Commercial Turkey Meat Bird	12/17/2024	2/15/2025

Data refreshed weekdays by 4pm. Click for Accessibility Shortcuts

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Culturally/Linguistically Tailored Materials: Farm worker influenza vaccine

Community outreach toolkit

- Key messages
- Flyers (bilingual)
- Social media images
- Animated graphic
- Website

Developed by the MDH Communications team, guided by the CDC.

[Vaccine Promotion Resources](www.health.state.mn.us/diseases/flu/poster.html#promo)
(www.health.state.mn.us/diseases/flu/poster.html#promo)

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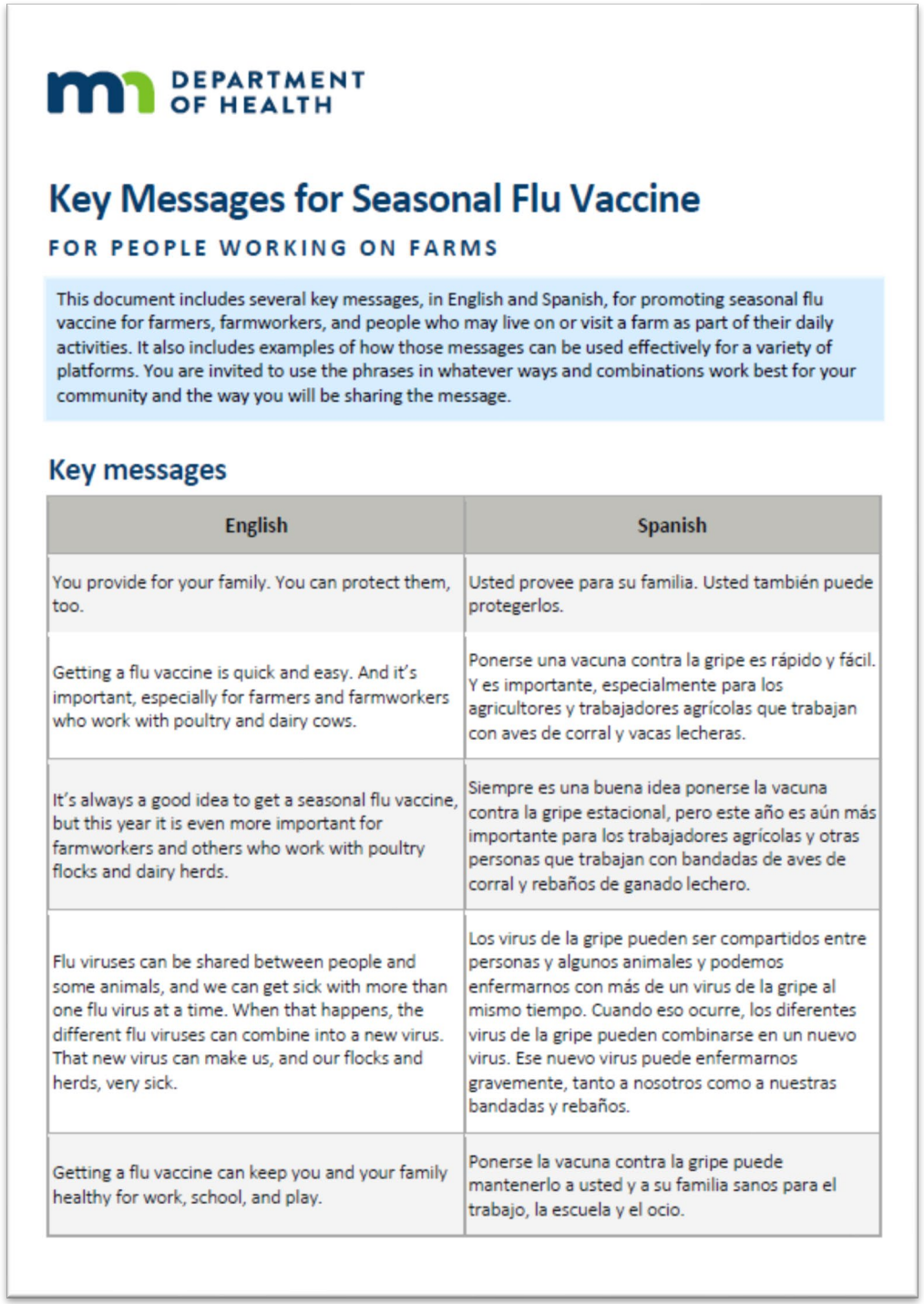
Materials Available for All Partners

Key messages in English and Spanish, organized in an easy-to-use and customizable way

Key Messages for Seasonal Flu Vaccine (www.health.state.mn.us/diseases/flu/basics/fluvaxmessages.pdf)

Seasonal Flu Vaccine for people working on Farms: A Community Outreach Toolkit (www.health.state.mn.us/diseases/flu/basics/fluvaxoutreach.pdf)



DEPARTMENT OF HEALTH

Key Messages for Seasonal Flu Vaccine

FOR PEOPLE WORKING ON FARMS

This document includes several key messages, in English and Spanish, for promoting seasonal flu vaccine for farmers, farmworkers, and people who may live on or visit a farm as part of their daily activities. It also includes examples of how those messages can be used effectively for a variety of platforms. You are invited to use the phrases in whatever ways and combinations work best for your community and the way you will be sharing the message.

Key messages

English	Spanish
You provide for your family. You can protect them, too.	Usted provee para su familia. Usted también puede protegerlos.
Getting a flu vaccine is quick and easy. And it's important, especially for farmers and farmworkers who work with poultry and dairy cows.	Ponerse una vacuna contra la gripe es rápido y fácil. Y es importante, especialmente para los agricultores y trabajadores agrícolas que trabajan con aves de corral y vacas lecheras.
It's always a good idea to get a seasonal flu vaccine, but this year it is even more important for farmworkers and others who work with poultry flocks and dairy herds.	Siempre es una buena idea ponerse la vacuna contra la gripe estacional, pero este año es aún más importante para los trabajadores agrícolas y otras personas que trabajan con bandadas de aves de corral y rebaños de ganado lechero.
Flu viruses can be shared between people and some animals, and we can get sick with more than one flu virus at a time. When that happens, the different flu viruses can combine into a new virus. That new virus can make us, and our flocks and herds, very sick.	Los virus de la gripe pueden ser compartidos entre personas y algunos animales y podemos enfermarnos con más de un virus de la gripe al mismo tiempo. Cuando eso ocurre, los diferentes virus de la gripe pueden combinarse en un nuevo virus. Ese nuevo virus puede enfermarnos gravemente, tanto a nosotros como a nuestras bandadas y rebaños.
Getting a flu vaccine can keep you and your family healthy for work, school, and play.	Ponerse la vacuna contra la gripe puede mantenerlo a usted y a su familia sanos para el trabajo, la escuela y el ocio.

Identify Key Community Partners: Trusted Messengers & Peer Educators

- Engage respected community members
- Collaborate with CBOs and their established programs
  - Use peer-to-peer outreach
  - Build trust and familiarity
- Make yourself available to support and collaborate

Fe Y Justicia – Know Your Rights

Mobilize Resource Mapping in Addressing Barriers: On-Site & Mobile Education

A common barrier to delivering services is limited access to transportation and limited time.

- **Go to where the people are**
- Identify places to host events in the community (farms, homes, churches, community centers)
- Use mobile health vans or pop-ups
- Flexible scheduling - after work hours, weekends

Framework in Action

Tailoring this approach

- **Culturally and Linguistically Concordant Services:**
  Spanish speaking MDH workers attended event to assist with communications
- **Addressing Transportation Barriers:**
  Mobile units traveled to 3 farms
- **Collaborating with Key Partners:**
  Nurse from LPH administered vaccines
- **Build Trust in Community:**
  Further community outreach was accomplished through a winter clothing drive

35 people vaccinated!

Success in Minnesota

- Collaboration:
  - Puentes/Bridges
  - Land Stewardship Project
  - Workforce Development of a Regional Board
  - National Center for Farmworker Health

- Vaccine events:
  - 13 as of June 2025
  - 250+ vaccines administered
  - 7 scheduled clinics
  - 1 clinics in the planning stage – County Fair

Revisiting the Framework: Replicate this in your community!

- **Need**:
  Rural health outreach for H5N1 education and flu vaccines
- **Strategy**:
  - Identify key partners
  - Map resources
  - Identify barriers
  - Tailor delivery approach and materials to community

Key Takeaways

- Newcomers face an increased risk of exposure.
- Monitoring and testing is important for those with close exposure.
- The foundation of community engagement lies in building key partnerships, resource mapping, and a tailored approach focused on the needs of the community and the barriers they face.

Thank you!

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References

- **U.S. Department of Agriculture, National Agricultural Statistics Service.** (2023). *Cattle and Calves: Number by Class – Minnesota by County, January 1, 2022–2023*. Retrieved from https://www.nass.usda.gov/Statistics_by_State/Minnesota/Publications/County_Estimates

- **Minnesota Board of Animal Health**. (2024). *Minnesota confirmed highly pathogenic avian influenza (HPAI) cases in poultry* [Dashboard]. Retrieved from https://www.bah.state.mn.us/hpai

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