Children's Hospital of Philadelphia℠
Vaccine Education Center

April 2, 2025 Vaccine Update Webinar Q&A

General questions

Where can I obtain the slides for this presentation?
The slides are available in the "resources" section of the console when you watch the event or on the webinar archive page of our site, https://www.chop.edu/pages/vaccine-webinar-archive.

H5N1 Related Questions

When a patient tests positive in an office-based flu test, is there anything that should prompt referral to a health department for further H5 flu investigation?
Clinicians should consider Flu A (H5N1) infection in any person that has an acute respiratory illness or conjunctivitis plus a relevant exposure history including:

- Contact with potentially infected sick or dead birds, livestock, or other animals within 10 days before symptom onset
- Direct contact with water or surfaces contaminated with feces, unpasteurized (raw) milk or unpasteurized dairy products, or parts of potentially infected animals (carcasses, internal organs, etc.)
- Prolonged exposure to potentially infected birds or other animals in a confined space.

Detailed information for clinicians is available on the CDC website. [https://www.cdc.gov/bird-flu/hcp/clinicians-evaluating-patients/]

Is the binding mechanism for H5 the reason that dairy cattle are at risk, but other kinds of cattle are not?
The presence of receptors for H5N1 in mammary glands is the key factor that increases the risk for dairy cattle. Likewise, milking machines allow for aerosolization.

Do cows get the infection from each other or from birds? Why not vaccinate dairy herds if a vaccine is available?
Dairy cattle primarily are infected from environmental exposure to birds, though the spread within herds suggests that bovine-to-bovine transmission may be occurring. Contamination through shared milking equipment is another possible route for transmission, particularly since the infection is primarily restricted to the mammary glands.

Vaccination of dairy herds is under consideration, but challenges include regulatory approval, vaccine efficacy, potential impacts on exports, and logistics of mass vaccination.

Does cleansing the udders minimize viral colonies and decrease aerosolization?
While cleaning udders likely reduces surface contamination and may lower the viral load in milk, it's unclear how much it affects aerosolization. More data are needed to determine its role in limiting spread.

What is the number of confirmed H5 cases in Pennsylvania?
As of April 2, 2025, there have been no confirmed human H5N1 cases reported in Pennsylvania. Pennsylvania had its first confirmed case in domestic poultry on Jan. 27, 2025.

Are beef cattle becoming sickened by H5, even if we haven't seen spread to people?
The virus has mainly affected dairy cows, and no human cases have been linked to beef consumption or contact. More research is needed to understand why beef cattle are currently not impacted. Cows don't really get "sick" with H5 in that the virus doesn't reproduce in a cow's upper respiratory tract.

Do precautions need to be taken when handling bird feeders?
The main concern for transmission of H5N1 is having contact with respiratory secretions from birds, though the

virus can also be in guano (bird feces). For protection against H5N1, but also other transmissible diseases, it's best to wash your hands after coming into contact with the secretions or excrement of any living thing.

Is the vaccine national stockpile at risk with the cuts made by the current administration?
We do not have any information about this.

Why don't we vaccinate chickens? Where are we with developing a vaccination campaign to control the virus at the source?
It would be reasonable to vaccinate chickens. All poultry can be at risk, whether commercial, small urban, or backyard poultry. We use vaccines for animals in other cases, and chickens receive other vaccines, such as those to protect against Marek's disease and Newcastle disease, among others. The VEC does not have information on what would change the government's approach to vaccinating chickens.

With Easter coming, can baby chicks carry the H5N1 virus?
Yes. While they may not initially show symptoms, they can be infected through contaminated surfaces (e.g., incubators, feed, water) or directly from infected adult birds or other chicks.

Can you talk more about current measures and maybe ideal measures for protecting those most vulnerable to the current H5 virus? It is obviously most affecting farmworkers, typically folks facing multiple barriers to worker protections & healthcare.
As you indicate those working in the agricultural industry are most at risk, but those in other industries that care for or interact with birds could also be at risk. Personal protective equipment (PPE) should be used, and vaccination of high-risk individuals would be warranted if and when available. As of the Spring 2025 webinar, vaccination has not been made available.

Complete guidance for workers' protection is provided by the CDC. [https://www.cdc.gov/bird-flu/prevention/worker-protection-ppe.html]

Will the H5 vaccine in Europe against H5N8 (vs H5N1) provide protection from H5N1?
It remains unclear from current data whether a vaccine that only protects against the hemagglutinin (H) protein would be sufficiently protective or whether a vaccine that protects against neuraminidase as well would be more effective.

Are there any concerns of highly pathogenic avian influenza (HPAI) in pigs?
If H5N1 adapts to spread efficiently in pigs, that could accelerate its ability to infect humans, as pigs can act as a "mixing vessel" for H5N1 and human influenza strains. Currently, the virus does not appear to be infecting or spreading in pigs.

Would it be an effective strategy to allow bird flu to spread through flocks so that we can identify birds with immunity? This was proposed by RFK Jr.
Chickens do not have significant genetic variability as they are bred for egg production and size, which yields the largest quantity of meat. Since there is a high mortality rate in chickens, this would be an ineffective and costly strategy. For more information about the limits of allowing bird flu to spread unchecked, look at the Unbiased Science Substack, [https://theunbiasedscipod.substack.com/p/bird-flu-letting-the-virus-fly-wild] which addresses this issue at length.

Should families with small poultry coops be masking or limiting contact, or is this mainly a commercial-scale issue?
Yes, families with small poultry coops should take precautions, especially during times of HPAI outbreaks in the area. While commercial flocks are at higher risk due to scale and movement, backyard flocks can and do get infected**,** and human cases have occurred after contact with small flocks. Even birds that appear healthy can shed the virus.

Do bird droppings carry H5N1 virus?
Yes. Infected birds shed the virus in their saliva, nasal secretions, and feces. People can be exposed through handling contaminated surfaces, cleaning coops, or inhaling aerosolized particles when dry droppings become dust, making the use of personal protective equipment during these activities critical.

How do chickens get infected with H5N1 so easily? Are the alpha 2,3 receptors more accessible?
Yes. Influenza viruses bind to sialic acid (SA) receptors on the surface of host cells. The H5N1 virus prefers α2,3-linked sialic acid receptors**.** Chickens (and other birds, like ducks) have a high density of α2,3 receptors in their upper respiratory tract**,** lower respiratory tract, and intestinal tract**,** making them especially vulnerable.

Any insight on H7N9?
H7N9 is another cause of avian influenza. It was first identified in March 2013. It was recently detected in a flock of birds in Mississippi, leading to culling of the flock. We continue to watch for sporadic detections but current risk to the public is low. To date, H7 and H9 viruses, which can occasionally infect people, have not been found to spread person-to-person.

Seasonal Influenza

Has there been progress in development of a flu vaccine covering all H and N types?
The concept of a universal flu vaccine has existed since the 1980s. Money and expertise has been committed to this concept, but it is incredibly hard to accomplish short of new technology. There had been hope about an mRNA vaccine that could achieve this, but time will tell whether this work will continue and whether it will be fruitful.

Influenza B seems to be on the increase in this area (western PA). Is this nationwide? Any information on the course of illness or special concerns?
Current national data reported by CDC [https://www.cdc.gov/fluview/overview/fluview-interactive.html] suggests overall decreases in influenza infections due to both A and B (data as of March 29, 2025). Overall, rates of influenza-like illness in Pennsylvania are minimal (data as of March 29, 2025). [https://www.cdc.gov/fluview/surveillance/usmap.html] While different strains can be milder or more severe each season, the influenza B circulating this 2024-2025 season does not have any unique characteristics or special concerns.

Can you provide any information about selection of flu strains for the upcoming year given that the FDA committee hasn't met? What can we expect about flu surveillance given changes at CDC?
Every year, the FDA advisory committee, called the Vaccines and Related Biological Products Advisory Committee or VRBPAC, meets in mid-March to select influenza strains to prepare for a 6-month vaccine production cycle. This year, they did not meet; instead, FDA senior officials selected the strains recommended by the WHO.

While VRBPAC typically follows the WHO's recommendations, it is concerning that a publicly available meeting was cancelled. The VRBPAC meeting allows for transparency as the public can listen to the committee's discussion. Also, the prior year's data is typically reviewed at the spring meeting, providing an opportunity to reflect on last year's data and determine whether we could have made a better match. Removing this meeting eliminated that opportunity for reflection.

We do not know what ongoing surveillance for influenza and other diseases will be continued by CDC, and if it will continue at the standards Americans expect. At this point, it is unclear whether the FDA will continue to have an external group of advisors, as four FDA employees who staff that meeting were recently fired.

For individuals with annual influenza vaccination, how much protection does natural infection provide versus repeat vaccination?
This is a complex question. Protection from natural infection comes in multiple forms. Memory B and T cells can last years to decades. Against a similar strain, memory immunity may prevent infection entirely or make for a milder infection. However, if a strain has changed, or drifted, protection will be partial, perhaps leading to reduced

severity or duration of illness. But, if the strain has changed dramatically, or shifted, protection is likely to be minimal to nonexistent.

Also, we know that influenza immunity is impacted by immune imprinting, meaning a person's immune system will typically respond most effectively to a strain of influenza that is genetically similar to the one from their first exposure in life. This means that different people will have different responses depending on what strain was circulating during their first exposure.

For these reasons, following the recommendations for annual vaccination offers the best protection for the currently circulating strains, assuming the strains do not significantly change after the vaccine strains were chosen.

What are some potential reasons for higher rates of Influenza-associated encephalopathy in pediatric populations?
Influenza-associated encephalopathy or encephalitis is a spectrum of neurologic syndromes that occur after a respiratory infection caused by influenza. Inflammation of the brain can impact a person's mental functioning. We are just beginning to understand the associated pathophysiology of this condition in pediatric populations. Because influenza virus does not reproduce in the brain or spinal cord, it is hypothesized that the encephalopathy is caused by cytokines or chemokines generated in response to the infection, described as a "dysregulated inflammatory response." As public health officials work to better understand this condition, they are seeking reports about nonfatal cases. Healthcare providers can review the February 27 *Morbidity and Mortality Weekly Report* for more information. [https://www.cdc.gov/mmwr/volumes/74/wr/mm7406a3.htm]

Measles

If a patient has measles, which causes some immunosuppression, will they need to be revaccinated for any vaccine preventable diseases?
Natural measles infection has been found to destroy a significant percentage (up to 70%) of memory B and T cells, resulting in a concept referred to as immune amnesia. Basically, for a few years after infection with measles virus, an individual will not benefit from previously developed immunologic memory. In developing countries, this contributes to the high mortality associated with measles infections. Because the effects of this immune amnesia will vary across individuals and immunologic memory against some infections may be undetectable by assay but still sufficient to provide some protection upon exposure, current vaccine recommendations do not include revaccination after a measles infection. However, providers and families should be aware that recently measles-infected individuals may be at greater risk for infections to which they were previously immune.

Should you delay any vaccines after natural measles infection?
Live viral vaccines should be delayed 28 days after a measles infection. Inactivated vaccines can be administered according to recommendations at any time after the individual is feeling better.

Can measles be monitored through wastewater? If so, will there be funding for it?
Yes, measles can be monitored through wastewater, and this approach is gaining interest — though it's not yet as widespread or standardized as for other viruses, like SARS-CoV-2 or poliovirus. This may be helpful in areas with underreporting or where case-based surveillance is lagging, but it should complement traditional surveillance systems.

Changes to Government Agencies

Is the vaccine committee (ACIP) meeting happening in April and will a link be available?
The next ACIP meeting is scheduled for 4/15-16. [https://www.cdc.gov/acip/meetings/index.html] The link will be posted closer to the meeting dates.

Will the U.S. withdrawal from the WHO impact our ability to use their flu data for strain selection?
This is a concern. The United States relies heavily on the data infrastructure of WHO not just for influenza data, but also for data on a multitude of infectious diseases and health. Without direct lines of communication with WHO, it remains to be seen how we will be able to gain the information necessary to protect the U.S. population from global threats. Future influenza vaccine strain selection will be one of the more prominent measures of how

this will be done, but many other situations could also demonstrate this between now and next spring. Historically, the WHO has made the decisions of its advisors available to the public.

What can we do to voice our concerns with the current administration?
The best option is to contact legislators that represent you in state and federal government. Stories from constituents are always impactful, and even though you would be speaking as an individual constituent, as a healthcare provider or research scientist, your point of view and experience can be impactful and influence elected officials. If you work at a university or in a hospital system, you may also check if they have a government affairs or policy team working on issues relevant to your work to see whether you can be of assistance in your official capacity as well.

How do cuts to CDC and HHS budgets affect decisions on vaccines?
The impact of cuts will take some time to realize, although anecdotes about cancelled vaccine clinics and immunization conferences, as well as loss of staff and institutional knowledge, are being shared. An ACIP meeting scheduled for mid-April will offer some information about how recommendations will be implemented by the CDC Director. We will need to continue to closely follow what is happening and work to ensure that legislators and the public understand what is happening and the long-term implications.

Can we still trust CDC with the changes put in place by the current administration?
There are significant changes occurring at CDC related to staffing, priorities, and direction that are likely to impact the agency's efficiency. For example, data related to the current measles outbreak is slow to be released and does not provide an accurate assessment of the current outbreak. Case counts are only updated weekly and only include cases confirmed by testing (i.e., PCR or serology). In a large outbreak, measles can be clinically diagnosed, so healthcare providers and epidemiologists on the ground may be able to offer a more accurate representation of the current situation.

Reports of limited ability to release information have also surfaced, including a report about measles cases that was not allowed to be released.

We recommend monitoring multiple sources of information in addition to government agencies to ensure that you have the latest and most complete information to inform your point-of-care decision making and discussions.