



Influenza Review and Guidance for the 2017-2018 Season



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Outline

- I. 2016-17 Flu Season Summary and Surveillance
- II. 2017-18 Influenza Vaccine Information
- III. Reportable Aspects of Influenza
- IV. Interim Guidance for Flu Outbreaks in Long-term Care Facilities

2016-17 Flu Season: Summary

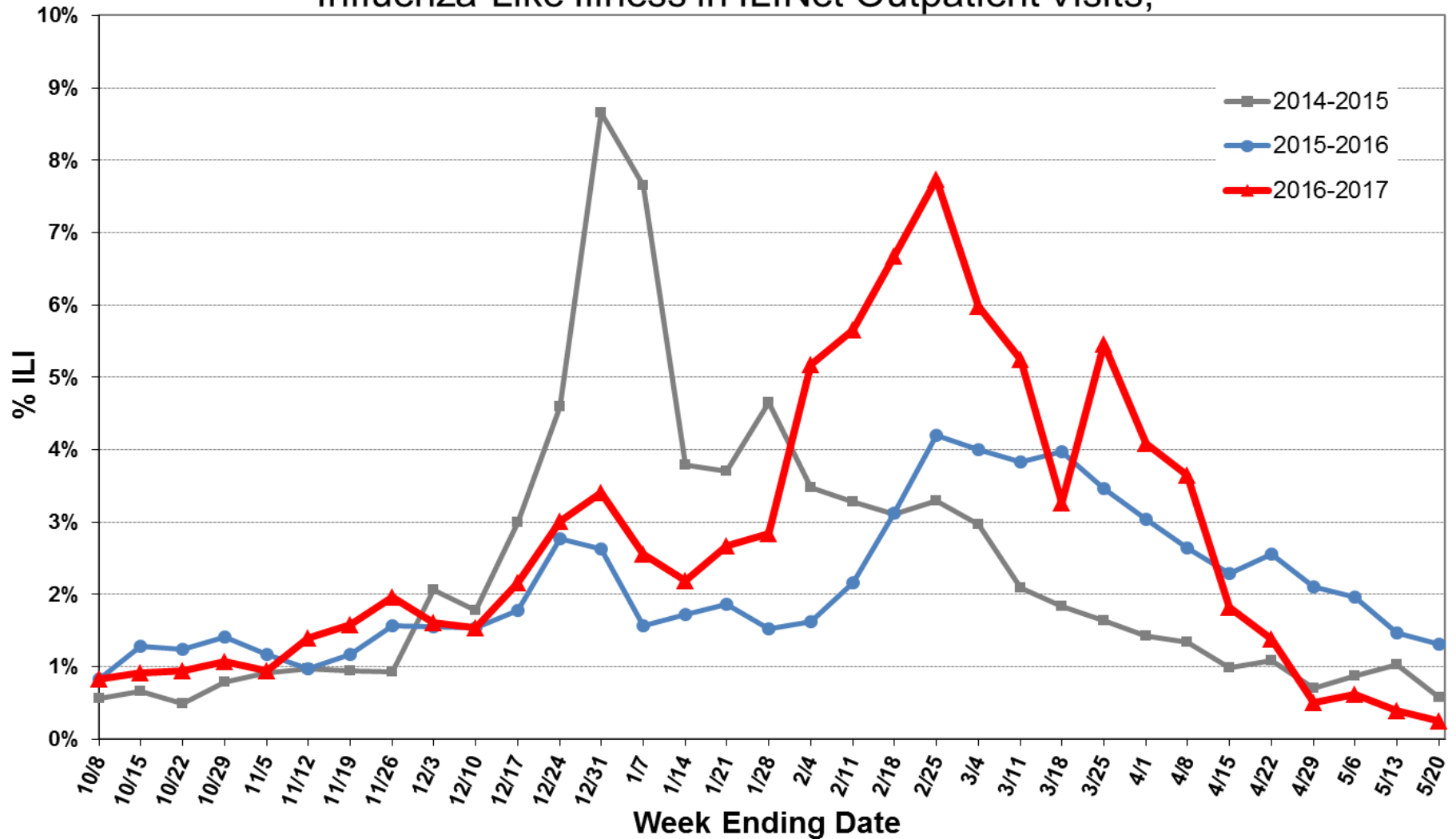
- Went above baseline activity at the end of Dec 2016
- Saw Double Peaks!
- Flu A(H3) was the predominant strain until mid-March
- Flu B was commonly reported from March – May

2016-17 Flu Season

- Nationally the weekly percentage of outpatient visits for ILI remained at or above baseline for 17 consecutive weeks
- In NC the weekly percentage of outpatient visits for ILI were at or above baseline for 16 weeks

Influenza Surveillance

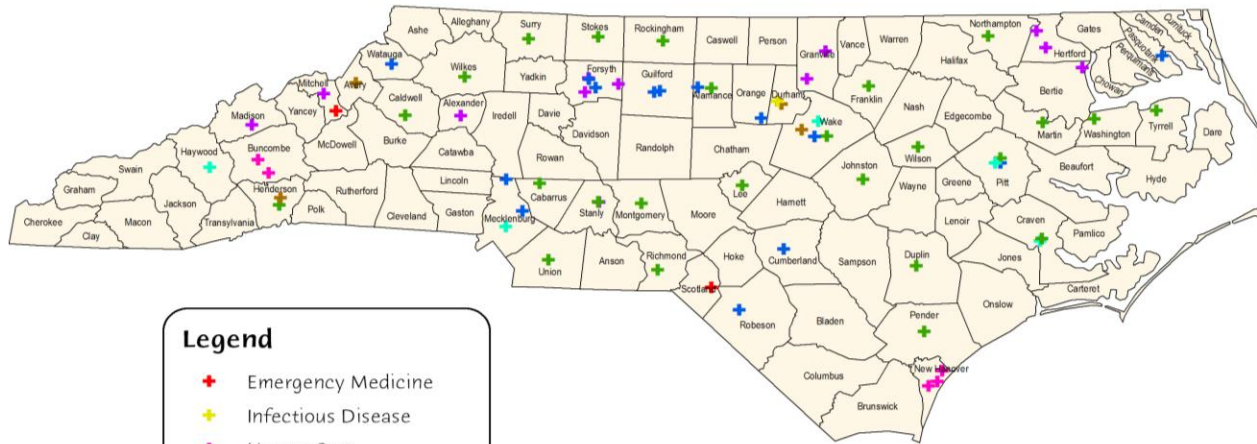
INFLUENZA SURVEILLANCE, NC 2014-2017
Influenza-Like Illness in ILINet Outpatient Visits,



Note: Week ending displayed is for 2016-17 influenza season. Flu seasons for previous years may have different week ending dates, but these only vary by a few days.

Influenza Surveillance

North Carolina ILI Network Provider Locations 2016-2017



Legend

- Emergency Medicine
- Infectious Disease
- Urgent Care
- Local Health Department
- Student Health
- Family Practice
- Pediatrician
- Other

STATE CENTER FOR HEALTH STATISTICS



66 sites participated in 2016 – 17:

- ✓ 36% are local health departments
- ✓ 30% of the sites send specimens to the state lab*
- ✓ 78% report data via CDC at least 10 times per season

2016-17 Flu Deaths

219 total deaths reported for
2016-17 flu season in NC

- 126 females; 93 males
- 7 pediatric deaths
- 101/219 (46%) were Flu A
 - 53/101 (52%) were Flu A (H3)
- Vaccination status is known for 146 cases
 - 83 (57%) were vaccinated
 - 63 (43%) were unvaccinated

Influenza Surveillance

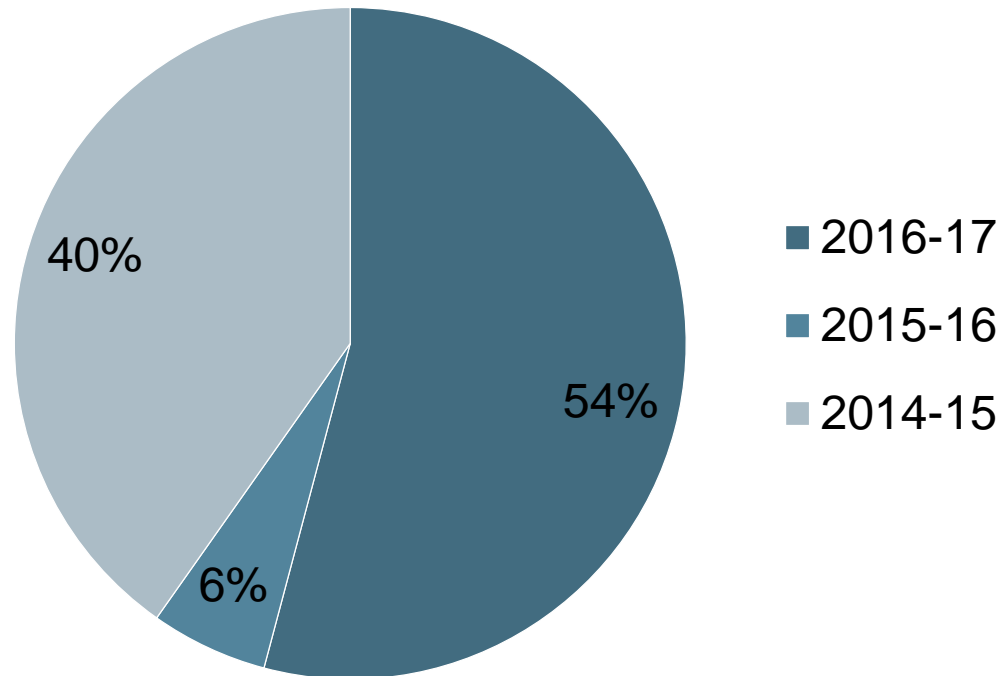
Influenza outbreaks reported over the last 3 seasons-

2014-15: H3N2 predominant season

2015-16: H1N1 & B predominant season

2016-17: H3N2 predominant season

Flu Outbreaks



Influenza Vaccine: 2017-18 components

The Trivalent vaccine contains:

- A/Michigan/45/2015 (H1N1)pdm09-like virus (updated)
- A/Hong Kong/4801/2014 (H3N2)-like virus
- B/Brisbane/60/2008-like (B/Victoria lineage) virus

The Quadrivalent vaccine also includes:

- B/Phuket/3073/2013-like (B/Yamagata lineage) virus

Influenza Vaccine: *New this Season*

The Advisory Committee on Immunization Practices (ACIP) and the CDC recommend:

- Pregnant women may receive any licensed, recommended, age-appropriate flu vaccine
- Afluria (IIV3) may be used for persons aged ≥ 5 years
- FluMist quadrivalent (LAIV4) should not be used again this season



Influenza Vaccine: *New this Season*

A study entitled “Association of spontaneous abortion with receipt of inactivated influenza vaccine containing H1N1pdm09 in 2010–11 and 2011–12” was published on September 13, 2017 in the journal *Vaccine*. Here are the key points:

- A number of studies have shown that flu vaccination can protect pregnant women and have been administered for decades.
- This study showed that women in early pregnancy who received 2 consecutive annual vaccines (both with an H1N1 component) had an increased risk of spontaneous abortion in the 28 days after receiving the second vaccine.
- This study does not quantify the risk of miscarriage; does not prove that flu vaccine was the cause of miscarriage
- Earlier studies have not found a link between flu vaccination and miscarriage
- ACIP, ACOG, and CDC continue to recommend that pregnant women get a flu vaccine.



Influenza Vaccine: *New this Season*

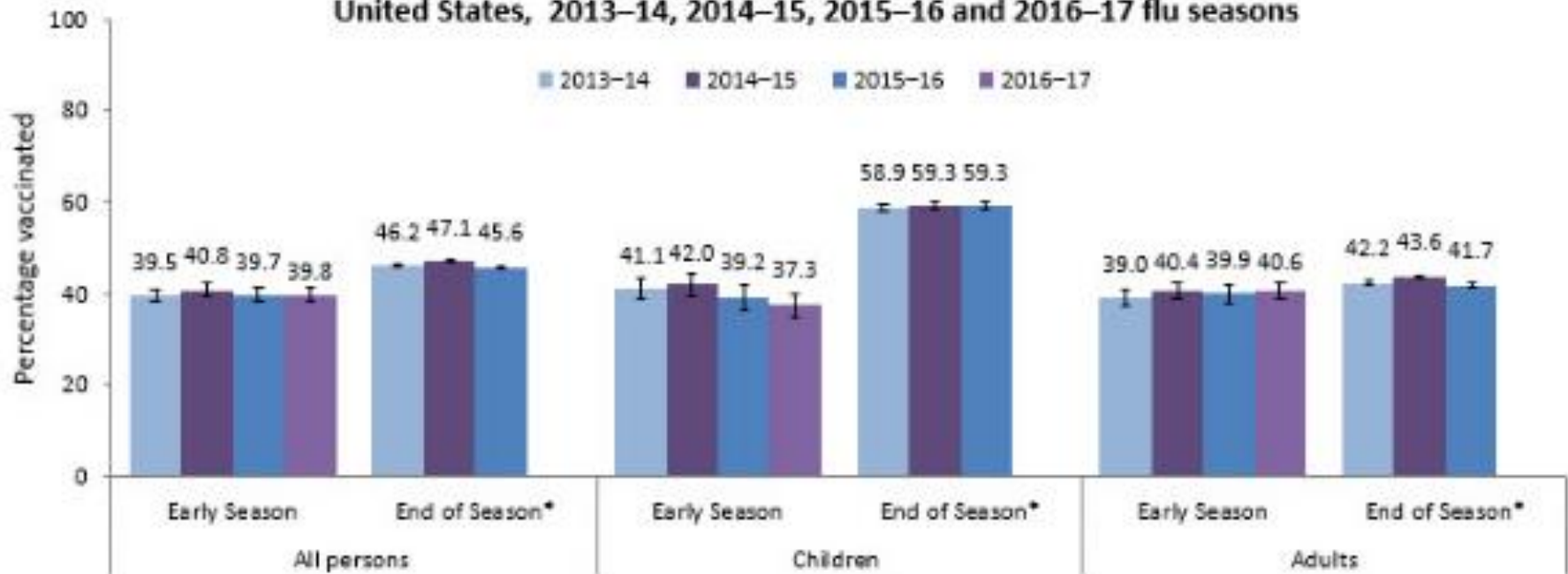
New flu vaccine options this season:

- Afluria Quadrivalent (IIV4)
- Flublok Quadrivalent (RIV4)
- In addition, a labeling change has been approved for a previously-licensed product: FluLaval Quadrivalent (IIV4) is now licensed for children aged 6 months and older



Influenza Vaccine Coverage (national)

Early season and end of season flu vaccination coverage estimates, National Immunization Survey-Flu, Behavioral Risk Factor Surveillance System, and National Internet Flu Survey, United States, 2013–14, 2014–15, 2015–16 and 2016–17 flu seasons



Influenza Vaccine Coverage

Data from National Immunization Survey-Flu (NIS-Flu)

Age Group	National
Overall (6 mos and over)	39.8%
Children (6 mos – 17 yrs)	37.3%
Adults (18 years and over)	40.6%

Most common places reported for receiving flu vaccinations:

- Medical locations- 51.9% (adults); 85.4% (children)
- Retail settings- 24.3%
- Workplaces- 17.6%

Influenza Vaccine Coverage

- Influenza vaccination reduced the overall risk for influenza-associated medical visits by 42%.
- Vaccine effectiveness against influenza A(H3N2) viruses was 34% and vaccine effectiveness against influenza B viruses was 56%.

Is Flu Reportable?

**FLU POSITIVES ARE NOT
REPORTABLE IN NC!**

- **Flu deaths are reportable**
- Flu outbreaks are reportable
- Novel flu cases are reportable

Flu deaths are reportable in NC

Clinical description:

An influenza-associated death (pediatric and adult) is defined for surveillance purposes as a death resulting from a clinically compatible illness that was confirmed to be influenza (either seasonal or pandemic) by an appropriate laboratory or rapid diagnostic test.

There should be no period of complete recovery between the illness and death.



NC EDSS Reporting

When reporting flu associated deaths in NCEDSS please note the following is entered:

- ✓ Name of case
- ✓ Date of Birth
- ✓ **Date of Death**
- ✓ **Labs-** rapid, PCR, or culture
- ✓ Vaccine status
- ✓ Any underlying conditions

Flu deaths are reportable in NC

A death should **NOT** be reported if:

1. There is no laboratory confirmation of influenza virus infection.
2. The influenza illness is followed by full recovery to baseline health status prior to death.
3. After review and consultation there is an alternative agreed upon cause of death.

Is Flu Reportable?

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- **Flu outbreaks are reportable**
- Novel flu cases are reportable

Flu outbreaks are reportable in NC

- Can occur in long term care facilities, skilled nursing, acute care, schools, daycare, etc.
- When you hear of a respiratory outbreak ask for a line list with a minimum of onset date, symptoms, number of ill patients and staff, and if any testing was done
- Use the flu outbreak worksheet to help gather information

INFLUENZA OUTBREAK WORKSHEET-INITIAL NOTIFICATION					
INFLUENZA OUTBREAK: If there is one laboratory-confirmed influenza positive case along with other cases of respiratory infection in a unit of a long-term care facility, an influenza outbreak might be occurring.					
DISEASE: <u>Influenza</u>			CALL TAKEN BY:		
CALL DATE:			CALL TIME:		
CALLER INFO					
NAME:			PHONE:		
TITLE:			COUNTY:		
FACILITY INFO					
FACILITY NAME:					
FACILITY TYPE:					
FIRST RESIDENT SYMPTOM ONSET DATE:					
LAST RESIDENT SYMPTOM ONSET DATE:					
# of ill residents: _____			Total # of residents: _____		
# of ill staff: _____			Total # of staff: _____		
CLINICAL INFO					
Symptoms:		Fever	Cough	Sore throat	Body aches
Other:					
% of residents vaccinated: _____					
No. of cases hospitalized: _____					
No. of deaths associated this outbreak: _____					
TREATMENT NOTES					
TESTING					
CASE	DATE	TYPE: <input type="checkbox"/> Rapid <input type="checkbox"/> PCR <input type="checkbox"/> Other <input type="checkbox"/> Unknown			RESULTS
1		TYPE: <input type="checkbox"/> Rapid <input type="checkbox"/> PCR <input type="checkbox"/> Other <input type="checkbox"/> Unknown			
2		TYPE: <input type="checkbox"/> Rapid <input type="checkbox"/> PCR <input type="checkbox"/> Other <input type="checkbox"/> Unknown			
3		TYPE: <input type="checkbox"/> Rapid <input type="checkbox"/> PCR <input type="checkbox"/> Other <input type="checkbox"/> Unknown			
NOTES					

NC EDSS Outbreak Reporting Summary

Outbreak reported to CDB

Outbreak event created by CDB and assigned to LHD

LHD Acknowledgment

Data Entry by LHD and assign to CDB when complete

Outbreak reviewed and closed by CDB

- Final Outbreak Report Form can still be used and attached in NC EDSS

- Outbreak will enter workflows and reports once event is created

NC EDSS Influenza Outbreaks

What minimum data is needed to close influenza outbreaks?

- Administrative:
 - Primary Owning jurisdiction, final outbreak information (primary illness, date outbreak declared over). Investigation trail should be assigned to state
- Reporting
 - Outbreak reporter information (usually the facility where the outbreak occurred), LHD notifications, CDB notifications
- Response
 - Date investigation started, Lead investigator, outbreak response information, outbreak investigation information (especially control measures)
- Results
 - All outbreak summary info
 - Counts: at least total # ill, hospitalized, and died. Try to find out how many residents in facility and how many vaccinated before outbreak
 - Setting
 - Lab methods- at least one case should be lab confirmed and entered in the outbreak

Is Flu Reportable?

FLU POSITIVES ARE **NOT**
REPORTABLE IN NC!

- Flu deaths are reportable
- Flu outbreaks are reportable
- **Novel flu cases are reportable**

Novel Flu

- There are many different influenza A viruses
- Some are found in humans and others in animals such as birds and swine.
- State lab of public health (SLPH) can test for the novel strains upon request and approval from CDB.

Novel Flu: Highly-Pathogenic Avian Influenza (HPAI)

- Highly pathogenic avian influenza (HPAI) infections have been reported in U.S. domestic poultry (backyard and commercial flocks), captive wild birds, and wild birds
- These viruses are thought to have the potential to infect people and cause severe illness. To date no human avian influenza infections have been documented in the U.S.
- An exposed person is defined as a person with contact in the past 10 days to infected **sick or dead birds**, or infected flocks.
- Exposed persons should monitor themselves for new illness for 10 days after the last known exposure. The presence of fever and respiratory symptoms (e.g., cough, sore throat, shortness of breath, difficulty breathing) should be assessed daily

<https://www.cdc.gov/flu/avianflu/guidance-exposed-persons.htm>



HPAI: Local Health Department Roles

1. Investigation
 - a. Identify community members exposed to HPAI
2. Monitoring and management of exposed persons
 - a. Community members
 - b. Responders from their county (if any) after the event
3. Communication
 - a. Public
 - b. Providers



CD NURSE TOOLKIT for HPAI

The tool kit for avian influenza is posted online:

- Symptom monitoring log
- Monitoring instructions for exposed people
- Provider memo on HPAI
- Line list shell
- HPAI contact questionnaire

http://epi.publichealth.nc.gov/cd/lhds/manuals/cd/other_diseases.html



Novel Flu: H7N9 Avian Influenza

- Annual epidemics of sporadic human infections with Asian H7N9 viruses in China have been reported since 2013. China is currently experiencing its 5th epidemic of Asian H7N9 human infections.
- As of September 5, 2017, the World Health Organization (WHO) has reported 760 human infections with Asian H7N9 virus during the 5th epidemic
- Testing for influenza A (H7N9) should be considered for patients with illness compatible with influenza who also meet either of the exposure criteria below:
 - Patients with recent travel to countries where human cases of novel influenza A (H7N9) virus infection have recently been detected, especially if there was recent direct or close contact with animals (such as wild birds, poultry, or pigs) or where influenza A (H7N9) viruses are known to be circulating in animals.
 - Patients who have had recent contact with confirmed human cases of infection with novel influenza A (H7N9) virus.



Novel Flu: H3N2 Variant

- Influenza viruses that normally circulate in pigs are called “variant” viruses when they are found in people.
- Influenza A H3N2 variant viruses with a gene from the 2009 H1N1 pandemic virus were first detected in people in July 2011
- During 2012, there were multiple outbreaks of H3N2v resulting in 309 reported cases. Sporadic infections with H3N2v have continued to be detected since that time
- H3N2v have mostly been associated with prolonged exposure to pigs at agricultural fairs



Interim Guidance for Influenza Outbreak Management in Long- term Care Facilities

Summarized from-

<http://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm>



Interim Guidance for Influenza Outbreak Management in LTCF

Preventing transmission of influenza viruses and other infectious agents within health care settings, including in long-term care facilities, requires a multi-faceted approach that includes the following:

1. Vaccination
2. Testing
3. Infection Control
4. Antiviral Treatment
5. Antiviral Chemoprophylaxis



LTCF Guidance: Vaccination

- Influenza vaccination should be provided routinely to all residents and health care workers of long-term care facilities.
- Higher vaccination levels among personnel have been associated with a lower risk of health care facility-associated influenza cases.

Vaccination FAQs

- Q: Facility states seeing flu in residents that were previously vaccinated. Should we re-vaccinate?
- A: No, there is no 'booster' or re-vaccinate option for those that got the seasonal vaccine within the current season. People over 65 years can choose to get the high-dose vaccine.

- Q: For staff that refuse getting a flu vaccine, do they have to wear masks or be removed from work?
- A: Mask policy is up to the facility but you cannot exclude individuals from work for not being vaccinated.

LTCF Guidance: Testing

If there is one laboratory-confirmed influenza positive case along with other cases of respiratory infection in a unit of a long-term care facility, an influenza outbreak **might** be occurring.

In order of priority, the following influenza tests are recommended: RT-PCR > immunofluorescence > rapid influenza diagnostic tests

LTCF Guidance: Testing

- Once a single lab-confirmed case has been identified and an outbreak is established, conduct surveillance until at least 1 week after the last confirmed case

Test for flu if-

- ✓ Ill persons in previously unaffected units
- ✓ Persons who develop acute respiratory illness more than 72 hours after starting antiviral chemoprophylaxis
- ✓ Long-term care residents that are medically fragile that manifest atypical signs & symptoms

LTCF Guidance: Infection Control

- Implement daily active surveillance for respiratory illness among ill residents, health care personnel and visitors.
- Implement **Standard** and **Droplet** Precautions for all residents with suspected or confirmed influenza
 - Standard Precautions – http://www.cdc.gov/hicpac/2007IP/2007ip_part3.html#a
 - Droplet Precautions – http://www.cdc.gov/hicpac/2007IP/2007ip_part4.html#5

Infection Control – FAQs

- Q: How long should we implement droplet precautions for residents with influenza?
- A: Implement for 7 days after illness onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer.

LTCF Guidance: Antiviral treatment

- Administer influenza antiviral treatment and chemoprophylaxis to residents and health care personnel according to current recommendations.
 - Treatment should not wait for laboratory confirmation of influenza.
 - Best started within first 2 days of symptoms
 - The recommended dosing and duration of antiviral treatment is twice daily for 5 days

Recommended Dosage and Duration of Treatment or Chemoprophylaxis for Influenza Antiviral Medications

<https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm#dosage>

Table 1. Antiviral Medications Recommended for Treatment and Chemoprophylaxis of Influenza

Antiviral Agent	Activity Against	Use	Recommended For	Not Recommended for Use in	Adverse Events
Oseltamivir (Tamiflu®)	Influenza A and B	Treatment	Any age ¹	N/A	Adverse events: nausea, vomiting. Postmarketing reports of serious skin reactions and sporadic, transient neuropsychiatric events (self-injury or delirium; mainly reported among Japanese adolescents and adults).
		Chemo-prophylaxis	3 months and older ¹	N/A	
Zanamivir (Relenza®)	Influenza A and B	Treatment	7 yrs and older	people with underlying respiratory disease (e.g., asthma, COPD) ²	Allergic reactions: oropharyngeal or facial edema. Adverse events: diarrhea, nausea, sinusitis, nasal signs and symptoms, bronchitis, cough, headache, dizziness, and ear, nose and throat infections.
		Chemo-prophylaxis	5 yrs and older	people with underlying respiratory disease (e.g., asthma, COPD) ²	
Peramivir (Rapivab®)	Influenza A and B ³	Treatment	18 yrs and older	N/A	Adverse events: diarrhea. Postmarketing reports of serious skin reactions and sporadic, transient neuropsychiatric events (self-injury or delirium; mainly reported among Japanese adolescents and adults).
		Chemo-prophylaxis	N/A	N/A	

Abbreviations: N/A = not applicable, COPD = chronic obstructive pulmonary disease.

¹ Oral oseltamivir is approved by the FDA for treatment of acute uncomplicated influenza in persons 14 days and older, and for chemoprophylaxis in persons 1 year and older. Although not part of the FDA-approved indications, use of oral oseltamivir for treatment of influenza in infants less than 14 days old, and for chemoprophylaxis in infants 3 months to 1 year of age, is recommended by the CDC and the American Academy of Pediatrics. If a child is younger than 3 months old, use of oseltamivir for chemoprophylaxis is not recommended unless the situation is judged critical due to limited data in this age group.

² Relenza is contraindicated in patients with history of allergy to milk protein.

³ Peramivir efficacy is based on clinical trials in which the predominant influenza virus type was influenza A; a limited number of subjects infected with influenza B virus were enrolled.



LTCF Guidance: Antiviral chemoprophylaxis

- All eligible residents in the entire long-term care facility (not just currently impacted wards) should receive antiviral chemoprophylaxis as soon as an influenza outbreak is determined.
- Antiviral chemoprophylaxis is recommended for all non-ill residents, regardless of their influenza vaccination status, in long-term care facilities that are experiencing outbreaks.
- CDC recommends antiviral chemoprophylaxis for a minimum of 2 weeks, and continuing for at least 7 days after the last known case was identified.
 - i.e. From the date of the first symptom onset chemoprophylaxis should be given for 2 weeks, during the outbreak or this time if a new case is identified then continue for 7 days after this

Chemoprophylaxis FAQs

- Q: Should we consider prophylaxis for entire facility when only one unit/wing is having the outbreak?
- A: If residents are cohorted and staff does not go from ill patients to well patients, then just one part of the facility can be given the prophylaxis dosing
- Q: Antiviral chemoprophylaxis can be considered or offered to unvaccinated personnel who provide care to persons at high risk of complications?
- A: It may be considered if the outbreak is caused by a strain that is not well matched by the vaccine, or for whom the vaccine is contraindicated.

LTCF Guidance: Additional Measures to Consider

- Have symptomatic residents stay in their own rooms as much as possible, including restricting them from common activities, and have their meals served in their rooms when possible.
- Limit the number of large group activities in the facility
- Avoid new admissions or transfers to wards with symptomatic residents.
- Limit visitation and exclude ill persons from visiting the facility via posted notices.

LTCF Guidance: Additional Measures to Consider

- Monitor personnel absenteeism due to respiratory symptoms and exclude those with influenza-like symptoms from work until at least 24 hours after they no longer have a fever.
- Restrict personnel movement from areas of the facility having illness to areas not affected by the outbreak.
- Administer the current season's influenza vaccine to unvaccinated residents and health care personnel as per current vaccination recommendations.

Additional Flu FAQs

- Q: Can we send specimens to the state lab?
- A: Yes, as part of an outbreak you can send specimens.

- Q: What if a death occurs during an outbreak?
- A: Notify the Epi on call, and enter the event in NCEDSS. Try to obtain a specimen for testing at the state lab.

Questions? Comments?

