

**Control of Influenza and Pneumococcal Disease  
in Long-Term Care Facilities (LTCFs)  
2015 – 2016**

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**Key Recommendations**

**Influenza:** Vaccinate all staff and residents against influenza every year. Begin vaccinating as soon as vaccine is available. Use inactivated influenza vaccine for people at higher risk of complications because of underlying medical conditions, children aged 6 - 23 months, and people aged  $\geq 50$  years. Use annual flu vaccination to assess patients for the need for other vaccines, including Tdap and pneumococcal vaccine.

**NEW!** ACIP recently changed the recommended interval between PCV13 followed by PPSV23 from 6-12 months to  $\geq 1$  year for immunocompetent adults  $\geq 65$  years. See page 2 for details.

**Tdap:** All adults aged 19 years and older, **including those 65 and older**, who have not yet received a dose of Tdap should receive a single dose. See page 5 for additional details.

**Influenza, people with neurologic conditions, and congregate housing:** Vaccination of residents and staff, early identification and treatment of influenza, rapid prophylaxis of exposed, and development of an influenza response plan are recommended. See page 8 for details.

Is influenza or influenza-like illness already circulating in your facility? See pages 8 - 12 for surveillance, reporting and control recommendations.

## **Pneumococcal Vaccine Recommendations:**

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**Background:** Beginning last season, a dose of PCV13 followed by PPSV23 should be administered routinely **in a series** to all healthy adults aged  $\geq 65$  years. This year, the optimal interval between doses PCV13 and PPSV23 was updated to be  $\geq 1$  year (changed from 6-12 months). This change in recommendation was based on the considerations summarized below.

- 1) Shorter intervals (e.g. 8 weeks) may be associated with increased reactogenicity.
- 2) Longer intervals ( $\geq 1$  year) may lead to an improved immune response.
- 3) Changing interval for the PCV13-PPSV23 sequence to  $\geq 1$  year simplifies and harmonizes the recommendation. It allows the intervals to be the same, regardless of the order in which the two vaccines are given, in immunocompetent adults aged  $\geq 65$  years.
- 4) The recently revised CMS regulations for pneumococcal vaccines allow for Medicare coverage of a different, second pneumococcal vaccine one year after the first vaccine was given. The change in the ACIP recommended interval for the PCV13-PPSV23 sequence would make ACIP recommendations consistent with the current Medicare policy.

### **Current Recommendations:**

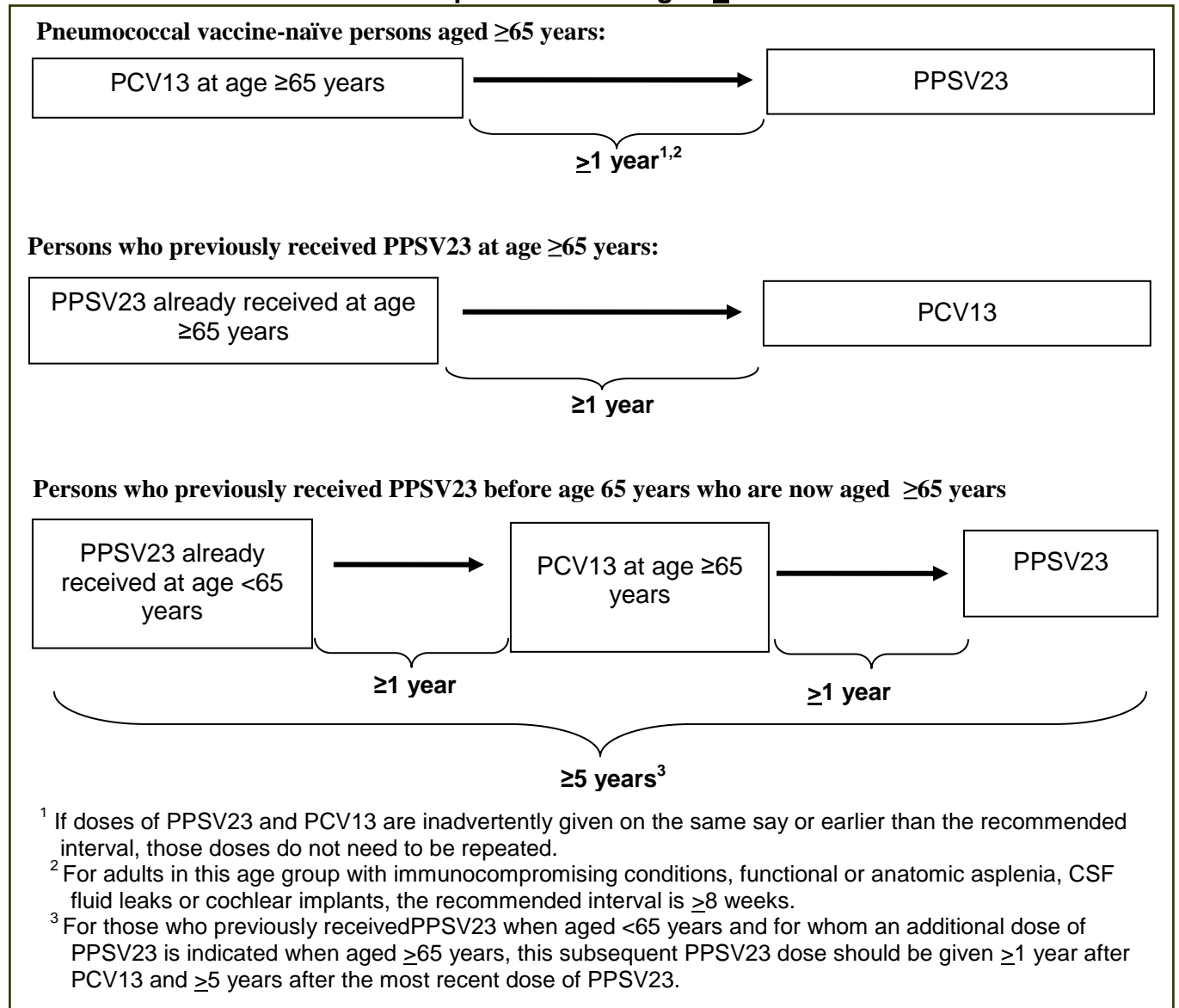
**NEW!** The [latest recommended intervals between PCV13 and PPSV23 vaccines by the ACIP](#) have been published.

A dose of PCV13 followed by PPSV23 should be administered routinely **in a series** to all immunocompetent adults aged  $\geq 65$  years. **PCV13** should be administered **only once** for all adults. Specific recommendations are based on a person's previous pneumococcal vaccine history.

- **Persons who are pneumococcal vaccine-naïve.** Adults aged  $\geq 65$  years who have not previously received pneumococcal vaccine or whose previous vaccination history is unknown should receive a single dose of PCV13 first, followed by a dose of PPSV23. The dose of PPSV23 should be given  $\geq 1$  year after a dose of PCV13. If PPSV23 cannot be given during this time window, the dose of PPSV23 should be given during the next visit.
- **Persons previously vaccinated with PPSV23.** Adults aged  $\geq 65$  years who have previously received  $\geq 1$  doses of PPSV23 also should receive a single dose of PCV13 if they have not yet received it. A dose of PCV13 should be given  $\geq 1$  year after receipt of the most recent PPSV23 dose. For those for whom an additional dose of PPSV23 is indicated, this subsequent PPSV23 dose should be given  $\geq 1$  year after PCV13 and  $\geq 5$  years after the most recent dose of PPSV23.
- The two vaccines should not be co-administered. If doses of PPSV23 and PCV13 are inadvertently given on the same day or earlier than the recommended interval, those doses do not need to be repeated.
- Adults 19 years and older at increased risk for pneumococcal disease who received a dose of PCV13 at 64 years or younger should **not** receive another dose of PCV13 at 65 years or older.
- For adults  $\geq 65$  years with immunocompromising conditions, functional or anatomic asplenia, CSF fluid leaks or cochlear implants, the recommended interval between a dose of PCV13 and PPSV23 remains at  $\geq 8$  weeks. This interval minimized the risk window for invasive pneumococcal disease caused by serotypes unique to PPSV23 in these highly vulnerable groups.

For more details about the sequential schedule and intervals, please see the algorithm below.

### Sequential Administration and Recommended Intervals for PCV13 and PPSV23 for Immunocompetent Adults Aged $\geq 65$ Years



The recommendations for routine PCV13 use among adults aged  $\geq 65$  years will be reevaluated in 2018 and revised as needed. CDC's [Pneumococcal Frequently Asked Questions](#) was developed to help healthcare professionals address common questions patients ask regarding pneumococcal vaccination. Also, information can be found on CDC's [Pneumococcal Disease](#) and [Pneumococcal Vaccination](#) web pages.

#### **Insurance Coverage and Pneumococcal Vaccines**

Most private health insurance covers pneumococcal vaccines. Check with the insurance provider for details on whether there is any cost to your patient and for a list of in-network vaccine providers. Medicare Part B covers the cost of two recommended doses of pneumococcal vaccine when administered 1 year apart. (i.e., 11 full months have passed following the month in which the previous pneumococcal vaccine was administered).

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As with other preventive care and vaccines, Medicare beneficiaries may not need to pay for the immunization if the doctor or other qualified health care provider accepts assignment (Medicare payment) for giving the vaccine. However, patients should check with their provider and plan to review the details of their coverage. Guidance for providers about Medicare Part B billing for pneumococcal vaccines can be found at: <http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/Downloads/MM9051.pdf>

CMS does have a free subscription service, which allows subscribers to receive notification by e-mail when new information is available. Subscribers select from a list of topics. **Please note that there is not a specific category regarding immunizations.** It can be found at: <http://www.cms.gov/About-CMS/Agency-Information/Aboutwebsite/EmailUpdates.html>. You can also send an email to CMS to ask questions about Medicare Part B at: [sec303ASPDData@cms.hhs.gov](mailto:sec303ASPDData@cms.hhs.gov). Or call the Medicare Call Center at 1-800-MEDICARE (1-800-633-4227).

### **Regulations, Requirements and Reimbursement**

#### **Massachusetts Regulation requires LTC facilities to offer flu vaccine to employees.**

Influenza is often introduced into and spread throughout a facility by staff or visitors. Flu vaccine may be less effective in the very elderly and some vaccinated LTC residents may remain susceptible. It is important to reduce their exposure to flu. HCP vaccination reduces mortality in elderly patients.

Regulation [105 CMR 150.002(D)[8]] requires LTC facilities to provide information about the risks and benefits of flu vaccine and flu vaccine at no cost to all personnel. All LTC facilities are also required to report information to MDPH documenting compliance with the vaccination requirement, in accordance with the reporting and data collection guidelines of the Commissioner (105 CMR). MDPH Circular Letter DHCQ 06-11-468

<http://www.mass.gov/eohhs/docs/dph/quality/hcq-circular-letters/ltc-facilities-0611468.pdf> For questions regarding the reporting requirements, please contact Eileen McHale at the Bureau of Healthcare Safety and Quality at 617-753-7324 or [eileen.mchale@state.ma.us](mailto:eileen.mchale@state.ma.us)

#### **The Centers for Medicaid and Medicare Services (CMS) require nursing homes to offer all residents flu and pneumococcal vaccines.**

[www.cms.hhs.gov/NursingHomeQualityInits/downloads/NHQIVaccinationSupplement.pdf](http://www.cms.hhs.gov/NursingHomeQualityInits/downloads/NHQIVaccinationSupplement.pdf)

#### **Medicare reimbursement for influenza and pneumococcal vaccination:**

In 2015, in addition to reimbursing the cost of vaccine, Medicare Part B reimburses \$28.58 for the administration of influenza and pneumococcal vaccine in Middlesex, Norfolk, and Suffolk counties, and \$26.74 in the rest of Massachusetts. For more information on Medicare Part B reimbursement for vaccines, see:

- The Medicare MLNMatters® article SE1523 (entitled “2015-2016 Influenza Resources for Health Care Professionals”) for the influenza vaccine pricing annual update (2015-2016 season) is available on the CMS Website at <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/Downloads/SE1523.pdf>
- Administration Rates: <http://www.ngsmedicare.com/ngs/portal/ngsmedicare/fees?timeframe=2013&LOB=Part+B>
- Vaccine Prices: <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Part-B-Drugs/McrPartBDrugAvgSalesPrice/VaccinesPricing.html>

- Center for Medicaid and Medicare Services Medical Learning Network site:  
<http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/>.

If you have questions regarding pricing and reimbursement under Medicare Part B, including pneumococcal vaccines, please send an email to the following address: [sec303ASPData@cms.hhs.gov](mailto:sec303ASPData@cms.hhs.gov). Or call the Medicare Call Center at 1-800-MEDICARE (1-800-633-4227).

### **Tdap Vaccine**

During 2001 through 2008, 49% of tetanus cases in the U.S. were among persons 50 years of age or older. The risk of dying from tetanus was five times greater in patients >65 years. Across the nation, including in Massachusetts, there has been an increase in the number of cases of pertussis (whooping cough). **Adults aged 19 years and older, including those older than 65, who have not yet received a dose of Tdap should receive a single dose.** Currently, Tdap is recommended only for a single dose across all age groups, except in pregnant women, who should get a dose during every pregnancy.

When feasible, Boostrix should be used for adults aged 65 years and older; however, ACIP concluded that either vaccine (Boostrix or Adacel) administered to a person 65 years or older is immunogenic and would provide protection. Providers should not miss an opportunity to vaccinate persons aged 65 years and older with Tdap. Therefore, providers may administer the Tdap vaccine they have available. A dose of either vaccine may be considered valid.

- Tdap can be administered **regardless** of interval since the last tetanus- or diphtheria-toxoid containing vaccine.
- After receipt of Tdap, persons should continue to receive Td for routine booster immunization every 10 years.

### **Influenza Prevention and Control Recommendations:**

Flu vaccination of health care workers protects the health care workers, their patients and their families.

Flu vaccination is an occupational health and patient safety issue.

### **Influenza Prevention and Control Measures Summary**

Strategies for the prevention and control of influenza in long-term care facilities include:

- Annual influenza vaccination of all residents and health-care personnel
- Age-appropriate vaccination of residents with pneumococcal vaccines
- Standard and droplet precautions with suspect or confirmed influenza cases
- Active surveillance and influenza testing for new cases
- Restriction of ill visitors and personnel
- Rapid administration of antiviral medications for treatment and prophylaxis
- Handwashing and respiratory hygiene/cough etiquette programs

## **Vaccination of Residents**

Use a systematic approach to vaccination, with checklists, to increase immunization levels:

- Vaccinate residents against flu when vaccine is available. Vaccinate residents admitted from September through March on admission.
- Ensure that written policies include annual flu vaccination for residents and staff, and pneumococcal vaccines (PPSV23 and PCV13) and Tdap vaccination for residents.
- Include Vaccine Information Statements (VIS) for PPSV23, PCV13, Tdap and flu vaccines in the admission packet. Vaccine Information Statements (VISs) for all vaccines in many languages: [www.immunize.org/vis](http://www.immunize.org/vis).
- Obtain consent for vaccination from the resident or family member on admission.
- Implement standing orders to administer flu, PCV13, PPSV23 and Tdap vaccines. Remember, doses of PCV13 and PPSV23 should be administered in a series and not on the same day. If given at the same time, or at shorter than the recommended interval, those doses do not need to be repeated. Other routine vaccines for adults are safe and effective when administered simultaneously in separate syringes at different anatomical sites.
- Use chart audits to ensure that there is documentation in every chart that the resident has been offered PPSV23, PCV13, and Tdap vaccines and annual influenza vaccine.
- Consider residents with uncertain immunization histories NOT immunized and vaccinate accordingly. The benefits of vaccination far outweigh any concerns about revaccination.

## **Vaccination of Family Members and Visitors**

Inform family members and other visitors about their role in the transmission of flu to patients and encourage them to get vaccinated. To find flu vaccine, they can call their health care provider or local board of health, visit <https://www.mylocalclinic.com/fcss/> for a list of flu vaccination clinics by town.

## **Influenza Vaccine**

**Vaccinate all staff and residents against influenza every year.** Begin vaccinating as soon as vaccine is available. Use inactivated influenza vaccine for people at higher risk of complications because of underlying medical conditions, children aged 6 - 23 months, and people aged  $\geq 50$  years.

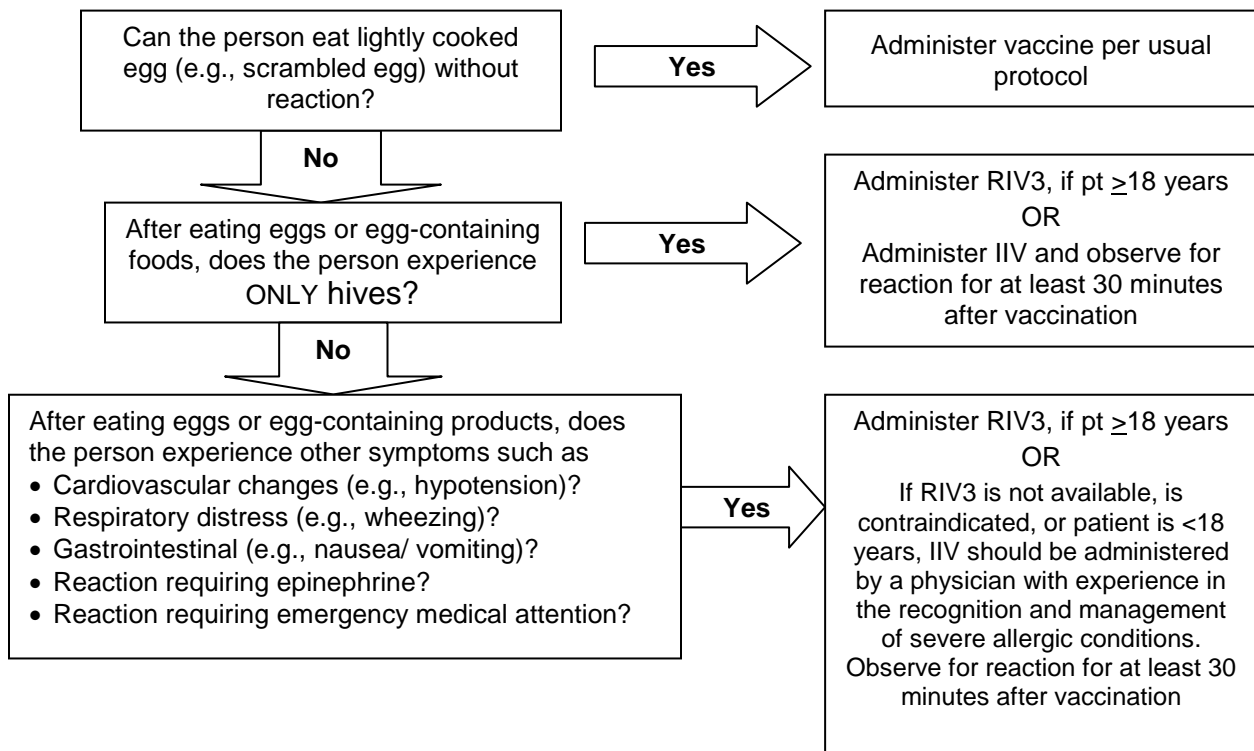
## **Evaluation and Management of Those with a History of Egg Allergies:**

- Persons with a history of egg allergy who experience only hives after exposure to egg should receive influenza vaccine. Because relatively fewer data are available for use of LAIV in this situation, use IIV or RIV. **RIV is egg-free** and may be used for persons aged  $\geq 18$  years who have no other contraindications. However, IIV (egg- or cell-culture based) may also be used, with the following additional safety measures:
  - Vaccine should be administered by a healthcare provider who is familiar with the potential manifestations of egg allergy; and
  - Observe vaccine recipients for at least 30 minutes for a reaction after administration of each dose.

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- Persons who have had reactions to egg involving such symptoms as angioedema, respiratory distress, lightheadedness, or recurrent emesis; or who required epinephrine or another emergency medical intervention may receive RIV3, if aged  $\geq 18$  years and there are no other contraindications. If RIV3 is not available or recipient is not within the indicated age range, IIV should be administered by a physician with experience in the recognition and management of severe allergic conditions.
- Some persons who report allergy to egg might not be egg-allergic. Those who are able to eat lightly cooked egg (e.g., scrambled egg) without reaction are unlikely to be allergic. Egg-allergic persons might tolerate egg in baked products (e.g., bread or cake). Tolerance to egg-containing foods does not exclude the possibility of egg allergy. Confirm egg allergy with a consistent medical history of adverse reactions to eggs and egg-containing foods, plus skin and/or blood testing for immunoglobulin E antibodies to egg proteins.
- For individuals who have no known history of exposure to egg, but who are suspected of being egg-allergic on the basis of previously performed allergy testing, consultation with a physician with expertise in the management of allergic conditions should be obtained prior to vaccination. Alternatively, RIV3 may be administered if the recipient is aged  $\geq 18$  years.
- CDC is continuing to monitor the data available about the safety of giving IIV and LAIV to those with egg allergy.

The algorithm below summarizes these recommendations for management of persons who report an allergy to eggs.





**Influenza, Neurologic and Neuromuscular Conditions, and Congregate Housing:**

Children and adults with neurological and neuromuscular conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability [mental retardation], moderate to severe developmental delay, muscular dystrophy, or spinal cord injury) are at increased risk of complications from influenza. These conditions can compromise respiratory function, handling of secretions and increase the risk of aspiration. Like everyone else six months of age and older, they should receive influenza vaccine every year. A [CDC study](#) found that in 2011-2012, only about half of children and young adults with in this high risk group received influenza vaccine.

People with neurological and neuromuscular conditions who live in congregate housing (e.g., group homes) and/or attend day programs may be exposed to influenza throughout the season. **They should receive flu vaccine as soon as it is available. Staff at these facilities should be vaccinated as well. In addition, when outbreaks of influenza-like illness (fever with cough and/or sore throat) occur in a group home or day program serving vulnerable populations, healthcare providers should be immediately notified and should consider rapid antiviral treatment of ill individuals as well as antiviral prophylaxis of individuals who were exposed.**

Outbreaks across the age spectrum in these settings have occurred annually in Massachusetts and have resulted in serious illness and even death. So, MDPH recommends proactive development of an influenza outbreak response protocol within agencies serving vulnerable populations, facilitates a rapid response when an outbreak occurs as well as immediate notification of MDPH and other appropriate agencies.

**Influenza Surveillance:**

Throughout the year, and especially during flu season, conduct surveillance for respiratory illness with fever and use influenza testing to identify outbreaks so infection control measures can be promptly initiated in all settings, including inpatient and outpatient settings.

**Influenza Reporting:**

All positive laboratory findings indicative of influenza virus infection are reportable directly to MDPH, in accordance with 105 CMR 300.000 (Reportable Diseases, Surveillance and Isolation and Quarantine Requirements).

**1) Immediately report the following influenza-related cases by phone to the Division of Epidemiology and Immunization at 617-983-6800 and to your local board of health.**

Providers in the city of Boston should report these cases directly to the Boston Public Health Commission at 617-534- 5611. This applies to all strains of influenza:

- ☎ Suspected and confirmed deaths related to influenza in children under 18 and in pregnant women
- ☎ Unusual or unusually severe cases of influenza or ILI (e.g., with encephalopathy, myocarditis, or pericarditis)
- ☎ Case(s) or clusters of ILI in long-term care facilities, group homes, shelters, prisons or other high risk settings
- ☎ Unusual clusters of ILI in daycare and elementary schools
- ☎ Cases of suspected or proven antiviral treatment or prophylaxis failure
- ☎ Suspect novel or variant influenza, e.g., travel-associated, animal-associated, avian influenza A H5N1 or H7N9, influenza A H3N2v, other highly pathologic avian influenza
- ☎ ILI in employees of swine or poultry farms



**Clusters in hospitals and long-term care:** Report clusters of influenza-like illness to MDPH via faxed teleform. Teleforms are available by calling 617-983-6801. Please provide as much detail on these forms as possible. Upon receipt of the teleform, an epidemiologist will contact you to provide guidance concerning testing, prophylaxis and infection control. Clusters in hospitals, long term care facilities and other entities licensed by the Division of Healthcare Quality (DHCQ) should also be reported to DHCQ at 800-462-5540 or 617-753-8150. Group homes, prisons or other settings should also contact the appropriate oversight agency for your facility.

**2) Report rapid influenza flu test results by teleform:** A teleform for reporting positive results of rapid influenza tests to MDPH is available by calling 617-983-6801.

**3) More about reporting:** For specific information about reporting, see the MDPH 105 CMR 300.000: Reportable Diseases, Surveillance and Isolation and Quarantine Requirements at [www.mass.gov/eohhs/docs/dph/cdc/reporting/rdiq-req-summary.rtf](http://www.mass.gov/eohhs/docs/dph/cdc/reporting/rdiq-req-summary.rtf). Please note that additional jurisdiction-specific reporting requirements may also apply. For example, healthcare providers and laboratories within the city of Boston must also report all cases of influenza and all laboratory tests positive for influenza directly to the Boston Public Health Commission (see [www.bphc.org/](http://www.bphc.org/) or contact BPHC at 617-534-5611).

**Influenza testing and infection control (including antiviral treatment), below:** Providers should routinely check for updates at [www.mass.gov/flu](http://www.mass.gov/flu) and [www.cdc.gov/flu/professionals/](http://www.cdc.gov/flu/professionals/).

**Infection Control:** To prevent the transmission of **all** respiratory infections, including influenza, in health care settings, implement the following infection control measures at the first point of contact with a potentially infected person. These should be incorporated into infection control practices as one component of standard precautions. Tools to help promote and implement these recommendations are available at [www.cdc.gov/flu/professionals/infectioncontrol](http://www.cdc.gov/flu/professionals/infectioncontrol).

**1) Assess the influenza and pneumococcal vaccination status of all patients** and the flu vaccination status of all staff. Vaccinate all susceptible patients and staff.

**2) Use standard precautions** ([www.cdc.gov/hicpac/2007IP/2007ip\\_part3.html#a](http://www.cdc.gov/hicpac/2007IP/2007ip_part3.html#a)) with all patients. Use droplet precautions ([www.cdc.gov/hicpac/2007IP/2007ip\\_part3.html#b](http://www.cdc.gov/hicpac/2007IP/2007ip_part3.html#b)) when caring for patients with suspected or confirmed seasonal influenza.

**3) Active surveillance and testing for new illness and cases:** Educate staff about the signs and symptoms of influenza-like illness.

**4) Respiratory hygiene/cough etiquette:** Post visual alerts (in appropriate languages) at the entrance to outpatient facilities (e.g., emergency departments, physician offices, outpatient clinics) instructing patients and persons who accompany them (e.g., family, friends) to inform health care personnel of symptoms of a respiratory infection when they first register for care and to practice respiratory hygiene/cough etiquette. Posters, brochures and fact sheets promoting **cough etiquette** and **handwashing** in multiple languages are available from the Massachusetts Health Promotion Clearinghouse at <https://massclearinghouse.ehs.state.ma.us/>

**5) Novel strains of influenza:** If you suspect any novel strain of influenza, please contact your local board of health and MDPH **immediately** at 617-983-6800. Highly-pathogenic avian influenza (HPAI) A H5 viruses have been identified in birds in the United States since December 2014. The majority of these infections have occurred in poultry, including backyard and commercial flocks. There have been no cases identified in Massachusetts birds to date; these HPAI A H5 viruses are not known to have caused disease in humans. Providers should check for updates at <http://www.cdc.gov/flu/avianflu/index.htm>, <http://www.cdc.gov/gonbnnv/flu/avianflu/h7n9-virus.htm> and at <http://www.cdc.gov/flu/swineflu/prevention-strategies.htm>.

**6) Antiviral drugs** are an adjunct to, not a substitute for, vaccination for preventing and controlling influenza. The neuraminidase inhibitors oseltamivir (Tamiflu<sup>®</sup>), zanamivir (Relenza<sup>®</sup>), and peramivir (Rapivab<sup>®</sup>) are currently recommended for use against circulating influenza viruses. The adamantanes (amantadine and rimantadine) are **not** recommended because of high levels of resistance to these drugs among recently circulating influenza A (H3) and 2009 H1N1 influenza viruses.

**Prompt empiric antiviral treatment:** Clinical judgment is an important factor in treatment decisions for patients presenting with influenza-like illness. Prompt empiric antiviral treatment with influenza antiviral medications is recommended while results of definitive diagnostic tests are pending, or if diagnostic testing is not possible, for patients with clinically suspected influenza illness who have:

- Illness requiring hospitalization,
- Progressive, severe, or complicated illness, regardless of previous health status, and/or
- Increased risk for severe disease.

Antiviral treatment, when clinically indicated, should **not be delayed pending definitive laboratory confirmation of influenza**. Influenza antiviral medications are most effective when initiated within the first 2 days of illness, but these medications may also provide benefits for severely ill patients when initiated even after 2 days. Guidance on use of antivirals may change depending upon resistance data. Consult CDC's latest recommendations on antiviral use at [www.cdc.gov/flu/professionals/antivirals/](http://www.cdc.gov/flu/professionals/antivirals/).

**Antiviral agents for outbreak control:** Used in conjunction with vaccination and behavioral measures, including droplet precautions and cohorting of ill residents, antiviral agents are a key component of outbreak control in long-term care facilities and other institutional settings. Antiviral chemoprophylaxis should be considered following identification of any laboratory-confirmed case of influenza or in the presence of more than one resident meeting criteria for influenza-like illness (see above definition) in a facility or area of the facility.

- When antiviral agents are used for outbreak control, they should be administered to all residents (include all employees if variant strain is found that is not well matched to vaccine), regardless of immunization status.
- All unvaccinated staff should be re-offered influenza vaccine. They should also be offered chemoprophylaxis if they care for persons at high risk for complications.
- All staff, regardless of vaccination status, should be offered chemoprophylaxis if there are any indications that the outbreak is caused by a variant strain of influenza that is not covered by the vaccine.
- The drugs should be continued for a minimum of 2 weeks and as long as 10 days after the last onset of symptoms.
- The antiviral dose for each resident is determined based on age, renal function, liver function and other pertinent characteristics.
- Pre-approved medication orders, or plans to obtain physician's orders on short notice, should be in place to ensure that chemoprophylaxis can be started as soon as possible.
- Additional CDC guidance concerning control of influenza in LTCFs is available at <http://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm>

- **Clinicians should be alert to changes in antiviral recommendations that might occur as additional antiviral resistance data becomes available during the 2015-2016 season.** For more information go to <http://www.cdc.gov/flu/professionals/antivirals/antiviral-infection-control.htm>

**7) Rapid testing reminder:** Point of care rapid tests capable of detecting influenza A and B virus infections are available, **but health care providers and public health personnel should be aware that rapid influenza diagnostic tests have limited sensitivity and false negative results are common.** Thus, negative results from rapid influenza diagnostic test should not be used to guide decisions regarding treating patients with influenza antiviral medications. In addition, false positive tests can occur and are more likely when influenza is rare in the community. When laboratory confirmation is desired, use RT-PCR and/or viral culture.

Additional information on the prevention and control of influenza can be found in the influenza chapter of the MDPH Guide to Surveillance, Reporting and Control, at [www.mass.gov/eohhs/docs/dph/disease-reporting/guide/influenza.rtf](http://www.mass.gov/eohhs/docs/dph/disease-reporting/guide/influenza.rtf).

### **Influenza Testing:**

Diagnostic testing for influenza can aid clinical judgment and guide treatment decisions and control measures. Clinical testing services performed on specimens submitted to a state public health laboratory provide important diagnostic information to the clinician and also contribute to public health respiratory surveillance response and control measures. As a specific example, an influenza B strain submitted to the Massachusetts State Public Health Laboratory (MA SPHL) in March 2012 was the first identified isolate that later began to circulate widely and was then incorporated into the 2013-14 and 2014-15 influenza vaccines. Specific testing services provided by the MA SPHL may assist the clinician as follows:

- **Define the start of the influenza season:** Rapid antigen testing for detecting influenza A and B virus infections is widely available. Rapid influenza diagnostic tests vary in performance characteristics. False negative and false positive results can occur when flu prevalence is low in the community. For this reason, MA SPHL requests that clinical laboratories consider submitting their first influenza rapid positive original samples of the season (beginning in October) to MA SPHL for confirmation. For more information: [www.cdc.gov/flu/professionals/diagnosis/clinician\\_guidance\\_ridt.htm](http://www.cdc.gov/flu/professionals/diagnosis/clinician_guidance_ridt.htm).
- **Diagnose influenza or other respiratory infections:** Diagnostic tests for influenza performed at the MA SPHL include a “respiratory panel” to identify seasonal and novel influenza types/subtypes followed by testing of influenza negative samples for the presence of adenovirus, respiratory syncytial virus (A/B), parainfluenza virus (1-4), coronavirus (HKU1, OC43, NL63, 229E), human metapneumovirus and rhinovirus/enterovirus using polymerase chain reaction (PCR). There is no charge for these tests. The turnaround time for results is usually a few days, but varies depending on the test performed. Results are returned electronically or by fax and mail to the submitting provider.
- **Monitor trends in influenza antiviral resistance:** MA SPHL performs surveillance testing for influenza antiviral resistance and provides this information in its weekly influenza report. Diagnostic antiviral resistance testing is currently coordinated with CDC and is offered on a case-by-case basis. Providers are encouraged to submit samples from influenza cases with suspect antiviral drug resistance.
- **Rapid identification of new or novel influenza or other viral infections:** MA SPHL is able to rapidly determine the presence of a novel or variant influenza strain using the CDC diagnostic panel. Rapid antigen testing and commercially-available RT-PCR tests may not

detect novel or variant strains of influenza and most are unable to differentiate between seasonal, novel or variant influenza strains. Therefore, respiratory specimens should be collected from any patient suspected of having atypical or novel infections with H3N2v or avian influenza H7N9, for example. These suspicions may be based on travel history or animal exposure.

### **Specimen Collection and Shipping to MA SPHL:**

Flu specimens should be collected as soon as possible after onset of illness, preferably within three days (72 hours). Specimens collected after 72 hours are usually unsuitable for testing. Specimens should be submitted immediately after collection to MA SPHL in order to be tested within three days of collection. If samples will be shipped to MA SPHL  $\geq 3$  days from collection or on a Friday but are collected within 72 hrs, they should be frozen at  $< -20^{\circ}\text{C}$  and shipped with ice packs on Monday. This variation must be noted on the specimen submission form to avoid an “unsatisfactory for testing” designation.

- For information on influenza specimen collection and transportation, or to speak with an immunization epidemiologist, call MDPH at 617-983-6800.
- Information of specimen collection and submission, including the A respiratory surveillance specimen submission form may be found at: [www.mass.gov/eohhs/docs/dph/laboratory-sciences/flu-virus-collection.pdf](http://www.mass.gov/eohhs/docs/dph/laboratory-sciences/flu-virus-collection.pdf) and [www.mass.gov/eohhs/docs/dph/laboratory-sciences/flu-specimen-submission-form.pdf](http://www.mass.gov/eohhs/docs/dph/laboratory-sciences/flu-specimen-submission-form.pdf).

### **Influenza Vaccine Formulations, Abbreviations and Strains for 2015-2016 Season**

- **Influenza Vaccine Formulations and Abbreviations**

cclIV3 = Cell Culture-based Inactivated influenza Vaccine, Trivalent

IIV = Inactivated Influenza Vaccine

IIV3 = Inactivated Influenza Vaccine, Trivalent

IIV3-HD = Inactivated Influenza Vaccine, Trivalent, high dose

IIV4 = Inactivated Influenza Vaccine, Quadrivalent

IIV4 – ID = Inactivated Influenza Vaccine, Quadrivalent, intradermal

LAIV4 = Live, Attenuated Influenza Vaccine, Quadrivalent

RIV3 = Recombinant Influenza Vaccine, Trivalent

- **Choice of which influenza vaccine formulation to use:** Choice should primarily be driven by the age indication and contraindications and precautions.

**There is no current preference for:**

LAIV vs. IIV

Quadrivalent vs. trivalent

High-dose vs. standard dose

- **2015-2016 influenza vaccine formulations**

For 2015–16, U.S.-licensed influenza vaccines contain new two strains which are different from those in the 2014–15 vaccine.

- Trivalent influenza vaccines contain:
  - an A/California/7/2009 (H1N1)pdm09-like virus
  - an A/Switzerland/9715293/2013 (H3N2)-like virus (**New!**)
  - a B/Phuket/3073/2013-like (Yamagata lineage) virus (**New!**)
- Quadrivalent vaccines contain the above three viruses and a second influenza B strain, B/Brisbane/60/2008-like (Victoria lineage) virus.

## Vaccine Ordering and Locating Clinics:

Some resources for providers and patients can be found below.

### **Providers Wishing to Order Flu Vaccine for Private Purchase:**

The national [Influenza Vaccine Availability Tracking System](#) (IVATS) assists providers wishing to privately purchase flu vaccine. IVATS identifies available doses of influenza vaccine by formulation and distributor/vendor throughout the season.

### **Location of Flu and Adult Vaccination Services:**

Flu vaccination clinics are listed on the [mylocalclinic.com](#) website sponsored by the Massachusetts Health Officers Association (MHOA). MDPH urges agencies to post their clinics on this website. Many boards of health (BOHs) may have clinics that make flu and other vaccines available to both adults and children. BOHs can be contacted individually for questions about possible flu vaccination clinics in Massachusetts municipalities, including the age groups served.

[HealthMap Vaccine Finder](#) assists the public with locating influenza and adult vaccination services within their communities. It is a free, online service where users can search for locations that offer immunizations. Its staff works with partners such as clinics, pharmacies, and health departments to provide accurate and up-to-date information about vaccination services. MDPH urges providers and other agencies to [register their locations](#) on the HealthMap Vaccine Finder site too.

## **References and Resources:**

For questions about influenza please call the Massachusetts Department of Public Health Immunization Program at 617-983-6800 or your local board of health. For questions about state-supplied influenza vaccine, please call the Vaccine Unit at 617-983-6828.

**NEW!** CDC Influenza Toolkit for Long-Term Care Employers (resources for increasing vaccination rates among healthcare personnel in LTCFs): <http://www.cdc.gov/flu/toolkit/long-term-care/>

CDC. Summary Recommendations: Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP) - United States, 2015-16. MMWR 2015;818-825. <http://www.cdc.gov/mmwr/pdf/wk/mm6430.pdf>

CDC. Intervals between PCV13 and PPSV23 Vaccine Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2015;64;944-947. [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6434a4.htm?s\\_cid=mm6434a4\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6434a4.htm?s_cid=mm6434a4_e)

CDC. Use of 13-Valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine Among Adults Aged  $\geq 65$  Years: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR, 2014, 63;822-825. [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a4.htm?s\\_cid=mm6337a4\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a4.htm?s_cid=mm6337a4_w)

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Prevention Strategies for Seasonal and Influenza A (H3N2)v in Health Care Settings. Web page last reviewed 8/30/2014. <http://www.cdc.gov/flu/swineflu/prevention-strategies.htm>

CDC. Immunization of Health-Care Personnel: Recommendations of the ACIP. MMWR November 25, 2011, 2011:1-45. <http://www.cdc.gov/mmwr/PDF/rr/rr6007.pdf>

CDC. Influenza Vaccination of Health-Care Personnel: Recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP) 2006:55(No. RR-2). [www.cdc.gov/mmwr/preview/mmwrhtml/rr5502a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5502a1.htm).

Vaccine Information Statements (VISs) for all vaccines in many languages: [www.immunize.org/vis](http://www.immunize.org/vis).

Standing orders for LAIV, IIV, pneumococcal vaccine, Tdap and other vaccines are available at [www.immunize.org](http://www.immunize.org) or [www.mass.gov/dph/imm](http://www.mass.gov/dph/imm)