CME Activity Online (See Page 33)

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INFLUENZA PREVENTION AND CONTROL, 2022-2023

- Provider recommendation is one of the greatest predictors of vaccination. Ensure that you and your entire staff receive flu vaccines and counsel patients and caregivers on the benefits of flu vaccination.
- Use every opportunity to vaccinate all patients aged 6 months and older against influenza, especially those at risk of severe illness from influenza and COVID-19. All routine vaccines can be coadministered with flu vaccines, including COVID-19 vaccines.
- Vaccinate all children aged 6 through 59 months attending City-licensed and City-regulated childcare against influenza by December 31st of each year, as required by the New York City Health Code.
- Give inactivated flu vaccines to all pregnant persons in any trimester to prevent influenza infection and complications in the patient and infant.
- Administer high-dose, adjuvanted, or recombinant flu vaccines to patients aged 65 years and older.

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Influenza is a highly contagious viral infection that results in serious illnesses, hospitalizations, and deaths every season. Infants, pregnant persons, older adults, and people of any age with certain medical conditions are at higher risk of serious complications.[1]

Influenza activity has been lower than that seen before SARS-CoV-2, the novel coronavirus that causes COVID-19, appeared in the United States in early 2020.[1] The 2021-2022 influenza season was mild and occurred in 2 waves, with more cases and hospitalizations in the second wave than the first.[2] Influenza activity peaked later than had been reported in previous seasons.[2] Estimates of symptomatic illnesses, medical visits, hospitalizations, and deaths caused by influenza during the 2021-2022 season are lower than

estimates for the 10 influenza seasons preceding the COVID-19 pandemic.[2] There were no influenza-associated deaths among children in New York City (NYC); in the United States, 40 children died of influenza.[3,4] In addition to flu vaccination, precautions taken during the COVID-19 pandemic, including social distancing and mask wearing, may have had an impact on the timing and severity of influenza activity.[2]

Vaccination is our best defense against influenza and its complications. An estimated 7.5 million influenza cases, 105,000 hospitalizations, and 6,300 deaths were prevented by vaccination in the United States during the 2019-2020 influenza season (the data are insufficient to calculate the burden for the 2020-2021 season).[5] The largest proportions of these negative outcomes were prevented among children aged 6 months to 4 years, who received flu vaccination at high rates and for whom vaccine effectiveness was greatest.[5]

In the United States, influenza viruses circulate most commonly from the late fall through early spring, though the timing, intensity, and severity of each season cannot be predicted.[1] This season, NYC is seeing an early increase in influenza activity. SARS-CoV-2 will continue to cocirculate with influenza and relaxed COVID-19 mitigation measures could result in increased activity for both viruses.[6] Flu vaccination will reduce the overall burden of influenza-related illnesses and protect people at risk of severe influenza-related illness. Use every opportunity to administer flu vaccines to all persons aged 6 months and older. Ensure those at greatest risk of severe illness from influenza are vaccinated (**Boxes 1**[1,7] and **2**[1,7]).

VACCINATION COVERAGE AND INEQUITIES

Despite the importance of flu vaccination, coverage in NYC fell short of the Healthy People 2030 target of 70.0%[8] for all age groups during the 2021-2022 season.

Flu vaccination coverage among children aged 18 years and younger was lower in the 2021-2022 season than the prior season; it was 49.0% overall, 62.8% for children aged 6 through 59 months, 50.3% for children aged 5 through 8 years, and 42.1% for children aged 9 through 18 years (unpublished data, Citywide Immunization Registry [CIR]). In the 2019-2020 season, coverage among children aged 6 through 59 months was greater (76.8%) and had increased each season since the NYC Health Code requirement that children in City-licensed and City-regulated childcare be vaccinated against influenza was reinstated in 2018 (unpublished data, CIR).[9] Disruption in childcare attendance and routine immunization services during the COVID-19 pandemic may have led to lower coverage among children in this age group since 2020.

BOX 1. IMPORTANT GROUPS TO VACCINATE AGAINST INFLUENZA[1,7]

- All children aged 6 through 59 months, especially those aged younger than 2 years
- Adults aged 50 years and older, especially those aged 65 years and older
- People who are or may be pregnant during influenza season
- Residents of nursing homes and other long-term care facilities
- Adults and children with certain high-risk medical conditions (**Box 2**)
- Health care workers
- Household contacts and caregivers of
  - children aged younger than 5 years, especially those younger than 6 months
  - adults aged 50 years and older
  - people with certain medical conditions (**Box 2**)
- Non-Latino Black, Latino, and American Indian or Alaska Native people[a]
- People at increased risk of severe COVID-19

[a]Risk is due to structural racism and health care access; see Health Equity and Flu

The New York City Board of Health requires all children aged 6 through 59 months attending City-licensed and City-regulated day care, school-based childcare, Head Start, and prekindergarten programs to receive an annual flu vaccine by December 31st of each year.

BOX 2. MEDICAL CONDITIONS THAT INCREASE RISK OF SEVERE COMPLICATIONS FROM INFLUENZA[1,7]

- Asthma or chronic lung disease (eg, chronic obstructive pulmonary disease, cystic fibrosis)
- Heart disease (eg, congenital heart disease, congestive heart failure, coronary artery disease) or stroke
- Renal, hepatic, neurologic, hematologic, or metabolic disorders, including diabetes
- Immunocompromise due to any cause, including immunosuppression caused by medications or by HIV infection
- Conditions requiring use of aspirin- or salicylate-containing medications in people aged younger than 19 years because of risk of Reye syndrome after influenza infection
- Morbid obesity (body mass index ≥40)

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In 2021, 49.1% of adults aged 18 years and older reported receiving the flu vaccine in the past 12 months, but there were substantial inequities in vaccination by race/ethnicity (unpublished data, 2021 Community Health Survey). Compared with non-Latino White adults, adults who identify as non-Latino Black, Latino, and non-Latino Other Race received flu vaccines at lower rates (54.5% vs 40.9%, 45.1%, and 44.3%, respectively). There was no significant difference in flu vaccine coverage between non-Latino Asian/Pacific Islander (55.8%) and non-Latino White adults. Among adults aged 65 years and older, no significant differences were seen by race/ethnicity. Overall, 68.5% of older adults reported that they received the flu vaccine; coverage was 67.7%, 65.5%, 70.2%, and 70.8% among non-Latino Black, Latino, non-Latino Asian/Pacific Islander, and non-Latino White older adults, respectively.

Lack of access to health care and low confidence in vaccines affect vaccination uptake among people across racial, ethnic, religious, and other groups. Unethical medical research and practices in the past, along with ongoing structural racism and discrimination in health care, have created a long-standing mistrust in medical research, health care institutions, and vaccines among many people, including Black, Indigenous, and people of color (BIPOC).[10-18] Although demographic statistics are commonly used to highlight health inequities, race and ethnicity are social constructs,[19] not biological ones; there are no physiologic differences in disease processes by race. However, structural and interpersonal racism do influence the distribution of social, economic, and environmental conditions needed for health. The NYC Board of Health has declared racism a public health crisis.

Learn more at Racism and Health and Health Equity and Flu, and about building your patients' trust in your health care practice at Conversations to Build Trust in Vaccination: A Training Module for Health Workers.

STRONGLY RECOMMEND VACCINATION

A strong recommendation from a health care provider is one of the greatest predictors of a patient getting vaccinated.[20,21] Build confidence in the safety and effectiveness of flu and other vaccines with discussion at every visit, especially among patients who are BIPOC (**Resources**).[22]

- Listen with empathy, and respectfully address questions or concerns that keep the patient or parent from readily accepting vaccination (**Boxes 3**[23,24] and **4**[1,25-28]).
- Share why you, your staff, and your family get vaccinated against influenza each year.
- Ensure that all staff who have contact with patients give the same culturally competent, affirmative, and accurate messages about flu vaccination (**Resources**).
  - As required by law, before vaccinating, give patients the CDC Vaccine Information Statement (VIS), which explains the bene-

BOX 3. COMMON QUESTIONS ABOUT THE IMPORTANCE OF FLU VACCINATION[23,24]

Q: Why do I need a flu vaccine?
A: You need a flu vaccine because influenza can cause severe illness, especially in young children, pregnant people, older adults, and people with certain medical conditions such as asthma, heart disease, and diabetes. Influenza can cause complications that lead to hospitalization and death, even in healthy children and adults.

Q: Will a flu vaccine do any good? I got a flu vaccine once and got the flu anyway.
A: Yes, a flu vaccine will give you protection against the influenza virus and prevent many influenza infections, even though it may not be 100% effective. If you do get influenza, the vaccine can make your illness milder and reduce the risk of complications, including hospitalization and death.

Q: How late is too late to get a flu vaccine?
A: You can be vaccinated against influenza at any time during influenza season. Influenza viruses circulate all year. Influenza activity is usually highest between December and March, but there have been high numbers of cases as late as May. While we recommend getting the vaccine at the start of the season, you should still get vaccinated in the winter or spring if you were not vaccinated earlier.

Q: Do I need a flu vaccine every year?
A: Yes, everyone aged 6 months and older needs a flu vaccine every year, since influenza viruses can change each influenza season. This year's flu vaccine includes 2 new influenza strains.

Q: Why do I need a flu vaccine if other people are vaccinated? Won't that keep me from getting influenza?
A: Your best protection against influenza is getting vaccinated yourself. Influenza is very contagious. People who do not get vaccinated can get influenza and pass it on to people who may be more likely to have serious complications, including infants, pregnant people, older adults, and people with certain health conditions.

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fits and risks of a vaccine. VISs are available in more than 40 languages at Immunize.org; provide one in a language that the recipient or parent can understand.
  - Share clear information from trusted sources and be transparent about what you do and do not know.
  - Recognize that all people across racial, ethnic, religious, and other groups can experience low vaccine confidence and that the reasons behind their uncertainties are not uniform across any group.

BOX 4. WHAT TO TELL PATIENTS ABOUT FLU VACCINE SAFETY[1,25-28]

Vaccines generally cause only mild reactions

- Most side effects are minor and pass quickly; serious side effects are rare
  - The flu shot can cause soreness, redness, or swelling at the injection site, headache, fatigue, muscle aches, and low-grade fever
  - The nasal spray flu vaccine may cause a reaction in the nose, such as nasal congestion
- Flu vaccines have a long safety track record and are thoroughly tested by the FDA
  - The FDA and Centers for Disease Control and Prevention maintain robust surveillance systems to detect and identify any safety issues

The flu vaccine is made from safe ingredients

- Thimerosal is a vaccine preservative made with ethyl mercury. Ethyl mercury is not the same as the type of mercury associated with fish (which is called methylmercury). Ethyl mercury is quickly eliminated by your body and does not cause harm
- No adverse health effects have been found with the low doses of thimerosal in vaccines; there have been minor reactions such as redness and swelling at the injection site
  - There is no thimerosal in single-dose preparations of the flu vaccine; all multidose vials of the flu vaccine contain a small amount of thimerosal

The flu vaccine is unlikely to cause a severe allergic reaction

- Many forms of the flu vaccine do not contain common allergens such as preservatives, antibiotics, or gelatin; some are egg-free. There is no latex in any of this season's vaccines
- Your allergies will be reviewed to assess whether you are eligible to receive the flu vaccine

The flu vaccine cannot cause influenza

- The inactivated flu vaccine does not contain live viruses, so it cannot cause influenza
- The nasal spray flu vaccine does contain live viruses; however, the viruses are weakened so that they cannot cause influenza, but they may cause nasal congestion
  - Understand that perceived unfair treatment by a provider can discourage patient vaccination.[15]
- Advise patients that flu vaccination is covered by most insurance plans and is available at no cost under the Affordable Care Act, though there may be a copayment for office visits and restrictions on out-of-network providers.
  - For practices and facilities that see children, enroll in the Vaccines for Children (VFC) program. VFC provides vaccine at no cost to the provider to vaccinate eligible children (eg, those with health insurance that does not cover vaccines and those enrolled in Child Health Plus B).
  - For providers who are already enrolled in the VFC program, maintain sufficient supplies of VFC vaccine. More children may have become eligible for the VFC program because of insurance loss or economic hardship due to the COVID-19 pandemic. In NYC, 74% of children are estimated to be eligible to receive vaccine through the VFC program (unpublished data, 2022 CDC Population Estimate Survey).
- If you do not offer vaccinations, refer patients to other vaccine providers, including pharmacies (**Box 5**[29,30]).

BOX 5. IMMUNIZATION AND PHARMACISTS[29,30]

- Pharmacists in New York State are currently authorized to administer
  - Flu vaccines to everyone aged 2 years and older
  - COVID-19 vaccines to everyone aged 3 years and older
  - Tetanus-containing, pneumococcal, meningococcal, zoster, hepatitis A, hepatitis B, human papillomavirus, measles, mumps, rubella, and varicella vaccines to adults aged 18 years and older
- Patients can check with their local pharmacy directly or visit NYC Vaccine Finder and HealthMap to search for available vaccines, ages served,[a] and payment and insurance information
- Pharmacists administering flu vaccines should check the Citywide Immunization Registry (CIR) to assess for and coadminister any other vaccines that are due
- Pharmacies routinely report flu (and other) vaccinations to the CIR; during the 2021-2022 season, they reported administering more than 790,900 doses of the flu vaccine (unpublished data, CIR)

[a]New York State pharmacists may vaccinate children aged as young as 2 years, but each pharmacy may have its own age limits

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VACCINATING DURING COVID-19

During the COVID-19 pandemic, follow best practices for safe interactions among staff and patients when administering flu and other vaccines.[31] See Interim Guidance for Routine and Influenza Immunization Services During the COVID-19 Pandemic and Guidance for Planning Vaccination Clinics Held at Satellite, Temporary, or Off-Site Locations.

Currently, 4 COVID-19 vaccines are available in the United States under emergency use authorization or full licensure by the FDA. COVID-19 vaccines, including booster doses (**Box 6**[32]), can be coadministered with other vaccines such as flu vaccines. See Use of COVID-19 Vaccines in the United States and COVID-19 Vaccine Information for Providers for up-to-date information on COVID-19 vaccines, including eligible and special populations, booster doses, and contraindications.

ENSURE YOU AND YOUR STAFF ARE VACCINATED

All health care workers should be vaccinated against influenza as soon as vaccine is available to protect themselves, their families, and their patients from influenza infection and transmission (**Box 7**[33]). Flu vaccination among NYC health care workers in regulated facilities increased after New York State (NYS) influenza prevention regulations were established in 2013 but have declined during the COVID-19 pandemic, although the reasons for this are not yet clear. In the 2019-2020 season, vaccination coverage was 72%, but in the 2021-2022 season, vaccination coverage was 46% (unpublished data, NYS Department of Health).

IMPROVE VACCINATION COVERAGE

During the COVID-19 pandemic, there was a substantial disruption in the administration of routine vaccines in NYC, including among children.[34] In addition to assessing vaccination status and strongly recommending all due or overdue vaccines at every visit, implement best practices, such as using standing orders, reminder-recall systems, self-screening tools, posters, and patient handouts to improve vaccination uptake and reduce inequities (**Resources**). Follow the National Vaccine Advisory Committee (NVAC) Standards for Adult Immunization Practice (**Box 8**[35]).

VACCINATE CHILDREN AS EARLY AS POSSIBLE

Young children are at high risk of serious complications from influenza.[1] It is especially important to protect infants aged younger than 6 months from being exposed to influenza because they are at high risk of influenza-related hospitalizations and medically attended visits but are too young to be vaccinated. The best way to protect an infant is to vaccinate the parent when pregnant. Strongly encourage childcare providers and members of households with young children to get vaccinated.

The NYC Health Code requires all children aged 6 through 59 months attending City-licensed and City-regulated childcare to receive an annual flu vaccine by December 31st of each year.[9] During the 2021-2022 season, vaccination coverage for children in this age group was 62.8%, a 14% decrease from the 2019-2020 season, which may have resulted from disruption in childcare attendance during the COVID-19 pandemic (unpublished data, CIR).

The CDC recommends administering 2 doses of the flu vaccine (at least 4 weeks apart) to all children aged 6 months through 8 years if they have

BOX 6. BIVALENT COVID-19 BOOSTER VACCINATION[32]

Bivalent mRNA COVID-19 vaccines, which contain components of the original strain and the Omicron BA.4/BA.5 variants of SARS-CoV-2, are recommended as a single booster dose for most people. See Use of COVID-19 Vaccines in the United States for detailed guidance.

BOX 7. VACCINATION REQUIREMENTS FOR HEALTH CARE WORKERS[33]

- When the New York State Commissioner of Health declares that influenza is prevalent, Articles 28, 36, and 40 require health care and residential facilities to
  - document the flu vaccination status of all health care workers
  - provide masks for unvaccinated workers and ensure that masks are worn in the presence of patients or residents as long as influenza is prevalent
- Many health care facilities must also report health care workers' vaccination status to the Centers for Medicare and Medicaid Services (CMS) using the National Healthcare Safety Network platform. See CMS Requirements

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not received 2 or more doses of the flu vaccine before July 1, 2022.[1] For children who received 2 doses of the flu vaccine before July 1, 2022, the 2 doses of the flu vaccine need not have been administered in the same season or in consecutive seasons. Children aged 8 years or younger who have received 2 doses before July 1, 2022, and children older than age 8 years should receive 1 dose of the flu vaccine. Pharmacists in NYS can administer flu vaccines to children aged 2 years and older (**Box 5**, page 20).

VACCINATE PREGNANT PATIENTS AGAINST INFLUENZA AND PERTUSSIS

Influenza

Influenza can be dangerous to pregnant people and infants who are too young to receive the vaccine. The flu vaccine protects pregnant people against influenza as well as their newborns in the first few months of life through transplacental transfer of antibodies during pregnancy.[36] The American College of Obstetricians and Gynecologists (ACOG)[37] and the Advisory Committee on Immunization Practices (ACIP)[1] recommend that all pregnant people receive an annual influenza vaccine. In 2020, more than 1 in 6 pregnant people in NYC reported that they did not get a recommendation from their health care provider to receive a flu vaccine during the 12 months before delivery; only 65.0% of pregnant people reported receiving the flu vaccine that year (unpublished data, Pregnancy Risk Assessment Monitoring System [PRAMS]).

Provider recommendation is one of the greatest predictors of vaccination[20,21]; strongly recommend and offer inactivated flu vaccines to all pregnant people (**Box 9**[1,28,38-41]). Pregnant people in their third trimester of pregnancy should be offered vaccine as soon as it becomes available.[1]

Pertussis

When offering and administering flu vaccines, providers should also strongly recommend and offer tetanus, diphtheria, and pertussis (Tdap) vaccine to all pregnant people during each pregnancy, preferably during 27 to 36 weeks' gestation. Young infants are at greatest risk of severe disease, hospitalization, and death from pertussis.[42] Like the flu vaccine, the Tdap vaccine protects newborns in the first few months of life against pertussis through transplacental transfer of antibodies during pregnancy. A large US study concluded that maternal Tdap vaccination pre-

BOX 8. NATIONAL VACCINE ADVISORY COMMITTEE (NVAC) STANDARDS FOR ADULT IMMUNIZATION PRACTICE[35]

1. **ASSESS the immunization status of all patients at every visit**
2. **STRONGLY RECOMMEND needed vaccines**
3. **ADMINISTER needed vaccines or REFER patients to another vaccinator**
   - Administer all due or overdue vaccinations according to the routine immunization schedule during the same visit. All routine vaccines can be coadministered with flu vaccines, including COVID-19 vaccines
   - Use nonpatient-specific standing orders to allow registered nurses to independently assess patient vaccination status and administer needed vaccines without a direct order from the physician; this will save time and reduce missed opportunities for vaccination (**Resources**)
   - If you do not stock vaccine, use NYC Vaccine Finder and HealthMap to refer to a local vaccine provider, such as a pharmacist (**Box 5**, page 20)
4. **DOCUMENT all vaccines that patients receive**
   - Use the Citywide Immunization Registry (CIR) to document vaccinations and to let other providers know which vaccines patients have received
     - As a condition of receiving federally funded vaccine, providers are mandated to report all COVID-19 vaccinations to the CIR within 24 hours of administration
     - Providers should report all other immunizations administered to persons aged 19 years and older to the CIR, with the patient's written or verbal consent
       - Encourage patients to consent by discussing the advantages of reporting, such as online access to vaccine records

BOX 9. REASONS TO GIVE THE FLU VACCINE IN ANY TRIMESTER OF PREGNANCY[1,28,38-41]

- Pregnant people are 7 times more likely to have an influenza-related hospitalization than nonpregnant people
- Influenza increases the risk of premature labor and delivery
- Vaccination prevents influenza infection in the infant through transplacental antibody transfer, which protects infants aged younger than 6 months who are too young to get vaccinated and at high risk of complications
- Vaccination with inactivated vaccine during pregnancy is safe in any trimester
- Inactivated flu vaccines have been given to millions of pregnant people without harm and are available in single-dose preparations without thimerosal

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vented 91.4% of pertussis infections among infants in the first 2 months of life, before the first infant dose of diphtheria, tetanus, and pertussis (DTaP) vaccine is typically administered.[43]

In 2020, 69.9% of pregnant people in NYC reported that their provider recommended Tdap vaccine during any prenatal care visit, and 67.7% reported receiving Tdap vaccine (unpublished data, PRAMS). See ACIP's complete Tdap vaccination recommendations for pregnancy and pertussis.

VACCINATE OLDER ADULTS

For adults aged 65 years and older, ACIP recommends high-dose, adjuvanted, or recombinant flu vaccines preferentially, as there is evidence of greater potential benefit with these vaccines for older adults.[1] If high-dose, adjuvanted, or recombinant flu vaccines are not available at an opportunity for vaccine administration, use any other age-appropriate influenza vaccine.[1]

TIMING OF FLU VACCINES

In the United States, the composition of flu vaccines is determined in February or March of each year for the upcoming flu season, based on a variety of factors, including epidemiologic, genetic, and antigenic data, evolutionary analysis, and human serology and vaccine effectiveness studies.[1] Flu vaccines may be available as soon as July or August each year.

Vaccinate children who require 2 doses of the flu vaccine with their first dose as soon as vaccine becomes available so the second dose can be given by the end of October.[1] Vaccinate children who require only one dose of vaccine as soon as vaccine is available; there is less evidence that immunity wanes over time among children as compared with adults.[1] Similarly, vaccinate pregnant persons in their third trimester soon after vaccine becomes available to reduce their infants' risk of flu during the first months of life.[1] However, for adults who are not pregnant, avoid flu vaccination in July and August unless later vaccination may not be possible, since the vaccine may be less effective before the end of influenza season, especially among older adults.[1]

THIS SEASON'S VACCINES

For the 2022-2023 season, all influenza vaccines are only available in quadrivalent formulation.[1]

- Inactivated influenza vaccine (IIV4) and live attenuated influenza vaccine (LAIV4), both egg-based, contain A/Victoria/2570/2019 (H1N1)pdm09-like virus; A/Darwin/9/2021 (H3N2)-like virus (updated); B/Austria/1359417/2021 (Victoria lineage)-like virus (updated); and B/Phuket/3073/2013 (Yamagata lineage)-like virus.
- Cell culture-based inactivated influenza vaccine (ccIIV4) and recombinant influenza vaccine (RIV4) contain A/Wisconsin/588/2019 (H1N1)pdm09-like virus; A/Darwin/6/2021 (H3N2)-like virus (updated); B/Austria/1359417/2021 (Victoria lineage)-like virus (updated); and B/Phuket/3073/2013 (Yamagata lineage)-like virus.

In all flu vaccines (IIV4, LAIV4, ccIIV4, RIV4), the A/H3N2 and B/Victoria strains were updated from last season's formulations to better match circulating strains. Administer any licensed, age-appropriate influenza vaccine.[1] See **Table 1**[1] for information on this season's vaccines.

ASSESS FOR CONTRAINDICATIONS AND PRECAUTIONS

Ask about patients' current health status, including any acute illness and history of reactions to flu vaccines. For people with a history of egg allergy, if a flu vaccine ***other than quadrivalent ccIIV or RIV*** is used, the vaccine should be administered in an inpatient or outpatient medical setting, under the supervision of a health care provider who is able to recognize and manage severe allergic reactions (**Figure**[1,44], page 25).[1] Alert patients to potential reactions to the vaccine and tell them to report any concerning reactions.

- Current illness: A patient with mild illness, such as diarrhea, upper respiratory tract illness, or otitis media, or on current antimicrobial therapy can be safely vaccinated.[45] If illness is moderate to severe, with or without fever, consider the risks and benefits of administering the flu vaccine.[45]
- History of Guillain-Barré Syndrome (GBS): Explain the risks and benefits of vaccination in patients with a history of GBS within 6 weeks of receipt of a previous flu vaccination. If such patients are also at high risk of severe influenza complications, the benefits may outweigh the risks.[1]
- A previous severe allergic reaction to the flu vaccine, such as anaphylaxis, may be a precaution for, or contraindication to, future receipt of the vaccine.[1] See **Table 2**[1] (page 25) for details.

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- A previous severe allergic reaction to any component of a specific flu vaccine is a contraindication to receipt of that vaccine.[1]

Inform patients that alternate formulations of the flu vaccine are available if they have a known allergy to one or more vaccine components, including preservatives, antibiotics, and/or gelatin. None of the 2022-2023 vaccines contain latex. Check the CDC Vaccine Excipient Table or vaccine package inserts to find a formulation without the implicated ingredient.

ACIP recommends that LAIV should not be administered to the following groups[1]:

- Children and adolescents taking concomitant aspirin or salicylate-containing medications;
- Children aged 2 through 4 years who have received a diagnosis of asthma or whose parents report (or medical record notes) that the child had wheezing or asthma during the preceding 12 months;
- People who are immunocompromised;
- People with
  - asplenia or sickle cell disease,
  - a cochlear implant,
  - an active cerebrospinal fluid leak;
- Close contacts and caregivers of persons with severe immunosuppression who require a protected environment;
- Pregnant people;
- Persons who have taken influenza antiviral medications within the previous 48 hours to 17 days, depending on the antiviral used.

Precautions to LAIV use include asthma in persons aged 5 years and older and the presence of certain medical conditions that might predis-

TABLE 1. AVAILABLE FLU VACCINES FOR THE 2022-2023 SEASON[a,1]

Type	Trade Name	Manufacturer	Age Indication	Presentation	Thimerosal Content[b]
IIV4	Afluria Quadrivalent	Seqirus	≥3 y[c]	0.5-mL prefilled syringe[c]	Preservative-free
			≥6 mos[c,d]	5.0-mL multidose vial[c]	24.5 mcg/0.5mL
	Fluzone Quadrivalent	Sanofi Pasteur	≥6 mos[e]	0.5-mL prefilled syringe[e]	Preservative-free
				0.5-mL single-dose vial[e]	Preservative-free
				5.0-mL multidose vial[e]	25 mcg/0.5mL
	FluLaval Quadrivalent	GlaxoSmithKline	≥6 mos	0.5-mL prefilled syringe	Preservative-free
	Fluarix Quadrivalent	GlaxoSmithKline	≥6 mos	0.5-mL prefilled syringe	Preservative-free
ccIIV4[f]	Flucelvax Quadrivalent	Seqirus	≥6 mos	0.5-mL prefilled syringe	Preservative-free
				5.0-mL multidose vial	25 mcg/0.5mL
RIV4[f]	Flublok Quadrivalent	Sanofi Pasteur	≥18 y	0.5-mL prefilled syringe	Preservative-free
LAIV4	FluMist Quadrivalent	AstraZeneca	2-49 y	0.2-mL single-dose prefilled intranasal sprayer	Preservative-free
High-dose IIV4	Fluzone High-Dose Quadrivalent	Sanofi Pasteur	≥65 y	0.7-mL prefilled syringe	Preservative-free
Adjuvanted IIV4	Fluad Quadrivalent	Seqirus	≥65 y	0.5-mL prefilled syringe	Preservative-free

ccIIV4, cell culture-based inactivated influenza vaccine, quadrivalent; IIV4, inactivated influenza vaccine, quadrivalent; LAIV4, live attenuated influenza vaccine, quadrivalent; RIV4, recombinant influenza vaccine, quadrivalent

[a]All vaccines listed are intramuscular, except LAIV4, which is intranasal; all vaccines listed are latex-free

[b]New York State law prohibits the administration of vaccines containing more than trace amounts of thimerosal to pregnant people and children aged younger than 3 y, unless this vaccine cannot be obtained despite good-faith effort. In these instances, vaccination of children aged less than 3 y and pregnant people is still recommended because the substantial risk of complications or death from influenza in these groups outweighs the unproven risk of vaccination with thimerosal-containing vaccine

[c]Afluria Quadrivalent is approved for ages 6 through 35 months at 0.25 mL per dose and for ages ≥3 years at 0.5 mL per dose. For children aged 6 through 35 months, a 0.25-mL dose must be obtained from a multidose vial, as 0.25-mL prefilled syringes are not expected to be available for the 2022-2023 season

[d]May be given by jet injector instead of needle and syringe for persons aged 18 through 64 years only

[e]Fluzone Quadrivalent is approved for ages 6 through 35 months at either 0.25 mL or 0.5 mL per dose. If a prefilled syringe is used for a child in this age group, the dose volume will be 0.5 mL per dose, as 0.25-mL prefilled syringes are not expected to be available for the 2022-2023 season

[f]These vaccines are egg-free

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pose to complications after wild-type influenza infection (eg, chronic pulmonary, cardiovascular [except isolated hypertension], renal, hepatic, neurologic, hematologic, or metabolic disorders [including diabetes]).[1] When a precaution is present, vaccination should generally be deferred, but may be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction.

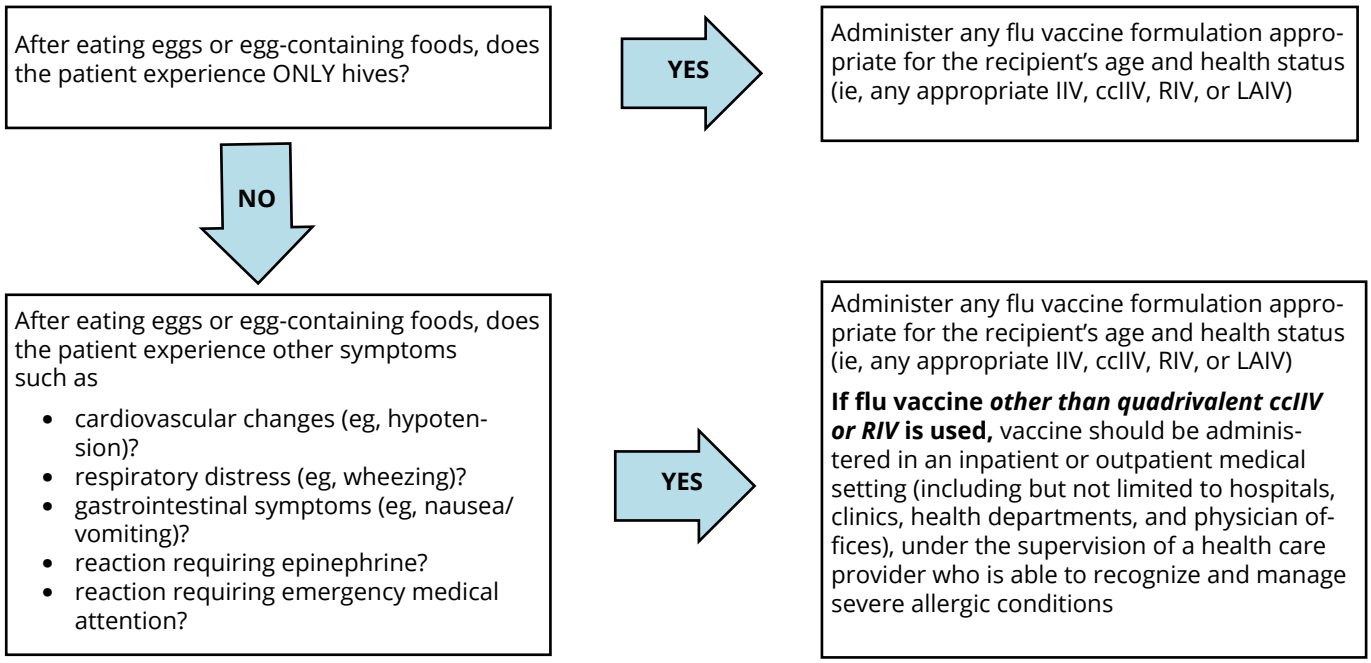
VACCINATE AGAINST PNEUMOCOCCAL DISEASE

Pneumococcal infection is a serious complication of influenza that can lead to severe pneumonia, meningitis, bacteremia, and sinus and ear infections.[46] Four vaccines are approved to prevent pneumococcal disease: 3 pneumococcal conjugate vaccines (PCV13, PCV15, and PCV20) and 1 pneumococcal polysaccharide vaccine (PPSV23).[47]

Per ACIP recommendations, children aged 59 months and younger should routinely receive the PCV13 series.[47] Some children with chronic medical conditions should receive additional doses of PCV13 and/or PPSV23, depending on previous vaccination history and specific medical condition present.

ACIP recommendations for pneumococcal vaccination in adults were revised in early 2022.[47] Adults aged 65 years and older who have not

FIGURE. ADMINISTERING FLU VACCINES TO PATIENTS WITH EGG ALLERGIES[1,44]



ccIIV, cell culture-based inactivated influenza vaccine; IIV, inactivated influenza vaccine; LAIV, live attenuated influenza vaccine; RIV, recombinant influenza vaccine

NOTE: Regardless of a recipient's egg allergy history, all vaccination providers should be familiar with the office emergency plan and be currently certified in cardiopulmonary resuscitation. Epinephrine and equipment for maintaining an airway should be available for immediate use

TABLE 2. CONTRAINDICATIONS AND PRECAUTIONS FOR PERSONS WITH PREVIOUS SEVERE ALLERGIC REACTION TO FLU VACCINE[1]

Flu vaccine[a] associated with previous severe allergic reaction (eg, anaphylaxis)	Egg-based IIV4 and LAIV4	ccIIV4	RIV4
Any egg-based IIV or LAIV	Contraindication[b]	Precaution[c]	Precaution[c]
Any ccIIV	Contraindication[b]	Contraindication[b]	Precaution[c]
Any RIV	Contraindication[b]	Precaution[c]	Contraindication[b]
Unknown	Consult with allergist		

ccIIV, cell culture-based inactivated influenza vaccine; IIV, inactivated influenza vaccine; LAIV, live attenuated influenza vaccine; RIV, recombinant influenza vaccine

[a]Any valency
[b]Do not administer vaccine
[c]Vaccination should be deferred but may be indicated if the benefit of protection from the vaccine outweighs the risk of an adverse reaction

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received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown should routinely receive either PCV20 alone or PCV15 followed by PPSV23 (**Table 3**[48,49]). Individuals aged 65 years and older who previously received PCV13 should receive PPSV23 (PCV20 may also be used if PPSV23 is not available) and those who previously received PPSV23 should receive PCV20 or PCV15 alone. For adults aged 19 through 64 years with a qualifying medical condition who have not received any pneumococcal vaccine or whose previous vaccination history is unknown, administer PCV20 alone or PCV15 followed by PPSV23 (**Table 3**). Adults aged 19 to 64 years with a qualifying medical condition and who previously received an incomplete pneumococcal series will require additional pneumococcal vaccines depending on vaccine history and the qualifying medical condition present.

See Pneumococcal ACIP Vaccine Recommendations and Pneumococcal Vaccine Timing for Adults for detailed guidance.

The Centers for Medicare and Medicaid Services covers the cost of pneumococcal vaccination, in accordance with current ACIP recommendations, for Medicare patients.

TABLE 3. PNEUMOCOCCAL VACCINE ADMINISTRATION FOR ADULTS WHO HAVE NEVER RECEIVED PNEUMOCOCCAL CONJUGATE VACCINE[48,49]

Underlying Medical Condition or Other Risk Factors	Ages 19 Through 64 y	Ages ≥65 y
None	Not recommended	Administer 1 dose of PCV20 OR 1 dose of PCV15 followed by 1 dose of PPSV23 at least 1 year later
Alcoholism	Administer 1 dose of PCV20 OR 1 dose of PCV15 followed by 1 dose of PPSV23 at least 1 year later *The minimum interval (8 weeks) can be considered in adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak.*	Administer 1 dose of PCV20 OR 1 dose of PCV15 followed by 1 dose of PPSV23 at least 1 year later *The minimum interval (8 weeks) can be considered in adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak.* *Reminder: No additional doses are indicated at this age if PCV15 or PCV20 was administered at a younger age.*
Cerebrospinal fluid leak		
Chronic heart disease[a]		
Chronic liver disease		
Chronic lung disease[b]		
Chronic renal failure[c]		
Cigarette smoking		
Cochlear implant		
Congenital or aquired asplenia[c]		
Congenital or acquired immunodeficiency[c,d]		
Diabetes mellitus		
Generalized malignancy[c]		
HIV infection[c]		
Hodgkin disease[c]		
Iatrogenic immunosuppression[c,e]		
Leukemia[c]		
Lymphoma[c]		
Multiple myeloma[c]		
Nephrotic syndrome[c]		
Sickle cell disease/other hemoglobinopathies[c]		
Solid organ transplant[c]		

PCV15, 15-valent pneumococcal conjugate vaccine; PCV20, 20-valent pneumococcal conjugate vaccine; PPSV23, 23-valent pneumococcal polysaccharide vaccine

[a]Includes congestive heart failure and cardiomyopathies

[b]Includes chronic obstructive pulmonary disease, emphysema, and asthma

[c]Considered an immunocompromising condition

[d]Includes B-(humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease)

[e]Includes diseases requiring treatment with immunosuppressive drugs such as long-term systemic corticosteroids and radiation therapy

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PRESCRIBE ANTIVIRALS FOR TREATMENT AND PROPHYLAXIS

Treatment

Treat people at higher risk of influenza complications (**Box 10**[7,50]). Four antiviral medications are approved to treat influenza A and B.[50]

- Oral oseltamivir for patients aged 2 weeks and older: Adverse events include nausea, vomiting, and headache. Off-label use of oseltamivir for treatment of influenza in infants aged younger than 14 days is recommended by the CDC and the American Academy of Pediatrics.
- Inhaled zanamivir for patients aged 7 years and older: Adverse events include risk of bronchospasm, sinusitis, and dizziness. Zanamivir is not recommended for people with underlying respiratory diseases such as asthma or chronic obstructive pulmonary disease and those with a history of allergy to lactose or milk protein.
- Intravenous peramivir for patients aged 6 months and older: The most common side effect is diarrhea.
- Oral baloxavir for patients aged 5 years and older: The incidence of adverse events in clinical trials was not significantly higher than it was with placebo.

Prophylaxis

Use oseltamivir (ages 3 months and older), zanamivir (ages 5 years and older), or baloxavir (ages 5 years and older) for prophylaxis if[50]

- the patient is at high risk of complications after they are exposed to influenza, and
- the vaccine is medically contraindicated or was administered within 2 weeks after exposure.

Baloxavir is the only single-dose influenza medication approved by the FDA for postexposure prophylaxis.[50] If a child is aged younger than 3 months, use of oseltamivir for chemoprophylaxis is not recommended unless the situation is judged critical, because of limited data in this age group.[50] Prophylaxis with oseltamivir, zanamivir, or baloxavir is generally not recommended if it has been more than 48 hours since initial exposure to influenza.[50]

Peramivir is not recommended for prophylaxis.[50] See package inserts for complete product safety information. Amantadine and rimantadine are not recommended for treatment or prophylaxis of currently circulating influenza A viruses because of high levels of drug resistance; these agents are ineffective against influenza B viruses.[50]

Influenza antiviral medications may reduce the effectiveness of LAIV if given within the following intervals:[1,50]

- Oseltamivir or zanamivir: 48 hours before to 2 weeks after LAIV
- Peramivir: 5 days before to 2 weeks after LAIV
- Baloxavir: 17 days before to 2 weeks after LAIV

REPORTING, ALERTS, AND SURVEILLANCE

Reporting vaccinations

- Report all vaccinations administered to children aged 18 years or younger to the CIR within 2 weeks of administration as required by NYS Public Health Law Section 2168 and NYC Health Code Section 11.07. To register with or access the CIR, log on to the CIR page.
- For patients aged 19 years and older, physicians are strongly encouraged to report

BOX 10. HIGH-RISK GROUPS WHO SHOULD RECEIVE ANTIVIRAL TREATMENT FOR INFLUENZA[7,50]

- Children aged younger than 2 years
- Adults aged 65 years and older
- People with
  - asthma or chronic lung disease (eg, chronic obstructive pulmonary disease, cystic fibrosis)
  - heart disease (eg, congenital heart disease, congestive heart failure, coronary artery disease) or stroke
  - renal, hepatic, neurologic, hematologic, or metabolic disorders, including diabetes
  - immunosuppression, including that caused by medications or by HIV infection
  - morbid obesity (ie, body mass index ≥40)
- People who are pregnant or postpartum (within 2 weeks after delivery)
- People aged younger than 19 years receiving long-term aspirin- or salicylate-containing medications, because of the risk of Reye syndrome after influenza infection
- Non-Latino Black, Latino, and American Indian or Alaska Native people[a]
- Residents of nursing homes and other chronic care facilities

[a]Risk is due to structural racism and health care access; see Health Equity and Flu

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vaccines administered to the CIR with the patient's verbal or written consent.
  - Encourage patients to consent by discussing the advantages of reporting, such as online access to vaccine records.
- Pharmacists and registered nurses **must** get verbal or written consent from people aged 19 years and older and report administered vaccinations to the CIR, as per NYS Public Health Law Section 2168.
- Incorporate CIR consent into a general consent process.
- Report all COVID-19 vaccinations to the CIR within 24 hours of vaccine administration as a condition of receiving federally funded vaccine.
- Collect and report vaccine recipients' characteristics, including race and ethnicity, to the CIR to support equitable vaccine distribution and access.

Use your electronic health record (EHR) system to report immunizations to the CIR. Contact cir_interop@health.nyc.gov with your facility address, contact information, and current EHR, or call the NYC Provider Access Line at 866-692-3641. Providers may be eligible to receive Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) incentive payments when using their EHR to report to the CIR. For more information, see Overview of Meaningful Use and Immunization Reporting and MACRA.

Reporting influenza cases and deaths

- Report nosocomial cases of even 1 laboratory confirmed case of influenza or clusters of 2 or more cases of influenza-like illness in Article 28 facilities by:
  - calling the NYS Department of Health at 518-474-1142 ***or***
  - using the Nosocomial Outbreak Reporting Application on the Health Commerce System ***or***
  - completing a NYS Healthcare Facility Infection Control (Nosocomial) Report and faxing it to 518-402-5165.
- Report deaths in children aged younger than 18 years that occurred from a clinically compatible illness in which there is a positive influenza test or from an unknown febrile respiratory illness by calling the NYC Provider Access Line at 866-692-3641.

Visit Reporting Diseases and Conditions for more information.

Updates, alerts, and surveillance

- Register for NYC DOHMH influenza alerts through the Health Alert Network or by calling 866-692-3641.
- Regularly review the NYC DOHMH's Weekly Influenza Surveillance Summary for information about local influenza activity, flu vaccine recommendations, and vaccine supply.
- Consider joining the NYC DOHMH's ILINet Influenza Surveillance Program as a sentinel physician. You will receive a weekly e-mail influenza update and guidance on influenza management. Contact Alice Yeung at 347-396-2608 or e-mail ayeung@health.nyc.gov for information.

SUMMARY

Hospitalizations and deaths occur every influenza season. Influenza and SARS-CoV-2 viruses are again circulating at the same time. Use every opportunity to administer flu vaccines to all eligible persons aged 6 months and older to reduce the burden of respiratory illnesses in the community and protect vulnerable populations at risk of severe illness. Follow safe vaccinating practices and use evidence-based strategies, such as standing orders and reminder-recall systems, to improve flu vaccination rates and eliminate inequities (**Box 11**). Coadminister routine vaccines, such as pneumococcal and Tdap vaccines, and COVID-19 vaccines with flu vaccines in children and adults.

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BOX 11. FLU VACCINE REMINDERS

1. **Order enough vaccine,** including enough preservative-free vaccine for pregnant persons and children aged younger than 3 years, as required by New York State public health law. See Influenza Vaccine Availability Tracking System—IVATS for information
   - If you are enrolled in the Vaccines for Children Program, order flu vaccines now if you have not already done so at the Citywide Immunization Registry (CIR). See Dear Colleague letter for details
2. **Ensure you have sufficient medical supplies,** including syringes, needles, and epinephrine pens, to vaccinate and administer anaphylaxis treatment
3. **Store vaccines safely** to ensure full potency. See Checklist for Safe Vaccine Storage and Handling
4. **Use your electronic health record (EHR) system** or CIR to identify and contact patients who need vaccination and to monitor vaccination coverage in your practice
5. **Document vaccines** administered and other required information in the patient's record. Provide a Vaccine Information Statement (VIS) in the appropriate language, and record the date the VIS was given and the VIS edition date
6. **Report all immunizations administered to all patients using the CIR**
   - Pediatric care practices should report all administered flu vaccine doses to the CIR. Providers administering flu vaccines to adults should report all doses with verbal or written consent from the patient. You can access up-to-date influenza reports any time during influenza season. Contact cir@health.nyc.gov with your facility address, contact information, and current EHR, or call 347-396-2400
   - To inform vaccination quality improvement initiatives, facilities can also use the CIR to generate practice-level vaccine coverage reports, identify unvaccinated patients, and access the CIR texting function for reminder and recall messages. Guides for these CIR tools are available at the bottom of the Online Registry sign-in page
7. **Report adverse reactions to the federal Vaccine Adverse Event Reporting System (VAERS)**, online or by calling 800-822-7967

See Resources for tips on increasing vaccination coverage in your practice

RESOURCES FOR PROVIDERS

New York City (NYC) Department of Health and Mental Hygiene (DOHMH)

- Provider Access Line: 866-NYC-DOH1 (866-692-3641)
- Immunization Information for Providers: https://www1.nyc.gov/site/doh/providers/health-topics/immunization-information-for-healthcare-providers.page

  See section on Influenza and Pneumococcal Information
- Letter to Providers: 2022-2023 Seasonal Influenza Vaccination: https://www1.nyc.gov/assets/doh/downloads/pdf/flu/dear-colleague-2022-seasonal-flu-kick-off-letter.pdf
- Weekly Influenza Surveillance Summary: https://www1.nyc.gov/site/doh/providers/health-topics/flu-alerts.page
- Citywide Immunization Registry: https://www1.nyc.gov/site/doh/providers/reporting-and-services/citywide-immunization-registry-cir.page

  User guides can be found at https://immunize.nyc/provider-client/servlet/PC
- NYCMED: https://a816-healthpsi.nyc.gov/NYCMED/Account/Login
- Health Alert Network: https://www.nyc.gov/site/doh/providers/resources/health-alert-network.page

  Sign up at https://a816-healthpsi.nyc.gov/NYCMED/Account/Login or 866-692-3641
- E-mail questions to: nycflu@health.nyc.gov

Improving vaccination coverage

- NYC DOHMH. Vaccines for Children Program (VFC): https://www1.nyc.gov/site/doh/providers/nyc-med-cir/vaccines-for-children-program.page
- NYC DOHMH. NYC VFC Provider Requirements. Enrollment and Recertification: https://www1.nyc.gov/site/doh/providers/nyc-med-cir/vaccines-for-children-requirements.page
- NYC DOHMH. Adult Immunization Action Kit: https://www1.nyc.gov/site/doh/providers/resources/public-health-action-kits-adult-immunization.page
- NYC DOHMH. Influenza Coverage and Text Messaging Recall: https://www1.nyc.gov/assets/doh/downloads/pdf/cir/cir-flu-coverage-and-custom-recall-texting-guide.pdf
- Centers for Disease Control and Prevention (CDC). Use of Reminder and Recall by Vaccination Providers: https://www.cdc.gov/mmwr/preview/mmwrhtml/00054628.htm
- CDC. Flu Print Resources: https://www.cdc.gov/flu/resource-center/freeresources/print/index.htm

  Downloadable posters and patient handouts by audience in different sizes, formats, and languages
- CDC. Use of Standing Orders Programs to Increase Adult Vaccination Rates: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr4901a2.htm
- CDC. The Adult Vaccine Assessment Tool: https://www2.cdc.gov/nip/adultimmsched
- New York State (NYS) Office of the Professions. Nonpatient-specific Standing Order and Protocol Guidelines: http://www.op.nysed.gov/prof/nurse/immunguide.htm
- Immunize.org. Standing Orders for Administering Influenza Vaccine to Adults: https://www.immunize.org/catg.d/p3074.pdf
- Immunize.org. Standing Orders Templates for Administering Vaccines: http://www.immunize.org/standing-orders

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RESOURCES FOR PROVIDERS *(continued)*

- Centers for Medicare and Medicaid Services (CMS). Influenza Vaccination Strategies: https://innovation.cms.gov/files/x/pgp-flu-vaccination.pdf

Building trust and vaccine confidence

- World Health Organization. Conversations to Build Trust in Vaccination: A Training Module for Health Workers: https://www.comminit.com/global/content/conversations-build-trust-vaccination-training-module-health-workers
- US Department of Health and Human Services. Think Cultural Health: https://cccm.thinkculturalhealth.hhs.gov

  Free accredited online educational program (registration required)
- University of Washington Health Sciences Library and Harborview Medical Center. EthnoMed: https://ethnomed.org

  Community cultural profiles and subjects related to ethnic groups; patient education materials in various languages
- CDC. What is Health Equity?: https://www.cdc.gov/healthequity/whatis
- CDC. Racism and Health: https://www.cdc.gov/minorityhealth/racism-disparities/index.html
- CDC. Health Equity and Flu: https://www.cdc.gov/flu/highrisk/disparities-racial-ethnic-minority-groups.html
- NYC DOHMH. Resolution of the NYC Board of Health Declaring Racism a Public Health Crisis: https://www1.nyc.gov/assets/doh/downloads/pdf/boh/racism-public-health-crisis-resolution.pdf

COVID-19

- NYC DOHMH. COVID-19 Vaccine Information for Providers: https://www1.nyc.gov/site/doh/covid/covid-19-providers-vaccines.page
- CDC. COVID-19: People with Certain Medical Conditions: https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html
- CDC. Use of COVID-19 Vaccines in the United States: https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html
- CDC. Interim Guidance for Routine and Influenza Immunization Services During the COVID-19 Pandemic: https://www.cdc.gov/vaccines/pandemic-guidance/index.html
- CDC. Guidance for Planning Vaccination Clinics Held at Satellite, Temporary, or Off-Site Locations: https://www.cdc.gov/vaccines/hcp/admin/mass-clinic-activities/index.html

Immunization recommendations

- CDC. Influenza (Flu). Information for Health Professionals: www.cdc.gov/flu/professionals
- CDC. Vaccine Administration: https://www.cdc.gov/vaccines/hcp/admin/admin-protocols.html
- Advisory Committee on Immunization Practices (ACIP). Immunization Schedules: https://www.cdc.gov/vaccines/schedules
- CDC. Pneumococcal Vaccination: Summary of Who and When to Vaccinate: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html
- ACIP. Pneumococcal Vaccine Recommendations: https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/pneumo.html
- ACIP. Pneumococcal Vaccine Timing for Adults: https://www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf
- ACIP. DTaP/Tdap/Td Vaccine Recommendations: https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/dtap.html
- ACIP. Shared Clinical Decision-Making Recommendations: https://www.cdc.gov/vaccines/acip/acip-scdm-faqs.html
- Immunize.org. Vaccines. Influenza: http://www.immunize.org/influenza
- Immunize.org. Checklist for Safe Vaccine Storage and Handling: https://www.immunize.org/catg.d/p3035.pdf
- American College of Physicians. Adult Immunization: https://www.acponline.org/clinical-information/clinical-resources-products/adult-immunization
- American College of Obstetricians and Gynecologists. Immunization for Women: http://www.immunizationforwomen.org
- New York State (NYS) Department of Health (DOH). Regulation for Prevention of Influenza Transmission by Healthcare and Residential Facility and Agency Personnel: http://www.health.ny.gov/diseases/communicable/influenza/seasonal/providers/prevention_of_influenza_transmission
- NYS DOH. New York State Law Prohibits the Administration of Vaccines Containing More Than Trace Amounts of Thimerosal to Children Less Than 3 Years of Age and Pregnant Women: https://www.health.ny.gov/prevention/immunization/providers/state_law_restricting_thimerosol_2008-04-23.htm

Reporting and documentation

- NYC DOHMH. Overview of Meaningful Use and Immunization Reporting: https://www1.nyc.gov/site/doh/providers/reporting-and-services/cir-ehr-meaningfuluse.page
- NYC DOHMH. Reporting Diseases and Conditions: https://www1.nyc.gov/site/doh/providers/reporting-and-services/notifiable-diseases-and-conditions-reporting-central.page
- NYS DOH. Communicable Disease Reporting: https://www.health.ny.gov/professionals/diseases/reporting/communicable
- NYS DOH. Health Commerce System Nosocomial Outbreak Reporting Application: https://commerce.health.state.ny.us
- NYS DOH. Health Care Facility Infection Control (Nosocomial) Report Form DOH 4018: https://www.health.ny.gov/forms/doh-4018.pdf
- CDC. CMS Requirements: https://www.cdc.gov/nhsn/cms/index.html
- CMS. Medicare Access and CHIP Reauthorization Act of 2015 (MACRA): https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs
- National Adult and Influenza Immunization Summit. Influenza Vaccine Availability Tracking System (IVATS): https://www.izsummitpartners.org/ivats

Vaccine safety

- US Department of Health and Human Services. Vaccine Adverse Event Reporting System (VAERS): https://vaers.hhs.gov/reportevent.html

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RESOURCES FOR PROVIDERS *(continued)*

- CDC. Vaccine Information Statements: https://www.cdc.gov/vaccines/hcp/vis/index.html
- CDC. Vaccine Excipient Table: https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf
- CDC. Thimerosal and Vaccines: https://www.cdc.gov/vaccinesafety/concerns/thimerosal/index.html

Coding and billing information

- Immunize.org. Vaccinating Adults. A Step-by-Step Guide: https://www.immunize.org/guide

  See Step 7B: How to Bill for Adult Immunizations

- CMS. Flu Shot: https://www.cms.gov/flu-provider
- CMS. Medicare Part D Vaccines: https://www.cms.gov/outreach-and-education/medicare-learning-network-mln/mln-products/downloads/vaccines-part-d-factsheet-icn908764.pdf

***City Health Information* archives:** https://www1.nyc.gov/site/doh/providers/resources/city-health-information-chi.page

RESOURCES FOR PATIENTS

General information

- National Foundation for Infectious Diseases. Influenza and Adults: https://www.nfid.org/infectious-diseases/influenza-and-adults

Educational materials

- New York City (NYC) Department of Health and Mental Hygiene (DOHMH). Seasonal Flu (Influenza): http://www.nyc.gov/flu

  Publications, brochures, and posters
- NYC DOHMH. Adult Immunization Action Kit: https://www1.nyc.gov/site/doh/providers/resources/public-health-action-kits-adult-immunization.page
- NYC DOHMH. Vaccinations and Pregnancy: https://www1.nyc.gov/site/doh/health/publications/health-bulletin/health-bulletin-119.page
- Immunize.org. Vaccine Information Statements (VIS): https://www.immunize.org/vis

  Available in many languages
- Centers for Disease Control and Prevention (CDC). Communication Resource Center: https://www.cdc.gov/flu/resource-center/index.htm

  Flyers, posters, and brochures for the general public, families, children, and high-risk groups

Vaccination locations

- NYC Vaccine Finder: https://vaccinefinder.nyc.gov
- NYC DOHMH. Immunization Clinics: http://www1.nyc.gov/site/doh/services/immunization-clinics.page
- NYC Health + Hospitals. Services: https://www.nychealthandhospitals.org/services
- NYC DOHMH. NYC HealthMap: https://a816-healthpsi.nyc.gov/nychealthmap

  Searchable map of health services
- US Department of Health and Human Services. Find a Health Center: https://findahealthcenter.hrsa.gov

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