2022-2023
Immunization Updates

Massachusetts Adult Immunization Coalition

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9-29-22
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Immunization Updates Overview

- Adult Immunization updates
  - General immunization resources
  - Current adult vaccination schedule
- Influenza
  - Influenza vaccine resources
  - Influenza burden
  - Influenza vaccine benefits, influenza risk factors & influenza vaccine uptake
  - Current influenza vaccination recommendations
- COVID-19
  - COVID-19 vaccine resources
  - Current COVID-19 vaccination recommendations
- Monkeypox
  - Monkeypox vaccine resources
  - Current Monkeypox vaccination recommendations
  - Intradermal (ID) injection

2022-2023
Adult Immunization Updates

General Immunization Resources

- **General Immunization**
  - Adult Immunization Schedule Recommendations for Ages 19 Years or Older, United States, 2022 https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html
  - General Best Practice Guidelines for Immunization: Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP) https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
  - Epidemiology and Prevention of Vaccine-Preventable Diseases: The Pink Book: Course Textbook - 14th Edition (2021) https://www.cdc.gov/vaccines/pubs/pinkbook/index.html
  - CDC Vaccine Storage and Handling Toolkit https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/
  - CDC Adult Vaccination Information for Healthcare and Public Health Professionals https://www.cdc.gov/vaccines/hcp/adults/index.html

Adult Immunization Schedule Recommendations for Ages 19 Years or Older, United States, 2022

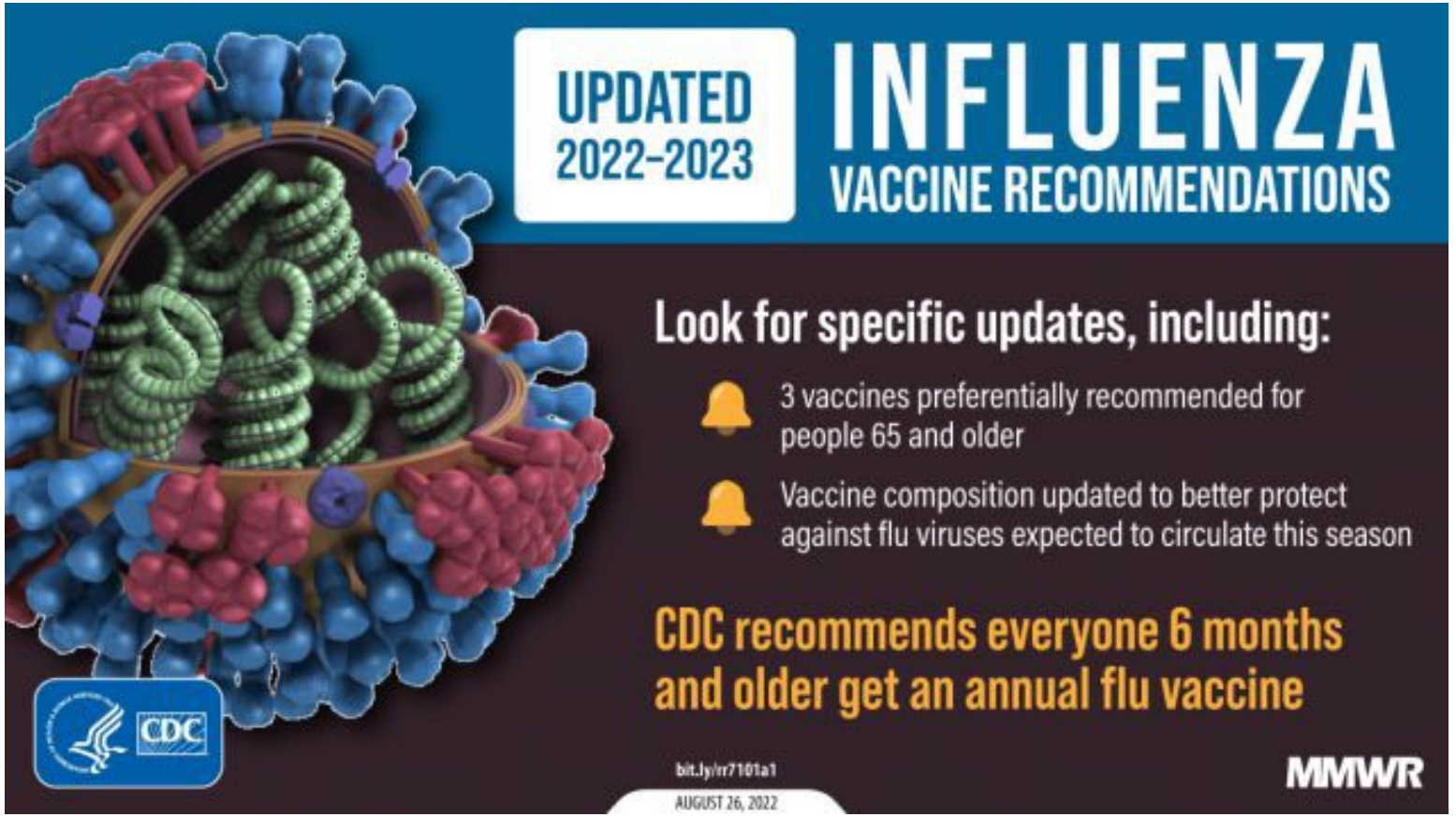
Using the schedule

To make vaccination recommendations, healthcare providers should:

1. Determine needed vaccines **based on age** (Table 1)
2. Assess for **medical conditions and other indications** (Table 2)
3. Review **special situations** (Vaccination Notes)
4. Review **contraindications and precautions to vaccination** (Appendix)

https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html

2022-2023 Season Influenza Vaccine Updates



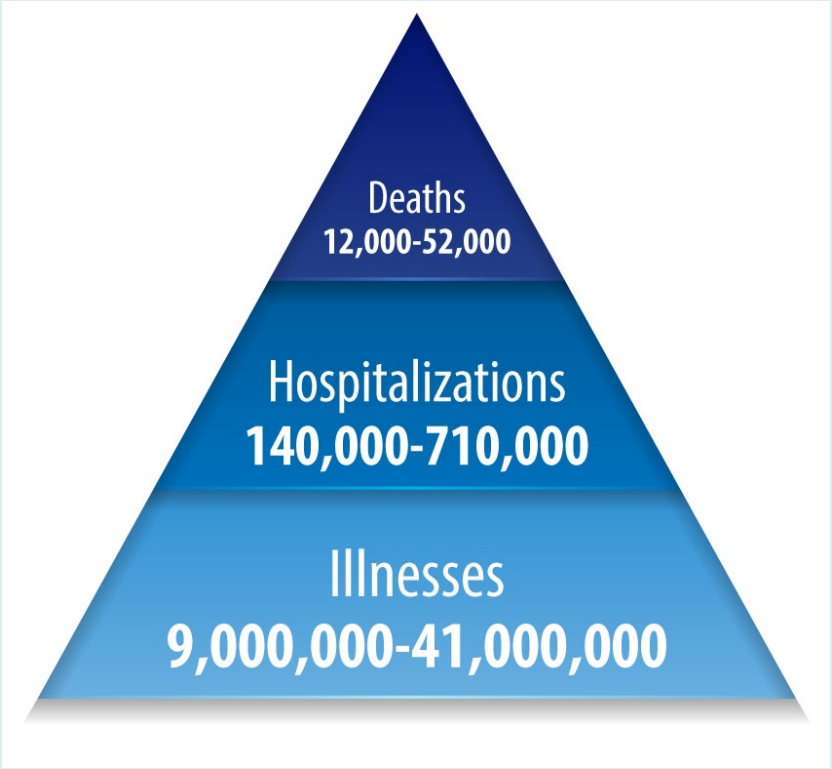
https://www.cdc.gov/flu/resource-center/freeresources/graphics/images.htm

Influenza Resources

- **Influenza vaccines**
  - CDC Seasonal Influenza Vaccination Resources for Health Professionals https://www.cdc.gov/flu/professionals/vaccination/index.htm
  - Grohskopf LA, Blanton LH, Ferdinands JM, et al. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season. MMWR Recomm Rep 2022;71(No. RR-1):1–28. DOI: http://dx.doi.org/10.15585/mmwr.rr7101a1
  - Summary: 'Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2022-23' https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm
  - CDC Frequently Asked Influenza (Flu) Questions: 2022-2023 Season https://www.cdc.gov/flu/season/faq-flu-season-2022-2023.htm
  - CDC Make a Strong Influenza Vaccine Recommendation https://www.cdc.gov/flu/professionals/vaccination/flu-vaccine-recommendation.htm
  - CDC HCP Fight Flu Toolkit https://www.cdc.gov/flu/professionals/vaccination/prepare-practice-tools.htm

Estimated Range of Annual Burden of Flu in the U.S. from 2010 – 2020

CDC estimates that flu has resulted in 9 million – 41 million illnesses, 140,000 – 710,000 hospitalizations and 12,000 – 52,000 deaths annually between 2010 and 2020.



https://www.cdc.gov/flu/about/burden/index.html

the benefits of flu vaccination 2019-2020

www.cdc.gov/flu

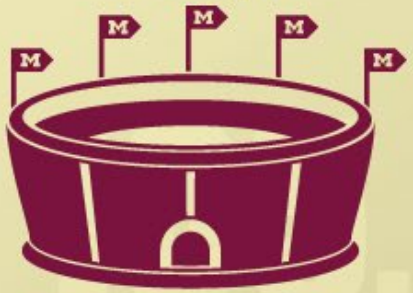
Flu vaccination in the U.S. during the 2019-2020 season prevented an estimated:

7.5 million flu illnesses

More than the combined population of Kentucky and Kansas

105,000 flu hospitalizations

Enough people to fill Michigan Stadium at the University of Michigan



6,300 flu deaths

Equivalent to saving about 17 lives per day over the course of a year

https://www.cdc.gov/flu/resource-center/freeresources/graphics/flu-vaccine-protected-infographic.htm

People at Increased Risk of Serious Flu Complications

- Adults 65 years and older
- Children younger than 2 years old
- Asthma
- Neurologic and neurodevelopment conditions
- Blood disorders (such as sickle cell disease)
- Chronic lung disease (such as chronic obstructive pulmonary disease [COPD] and cystic fibrosis)
- Endocrine disorders (such as diabetes mellitus)
- Heart disease (such as congenital heart disease, congestive heart failure and coronary artery disease)
- Kidney diseases
- Liver disorders
- Metabolic disorders (such as inherited metabolic disorders and mitochondrial disorders)
- People who are obese with a body mass index [BMI] of 40 or higher
- People younger than 19 years old on long-term aspirin- or salicylate-containing medications.
- People with a weakened immune system due to disease (such as people with HIV or AIDS, or some cancers such as leukemia) or medications (such as those receiving chemotherapy or radiation treatment for cancer, or persons with chronic conditions requiring chronic corticosteroids or other drugs that suppress the immune system)
- People who have had a stroke

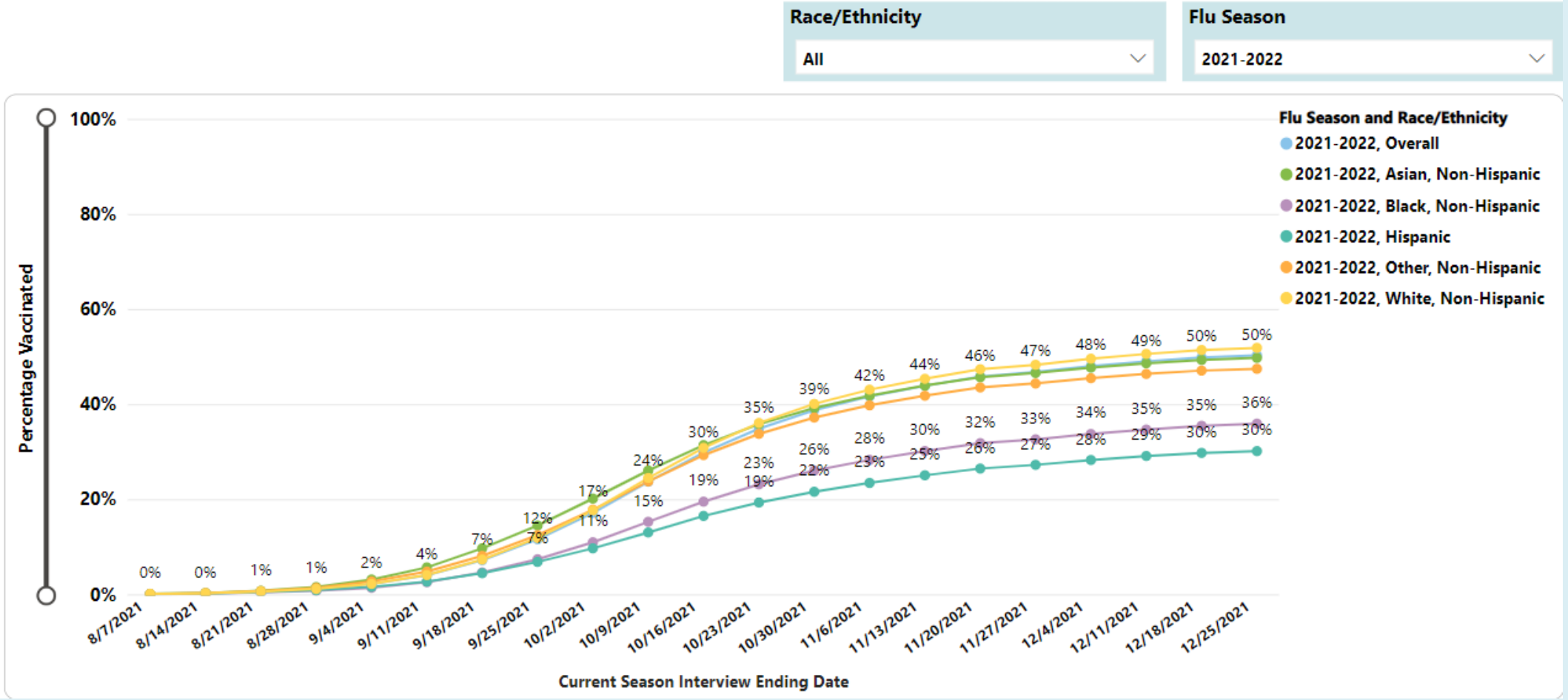
https://www.cdc.gov/flu/highrisk/index.htm

People at Increased Risk of Serious Flu Complications Cont.

- Pregnant people and people up to 2 weeks after the end of pregnancy
- People who live in nursing homes and other long-term care facilities
- People from certain racial and ethnic minority groups are at increased risk for hospitalization with flu, including non-Hispanic Black persons, Hispanic or Latino persons, and American Indian or Alaska Native persons

https://www.cdc.gov/flu/highrisk/index.htm

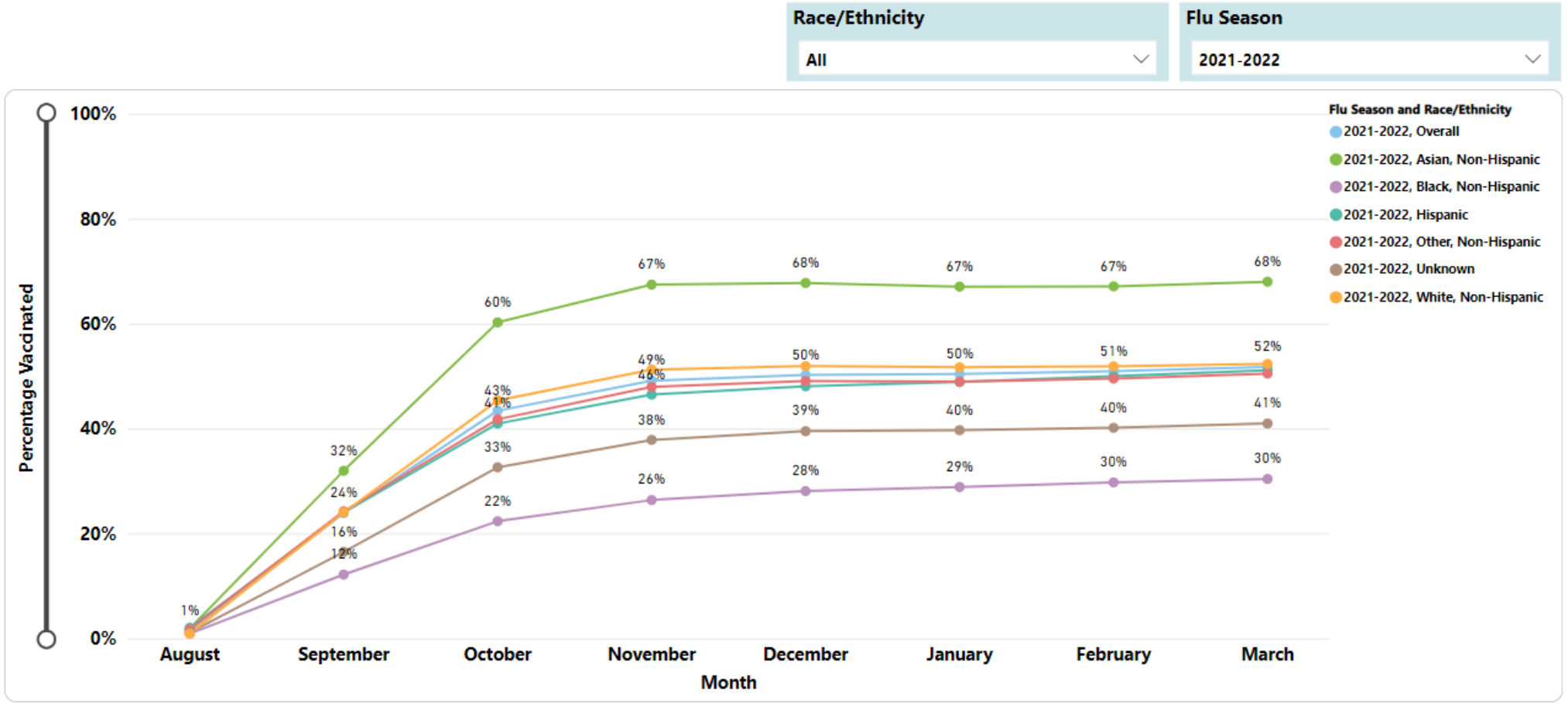
**Figure 5. Weekly Cumulative Influenza Vaccination Coverage*,
by Flu Season and Race/Ethnicity,
Medicare Fee-For-Service Beneficiaries aged ≥65 Years, United States
Data Source: Centers for Medicare & Medicaid Services Chronic Conditions Warehouse**



https://www.cdc.gov/flu/fluvaxview/dashboard/vaccination-coverage-adults-65-over.htm

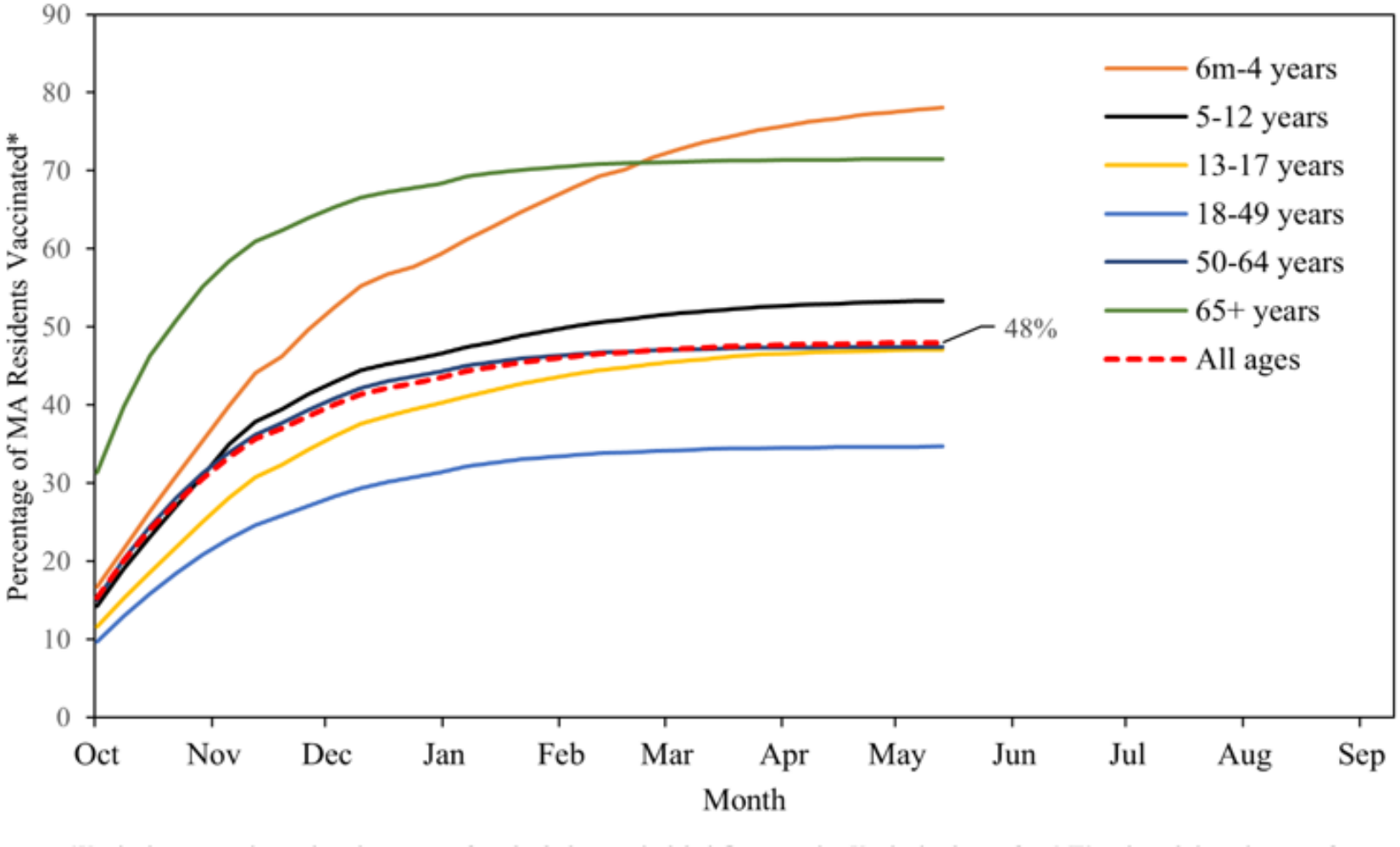
Fig. 3A: Pregnancy Line Graph | Fig. 3B: Pregnancy Bar Graph

Figure 3A. Monthly Cumulative Influenza Vaccination Coverage*, by Flu Season and Race/Ethnicity, Pregnant Persons 18–49 Years, United States
Data Source: Vaccine Safety Datalink
Data are current through April 16, 2022



https://www.cdc.gov/flu/fluvaxview/dashboard/vaccination-coverage-pregnant.html

Influenza Vaccination Coverage in Massachusetts as of May 21, 2022



https://www.mass.gov/service-details/massachusetts-immunization-information-system-miis-overview.

Vaccine Abbreviations

- Main influenza vaccine types:
  - IIV= Inactivated Influenza Vaccine
  - RIV= Recombinant Influenza Vaccine
  - LAIV= Live Attenuated Influenza Vaccine
- Numerals after letters indicate valency (the number of influenza viruses represented):
  - 4 for quadrivalent vaccines
  - 3 for trivalent vaccines
- Prefixes are sometimes used to refer specifically to certain IIVs:
  - a for adjuvanted IIV (e.g., aIIV4)
  - cc for cell culture-based IIV (e.g., ccIIV4)
  - HD for high-dose IIV (e.g., HD-IIV4)

https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm

Influenza Vaccines by Age Indication, United States, 2022–23 Influenza Season

Vaccine type		0 through 6 months	6 through 23 months	2 through 17 years	18 through 49 years	50 through 64 years	≥65 years
IIV4s	Standard-dose, unadjuvanted inactivated (IIV4)		Afluria Quadrivalent Fluarix Quadrivalent FluLaval Quadrivalent Fluzone Quadrivalent				
	Cell culture-based inactivated (ccIIV4)		Flucelvax Quadrivalent				
	Adjuvanted inactivated (aIIV4)						Fluad Quadrivalent
	High-dose inactivated (HD-IIV4)						Fluzone High-Dose Quadrivalent
RIV4	Recombinant (RIV4)				Flublok Quadrivalent		
LAIV4	Live attenuated (LAIV4)			FluMist Quadrivalent			

Not approved for age group *Egg-based* *Not egg-based*

All vaccines expected for 2022-23 are quadrivalent (i.e., contain hemagglutinin derived from four viruses: one influenza A(H1N1), one influenza A(H3N2), one influenza B/Victoria and one influenza B/Yamagata.

Clinician Outreach and Communication Activity (COCA) Call 9/8/2022

Influenza Vaccine Types—2022-23 U.S. Season

Intramuscular Vaccines

Inactivated Influenza Vaccines (IIV4s)

- Contain inactivated virus (split or subunit)
- Most are egg-based (one is cell culture-based—ccIIV4)
- Most contain 15 mcg of hemagglutinin per virus (one contains 60 mcg per virus—HD-IIV4)
- Most are unadjuvanted (one contains the adjuvant MF59—aIIV4)

Recombinant influenza vaccine (RIV4)

- No viruses used in production
- 45 mcg HA per virus
- Contains HA made through recombinant methods

Intranasal Vaccine

Live attenuated influenza vaccine (LAIV4)

- Egg-based
- Contains live, attenuated influenza viruses which must replicate in the nasopharynx in order to promote an immune response
  - Attenuated—to not cause clinical illness
  - Cold-adapted
  - Temperature-sensitive
- For ages 2 through 49 years
- Not recommended in pregnancy and for those with some medical conditions

Groups Recommended for Vaccination

- Routine annual influenza vaccination is recommended for all persons aged ≥6 months who do not have contraindications.

https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm

Timing of Vaccination

- For most persons who need only one dose of influenza vaccine for the season, vaccination should ideally be offered during September or October. However, vaccination should continue throughout the season as long as influenza viruses are circulating.
- Vaccination during July and August is not recommended for most groups. Considerations include:
  - For most adults (particularly those aged ≥65 years) and pregnant persons in the first or second trimester, vaccination during July and August should be avoided unless there is concern that later vaccination might not be possible.
  - Vaccination in July and August can be considered for pregnant persons who are in the third trimester during those months.

https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm

Adults aged ≥65 years

- ACIP recommends that adults aged **≥65 years preferentially receive** any one of the following higher dose or adjuvanted influenza vaccines: **quadrivalent high-dose inactivated influenza vaccine (HD-IIV4), quadrivalent recombinant influenza vaccine (RIV4), or quadrivalent adjuvanted inactivated influenza vaccine (aIIV4).** If none of these three vaccines is available at an opportunity for vaccine administration, then any other age-appropriate influenza vaccine should be used.

https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm

Persons with Egg Allergy

- Persons who have experienced only hives after exposure to egg may receive any licensed, recommended influenza vaccine appropriate for their age and health status (i.e., any IIV4, RIV4, or LAIV4).
- Persons reporting symptoms other than hives after exposure to egg (such as angioedema, respiratory distress, lightheadedness, or recurrent emesis; or who required epinephrine or another emergency medical intervention) may also receive any licensed, recommended influenza vaccine that is otherwise appropriate.
  - If a vaccine other than ccIIV4 or RIV4 is selected, it should be administered in an inpatient or outpatient medical setting, supervised by a health care provider who can recognize and manage severe allergic reactions.

https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm

Summary - A Review of Last Season 2021-2022

- Almost all A(H3N2) virus in all age groups and regions
- Long and late season
  - Two waves of circulation
  - Activity began to increase in November, remained elevated and even increased in some areas in May and early June
  - Activity levels were higher in May and June than ever before
- Low levels of activity overall
  - Lowest ever compared to pre-pandemic seasons by most metrics
  - But higher than the 2020-2021 season

Upcoming 2022-2023 U.S. Influenza Season

- It is unclear what impact the ongoing COVID-19 pandemic will have on the upcoming influenza season in the U.S.
- Influenza viruses and SARS-CoV-2 may co-circulate.
- People may be co-infected with influenza and SARS-CoV-2.
- There may be more influenza than the last two seasons because of reduced population immunity from fewer recent infections and relaxation of measures to reduce COVID-19.

COVID-19 Vaccine Updates

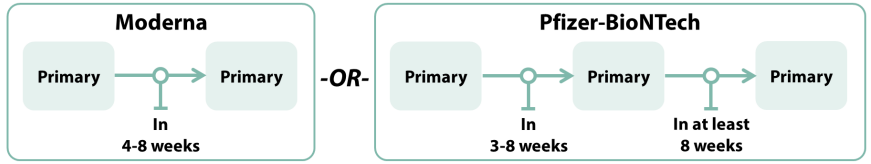
https://www.cdc.gov/mmwr/volumes/71/wr/mm7133e1.htm

COVID-19 Vaccine Resources

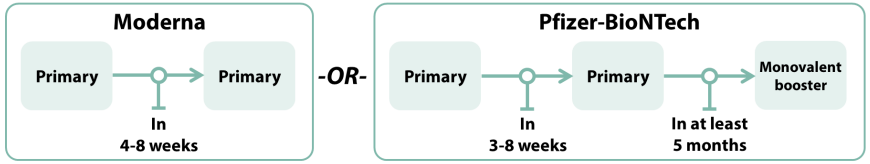
- **COVID-19 vaccines**
  - Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html
    - People who received COVID-19 vaccine outside the United States (Appendix B) https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-b
    - Vaccine administration errors and deviations (Appendix D) https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-d
    - Triage of people with a history of allergies or allergic reactions (Appendix E) https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-e
  - U.S. COVID-19 Vaccine Product Information https://www.cdc.gov/vaccines/covid-19/info-by-product/index.html
  - FDA COVID-19 Vaccines https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines

COVID-19 Vaccination Schedule for People who are NOT Moderately or Severely Immunocompromised

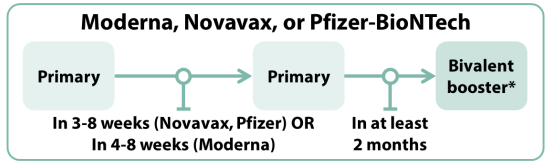
People ages 6 months through 4 years



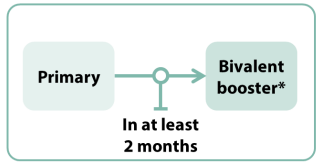
People ages 5 through 11 years



People ages 12 years and older



People ages 18 years and older who previously received Janssen primary series dose†



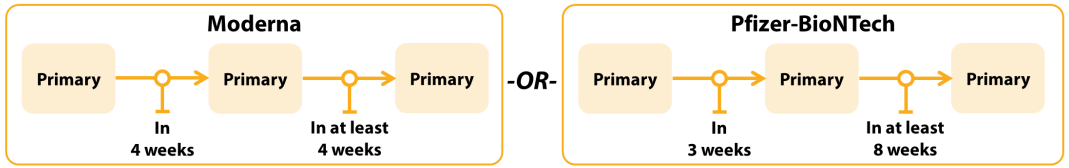
*The bivalent booster dose is administered at least 2 months after completion of the primary series. For people who previously received a monovalent booster dose(s), the bivalent booster dose is administered at least 2 months after the last monovalent booster dose.

† Janssen COVID-19 Vaccine should only be used in certain limited situations. See: https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-a

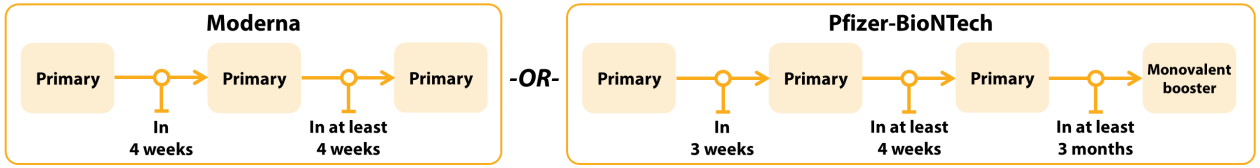
https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

COVID-19 Vaccination Schedule for People who are Moderately or Severely Immunocompromised

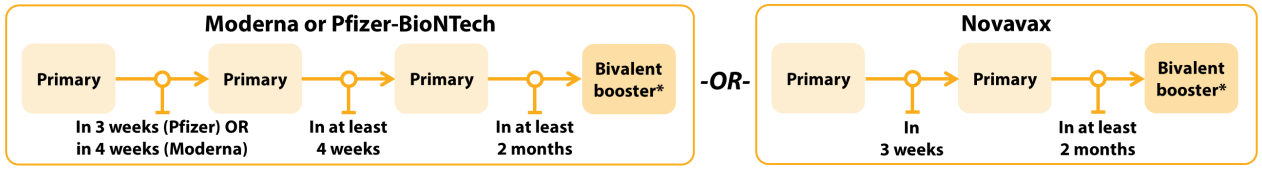
People ages 6 months through 4 years



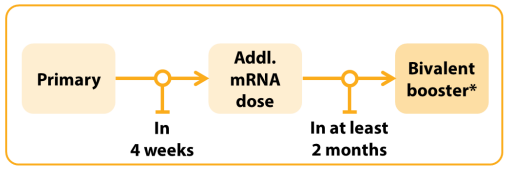
People ages 5 through 11 years



People ages 12 years and older

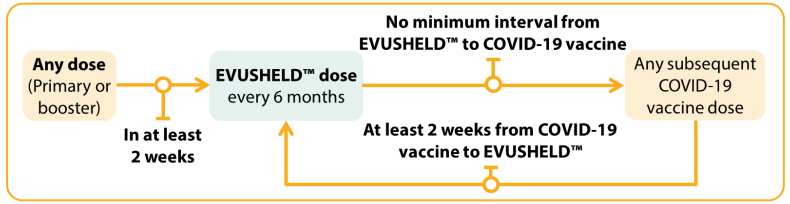


People ages 18 years and older who previously received Janssen primary series dose[†]



Monoclonal antibodies (EVUSHELD™) for COVID-19 pre-exposure prophylaxis

People ages 12 years and older (must weigh at least 40kg)



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[†]Janssen COVID-19 Vaccine should only be used in certain limited situations. See: https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-a

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

CONTRAINDICATION TO **COVID-19** VACCINATION	PRECAUTION TO **COVID-19** VACCINATION	**NO CONTRAINDICATION OR PRECAUTION TO COVID-19** VACCINATION
•**History of the following:**Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a component of a COVID-19 vaccine[1,2] •Known (diagnosed) allergy to a component of a COVID-19 vaccine[1]	•**Among people without a contraindication, a history of:**Anaphylaxis after non-COVID-19 vaccines or injectable therapies[3] •Non-severe, immediate (onset within 4 hours) allergic reaction[2] after a previous dose of COVID-19 vaccine[4] Note: People with an allergy-related contraindication to one type of COVID-19 vaccine have a precaution to the other types of COVID-19 vaccines.[4,5]	•**Among people without a contraindication or precaution, a history of:** Any allergy not listed as a contraindication or precaution
•**Actions:**Do not vaccinate •Consider referral to allergist-immunologist •Consider alternate vaccine type if age appropriate[1,5]	•**Actions:**Risk assessment •Should consider a 30-minute observation period[4,5] •Consider referral to allergist-immunologist	•**Actions:** Proceed with vaccination •Should consider a 15-minute observation period per General Best Practice Guidelines

Note: This table is specific to allergy-related contraindications and precautions and is not inclusive of all COVID-19 vaccine contraindications and precautions.

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-e

https://www.cdc.gov/mmwr/volumes/71/wr/mm7107e3.htm

Coadministration:COVID-19 vaccines & other vaccines

- COVID-19 vaccines may be administered without regard to timing of other vaccines. This includes simultaneous administration of COVID-19 vaccine and other vaccines on the same day. However, there are additional considerations if administering an orthopoxvirus vaccine.
- Extensive experience with non-COVID 19 vaccines has demonstrated that immunogenicity and adverse event profiles are generally similar when vaccines are administered simultaneously as when they are administered alone. Studies that compared coadministration of COVID-19 vaccines and seasonal influenza vaccines with separate administration of these vaccines found similar levels of immunogenicity and similar or slightly higher reactogenicity; no specific safety concerns were identified.
- In accordance with general best practices, routine administration of all age-appropriate doses of vaccines simultaneously is recommended for children, adolescents, and adults for whom no specific contraindications exist at the time of the healthcare visit.

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

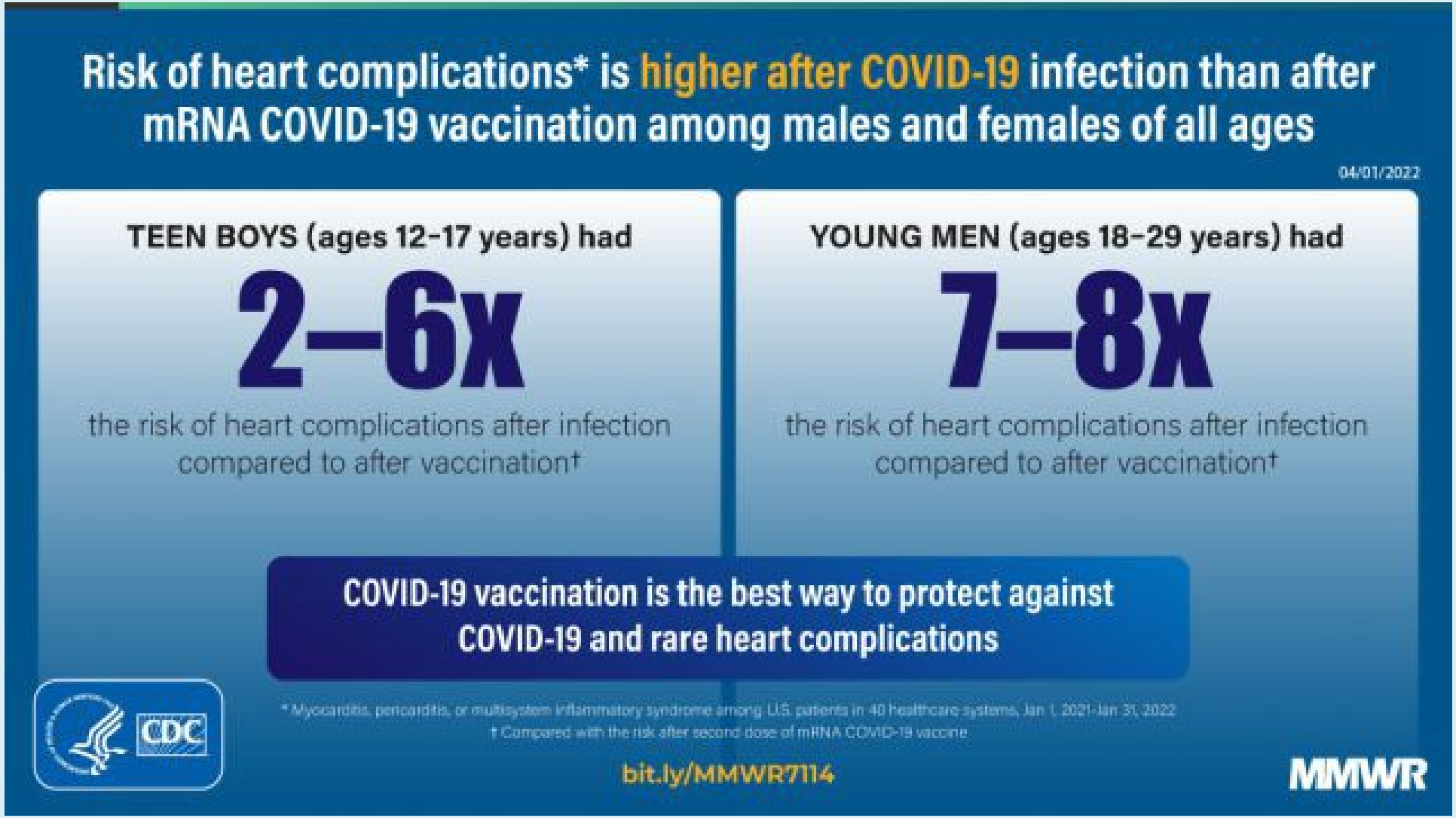
Coadministration:COVID-19 & orthopoxvirus vaccines

- If an orthopoxvirus vaccine is recommended for prophylaxis in the setting of an orthopoxvirus (e.g., monkeypox) outbreak, orthopoxvirus vaccination should not be delayed because of recent receipt of a Moderna, Novavax, or Pfizer-BioNTech COVID-19 vaccine; no minimum interval between COVID-19 vaccination with these vaccines and orthopoxvirus vaccination is necessary.

- People, particularly adolescent or young adult males, might consider waiting 4 weeks after orthopoxvirus vaccination (either JYNNEOS or ACAM2000) before receiving a Moderna, Novavax, or Pfizer-BioNTech COVID-19 vaccine because of the observed risk for myocarditis and pericarditis after receipt of ACAM2000 orthopoxvirus vaccine and mRNA (i.e., Moderna and Pfizer-BioNTech) and Novavax COVID-19 vaccines and the unknown risk for myocarditis and pericarditis after JYNNEOS.

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

Discussing Heart Complication Risk



https://www.cdc.gov/mmwr/volumes/71/wr/mm7114e1.htm

2022 Monkeypox Outbreak Vaccine Updates

https://www.cdc.gov/poxvirus/monkeypox/resources/graphics.html

Monkeypox Vaccine Resources

- **Monkeypox vaccines**
  - CDC Interim Clinical Considerations for Use of JYNNEOS and ACAM2000 Vaccines during the 2022 U.S. Monkeypox Outbreak https://www.cdc.gov/poxvirus/monkeypox/health-departments/vaccine-considerations.html
    - JYNNEOS Vaccine https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html
    - Video on Administering JYNNEOS Intradermally https://www.youtube.com/watch?v=TLv1mR6mECQ
  - CDC JYNNEOS Smallpox and Monkeypox Vaccine Standing Orders for Administering Vaccine Subcutaneously: STANDARD REGIMEN https://www.cdc.gov/poxvirus/monkeypox/files/interim-considerations/monkeypox-jynneos-standing-orders-stand.pdf
  - CDC JYNNEOS Smallpox and Monkeypox Vaccine Standing Orders for Administering Vaccine Intradermally: ALTERNATIVE DOSING REGIMEN https://www.cdc.gov/poxvirus/monkeypox/files/interim-considerations/monkeypox-jynneos-standing-orders-alt-dose.pdf
  - MDPH Monkeypox vaccination: What you need to know about monkeypox vaccine in Massachusetts https://www.mass.gov/info-details/monkeypox-vaccination
  - CDC Reducing Stigma in Monkeypox Communication and Community Engagement https://www.cdc.gov/poxvirus/monkeypox/reducing-stigma.html

Monkeypox Vaccine 2022 Eligibility

- Vaccination will be available to individuals who live or work in Massachusetts and meet the CDC's current eligibility criteria, prioritizing those who are most at risk of exposure to an individual with monkeypox. This includes:
  - Known contacts identified by public health via case investigation, contact tracing, and risk exposure assessments (this may include sexual partners, household contacts, and healthcare workers); as well as
  - Presumed contacts who meet the following criteria:
  - Know that a sexual partner in the past 14 days was diagnosed with monkeypox
  - Had multiple sexual partners in the past 14 days in a jurisdiction with known monkeypox
- While many of the identified cases are within networks of self-identified gay and bisexual men, other men who have sex with men, and transgender individuals who have sex with men, people of any sexual orientation or gender identity can become infected and spread monkeypox.
- Check https://www.mass.gov/info-details/monkeypox-vaccination for the most up to date vaccine eligibility.

https://www.mass.gov/info-details/monkeypox-vaccination

JYNNEOS Vaccine

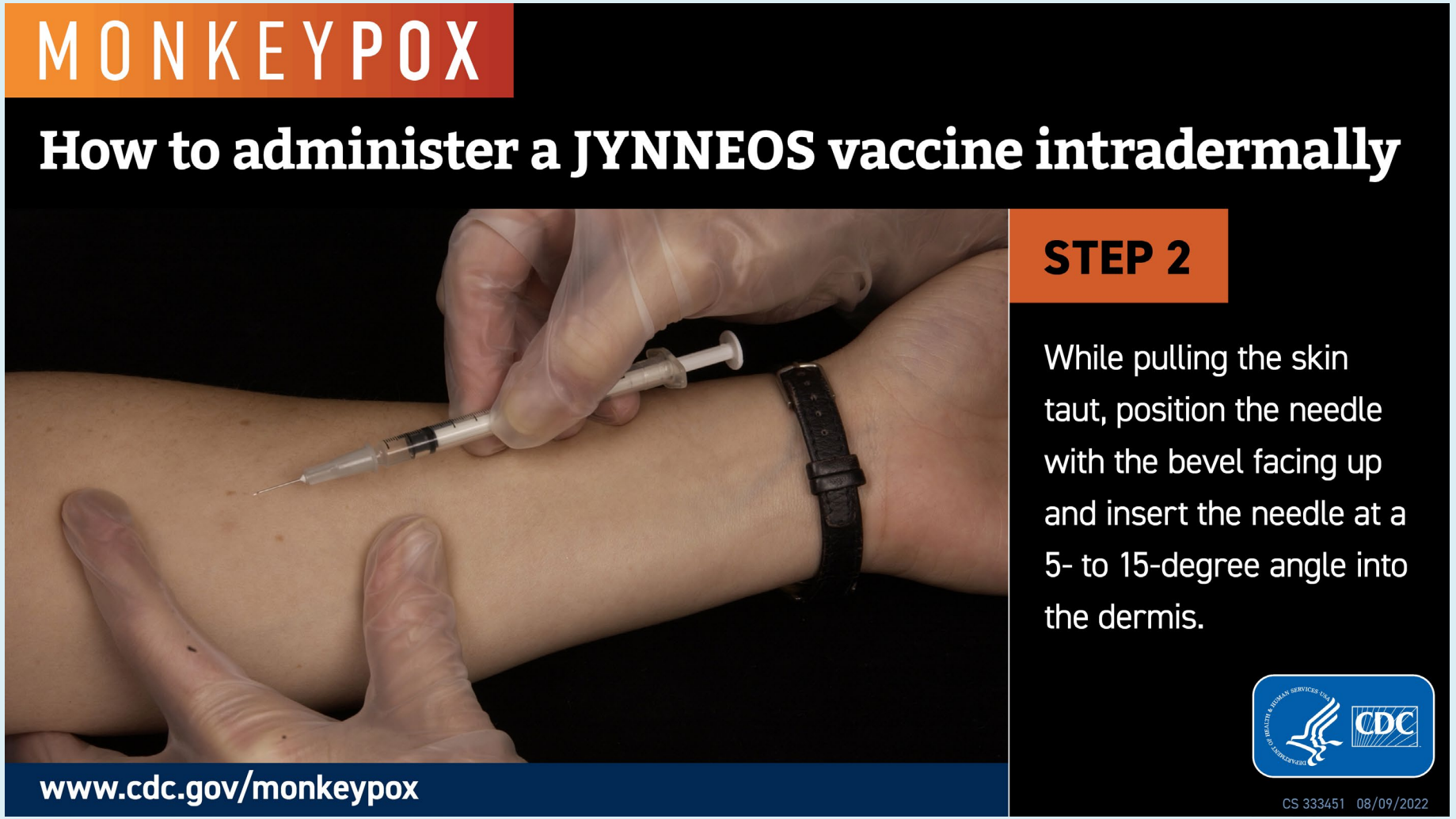
- In the United States, there is a very limited supply of JYNNEOS and it is solely distributed by the Centers for Disease Control and Prevention (CDC).
- On August 9, CDC and FDA released an EUA (Emergency Use Authorization) allowing an alternative dose vaccination regimen in people 18 years and over and allowing the use of the JYNNEOS vaccine in individuals younger than 18 years.
- The original JYNNEOS approval included the use of two 0.5 mL doses administered subcutaneously (under the skin). The alternative regimen allows the use of two lower doses, 0.1 mL of vaccine administered intradermally (into the skin). Providers administering JYNNEOS vaccine will begin utilizing this alternative dose vaccination regimen beginning August 18, 2022.
- Check the CDC Interim Clinical Considerations for Use of JYNNEOS and ACAM2000 Vaccines during the 2022 U.S. Monkeypox Outbreak https://www.cdc.gov/poxvirus/monkeypox/health-departments/vaccine-considerations.html & https://www.mass.gov/info-details/monkeypox-vaccination for the most up to date vaccine information.

https://www.cdc.gov/poxvirus/monkeypox/health-departments/vaccine-considerations.html
https://www.mass.gov/info-details/monkeypox-vaccination

Intradermal Vaccine Administration: Step 1

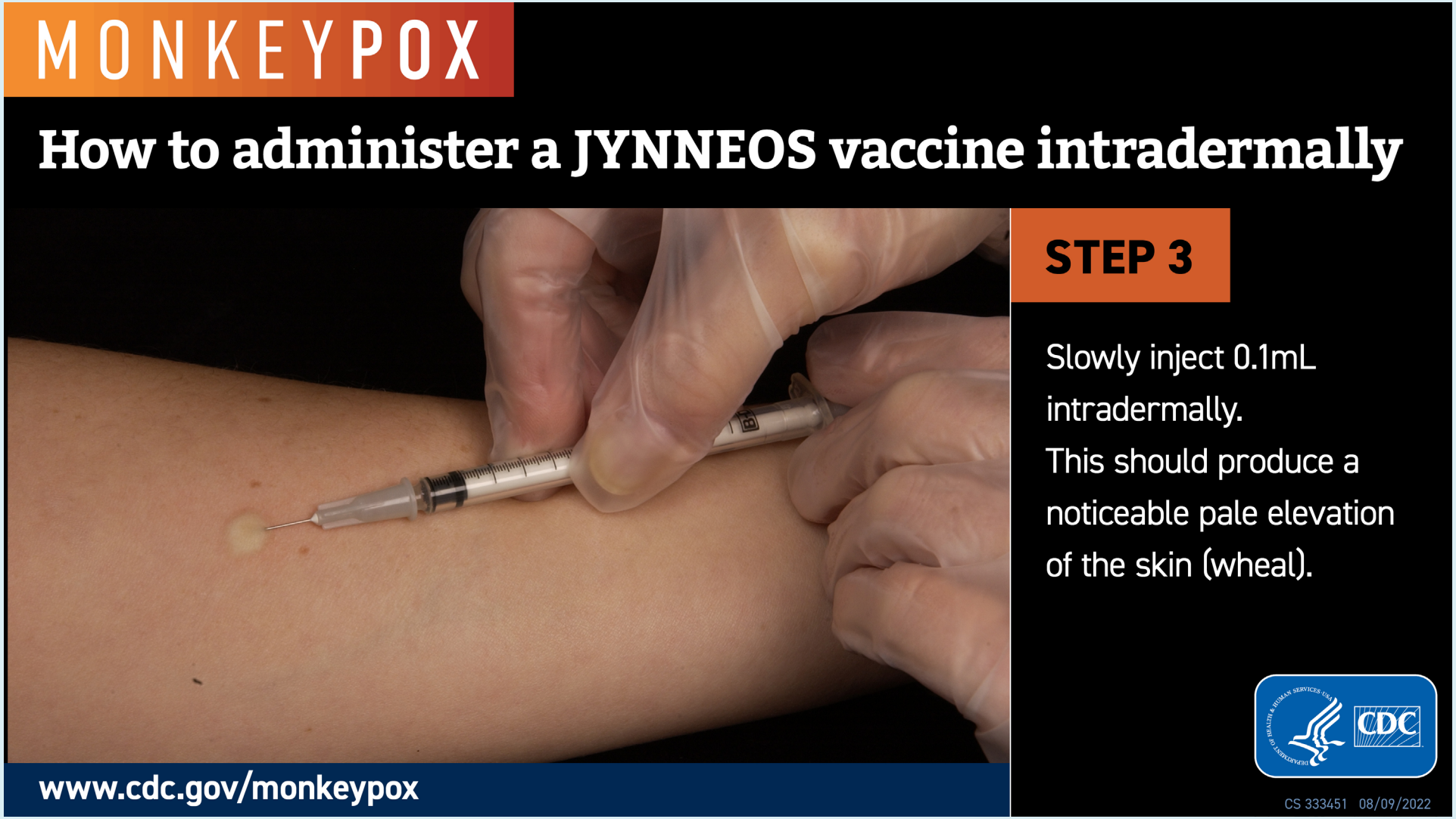
https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html

Intradermal Vaccine Administration: Step 2



https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html

Intradermal Vaccine Administration: Step 3



https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html

Intradermal Vaccine Administration: Step 4

https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html

MDPH Immunization Division

Immunization Division Main Number

- For questions about immunization recommendations, disease reporting, etc.
- Phone: 617-983-6800 (24/7 MDPH Epi line)
- Fax: 617-983-6840
- Website: https://www.mass.gov/topics/immunization

MIIS Help Desk

- Phone: 617-983-4335
- Fax: 857-323-8321
- Email questions to: miishelpdesk@mass.gov
- Website: https://www.mass.gov/massachusetts-immunization-information-system-miis

MDPH Vaccine Unit

- Phone: 617-983-6828
- Email questions to: dph-vaccine-management@mass.gov
- Website: https://www.mass.gov/service-details/vaccine-management

Thank you for all your efforts to improve vaccine acceptance and access in your community.