Vaccinations for People with HIV:

COVID-19 bivalent boosters, annual influenza vaccine, MPX vaccine and more…

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Overview

- **Introduction**
- **COVID-19 Vaccine and Boosters**
- **Influenza Vaccine**
- **Monkeypox (MPX) Vaccine**
- **Other Adult Vaccinations for People with HIV**

Introduction: HIV and Vaccines

- HIV causes defects in cell-mediated immunity, B-cell function, and antibody responses resulting in an increased risk of infections.
- Several of these infections can be prevented with vaccines.
- Vaccines spur protective immune responses, helping the immune system fight infections more quickly and effectively if exposed.
- Although vaccine efficacy can be compromised with advanced HIV, adequate vaccine responses are the norm in people receiving HIV treatment.
- Most vaccines are safe for people with HIV but:
  - Most live virus vaccines are contraindicated.
  - Some vaccines have special dosing recommendations.

Vaccine Recommendations for People with HIV

Guidelines for the Prevention and Treatment of Opportunistic Infections in Adults and Adolescents with HIV

Vaccine	All People	Where Varies by Age	Where Varies by CD4 Cell Count (cells/mm³)	
			< 200	≥ 200
Hepatitis A	2–3 doses (varies by formulation)			
Hepatitis B	2–4 doses (varies by formulation and indication)			
Human papillomavirus (HPV)		3 doses for ages 18–26*		
Influenza	1 dose annually			
Measles, mumps, rubella (MMR)			Contraindicated	2 doses if born after 1956 with no history of vaccination or positive antibody titer
Meningococcal A,C,W,Y conjugate (MenACWY)	2 doses, booster every 5 years			
Meningococcal B (MenB)	2–3 doses (varies by formulation)			
Pneumococcal conjugate (PCV15 or PCV20)	1 dose			
Pneumococcal polysaccharide (PPSV23)	1 dose (if conjugate vaccine was PCV-15)			
COVID-19	For current COVID-19 vaccination recommendations, please visit CDC.gov.		Recommendations differ with advanced or untreated HIV infection	
Tetanus, diphtheria, pertussis (Tdap/Td)	Tdap once, then Td or Tdap booster every 10 years			
Varicella (VAR)			Contraindicated	2 doses
Zoster recombinant (RZV)		2 doses for ages 18 and older		

Recommended for all adults and adolescents with HIV who meet the age requirement or lack documentation of vaccination or evidence of past infection.

Recommended for adults and adolescents with HIV with another risk factor (medical, occupational, or other indication) or in select circumstances.

Contraindicated

HIV and the Vaccine Schedule

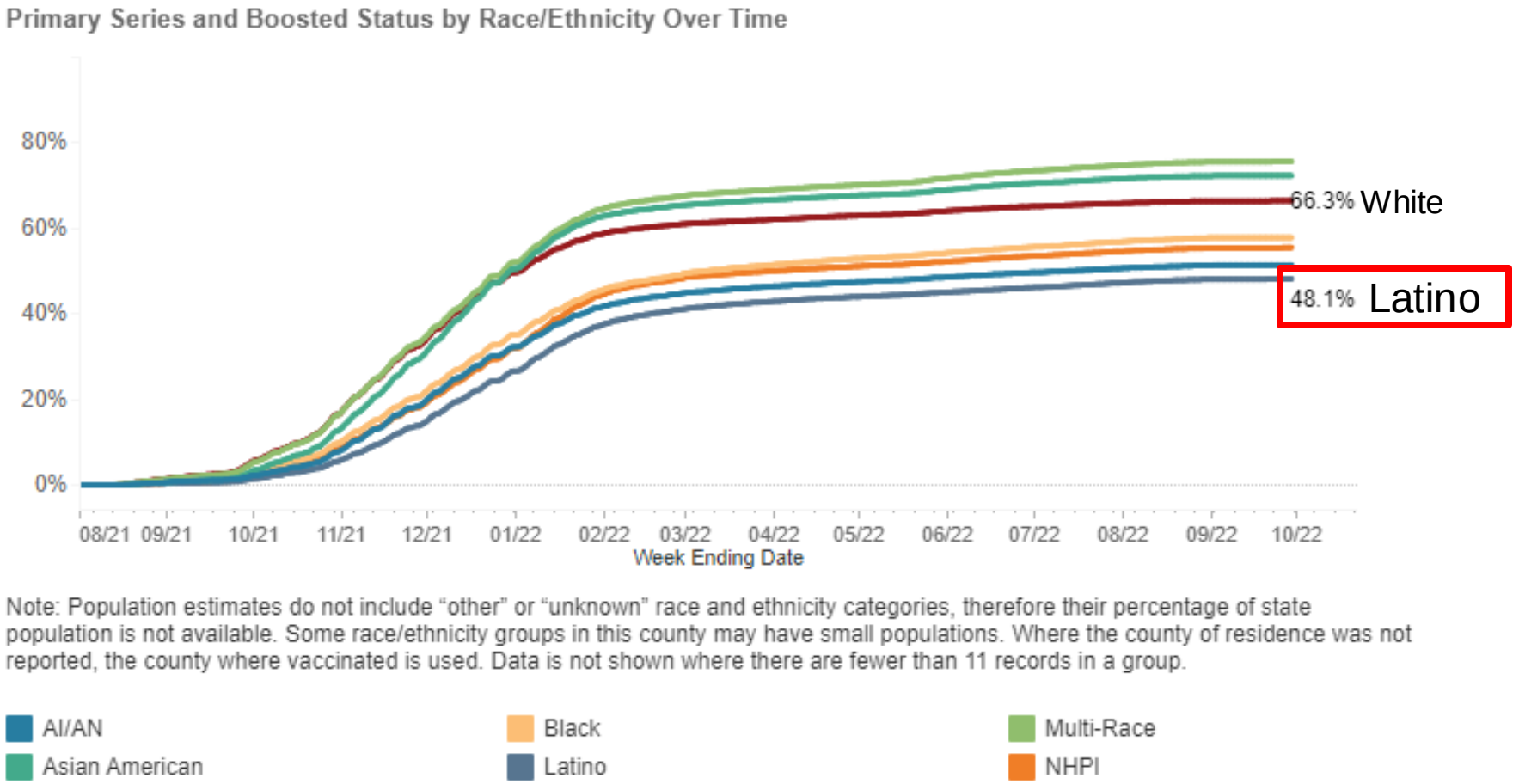
- HIV clinical care presents ongoing opportunities to address vaccination.
- Overall vaccination rates are good among people with HIV.
- Many opportunities for improvement; specially to address disparities by race/ethnicity.
- Vaccine fatigue and hesitancy is another important factor; can necessitate an in-depth conversation on the benefits of vaccination.

4.2. Receipt and Quality of HIV Care, Past 12 Months - Medical Monitoring Project, CA, 2020

	Number[a]	Percentage[b]	95% CI[c]
Received Influenza Vaccination, Past 12 Months			
Yes	153	77.5%	71.5–83.4

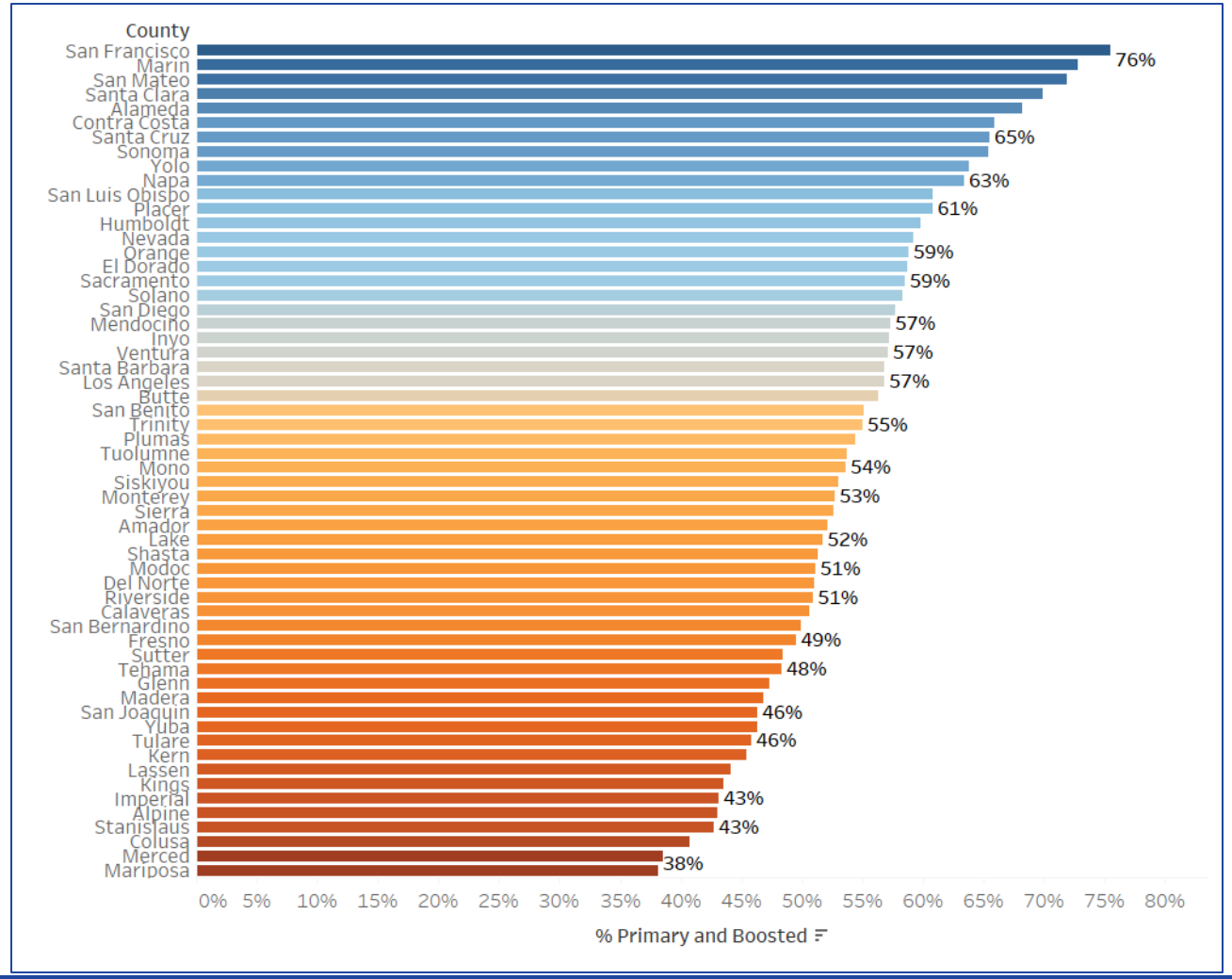
COVID-19 Vaccine and Boosters

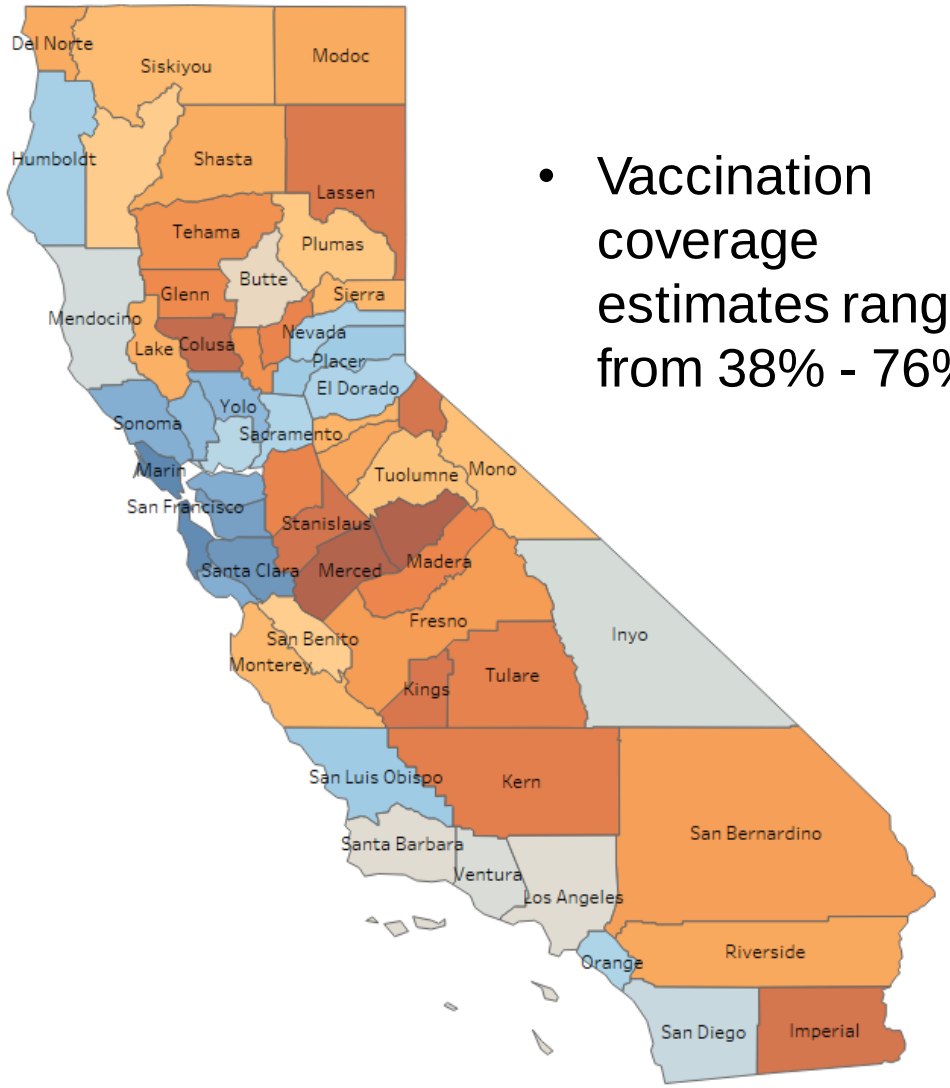
Primary Series and Boosted Status by Race/Ethnicity Over Time



Geographic Disparities in Booster Rates

% Booster Eligible Primary Series and Boosted, all ages by county





- Vaccination coverage estimates range from 38% - 76%

Updated (Bivalent) Booster for ≥5 Years

- The updated COVID-19 boosters are formulated to better protect against the most recently circulating COVID-19 variants.
  - They contain both the original strain and the Omicron BA.4/BA.5 spike protein component.
  - They can help restore protection that has waned since previous vaccination and provide broader protection against variants.
- Bivalent booster doses are only to be given as boosters, not for primary series.
- Any homologous or heterologous ("mix and match") age-appropriate bivalent mRNA vaccine can be used as a booster dose.
- Doses differ by product and age:
  - Pfizer FDA fact sheet for HCP: 5-11 years - 0.2ml (orange cap), 12+ years - 0.3 ml (gray cap)
  - Moderna FDA fact sheet for HCP: 6-11 years - 0.25 ml; 12+ years - 0.5 ml (both – blue cap)

COVID-19 Fall Booster “Reset”

- Recommendations are simplified.
- Change from dose counting to 1 bivalent booster for everyone eligible.
- If eligible, a bivalent should not be denied based on total number of doses.

Vaccination History

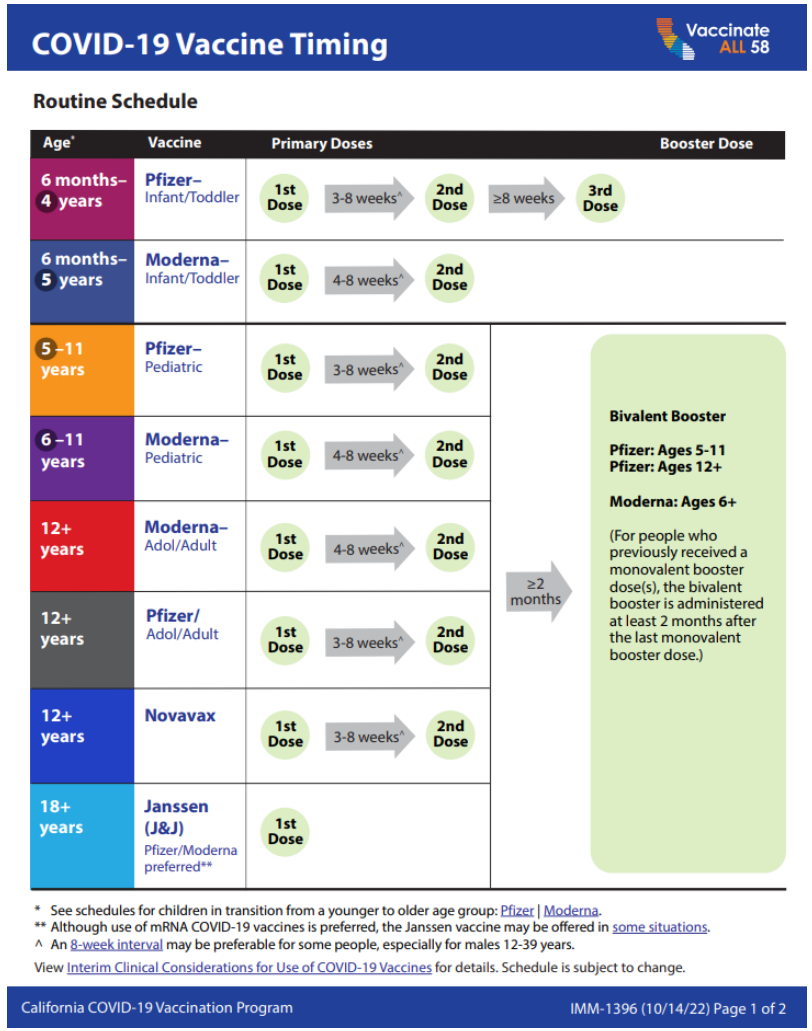
- **Primary series OR**
- **Primary series + 1 booster OR**
- **Primary series + 2 boosters**

At least 2 months

1 Bivalent Booster

Updated

COVID-19 Vaccine Timing by Age



COVID-19 Vaccine Timing

Vaccinate ALL 58

Routine Schedule

Age*	Vaccine	Primary Doses					Booster Dose
6 months–4 years	Pfizer–Infant/Toddler	1st Dose	3-8 weeks^	2nd Dose	≥8 weeks	3rd Dose	
6 months–5 years	Moderna–Infant/Toddler	1st Dose	4-8 weeks^	2nd Dose			
5–11 years	Pfizer–Pediatric	1st Dose	3-8 weeks^	2nd Dose			
6–11 years	Moderna–Pediatric	1st Dose	4-8 weeks^	2nd Dose			
12+ years	Moderna–Adol/Adult	1st Dose	4-8 weeks^	2nd Dose			
12+ years	Pfizer/Adol/Adult	1st Dose	3-8 weeks^	2nd Dose			
12+ years	Novavax	1st Dose	3-8 weeks^	2nd Dose			
18+ years	Janssen (J&J) Pfizer/Moderna preferred**	1st Dose					

≥2 months

Bivalent Booster

Pfizer: Ages 5-11
Pfizer: Ages 12+

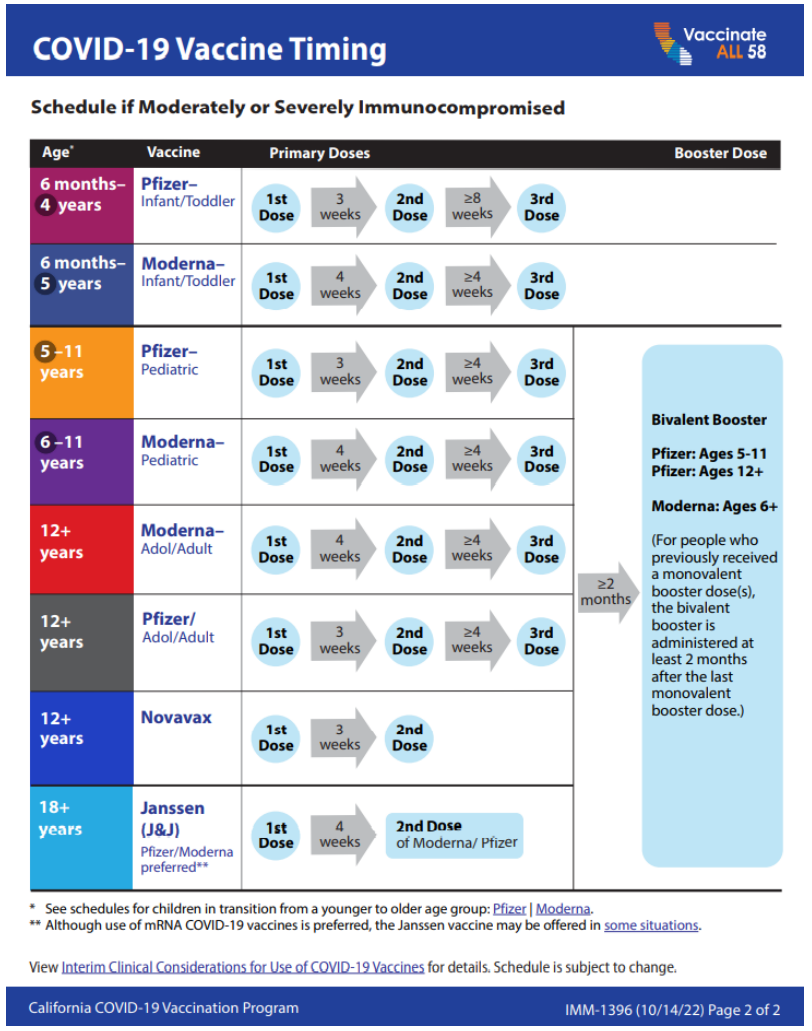
Moderna: Ages 6+

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

* See schedules for children in transition from a younger to older age group: Pfizer | Moderna.
** Although use of mRNA COVID-19 vaccines is preferred, the Janssen vaccine may be offered in some situations.
^ An 8-week interval may be preferable for some people, especially for males 12-39 years.

View Interim Clinical Considerations for Use of COVID-19 Vaccines for details. Schedule is subject to change.

California COVID-19 Vaccination Program IMM-1396 (10/14/22) Page 1 of 2



COVID-19 Vaccine Timing

Vaccinate ALL 58

Schedule if Moderately or Severely Immunocompromised

Age*	Vaccine	Primary Doses					Booster Dose
6 months–4 years	Pfizer–Infant/Toddler	1st Dose	3 weeks	2nd Dose	≥8 weeks	3rd Dose	
6 months–5 years	Moderna–Infant/Toddler	1st Dose	4 weeks	2nd Dose	≥4 weeks	3rd Dose	
5–11 years	Pfizer–Pediatric	1st Dose	3 weeks	2nd Dose	≥4 weeks	3rd Dose	
6–11 years	Moderna–Pediatric	1st Dose	4 weeks	2nd Dose	≥4 weeks	3rd Dose	
12+ years	Moderna–Adol/Adult	1st Dose	4 weeks	2nd Dose	≥4 weeks	3rd Dose	
12+ years	Pfizer/Adol/Adult	1st Dose	3 weeks	2nd Dose	≥4 weeks	3rd Dose	
12+ years	Novavax	1st Dose	3 weeks	2nd Dose			
18+ years	Janssen (J&J) Pfizer/Moderna preferred**	1st Dose	4 weeks	2nd Dose of Moderna/ Pfizer			

≥2 months

Bivalent Booster

Pfizer: Ages 5-11
Pfizer: Ages 12+

Moderna: Ages 6+

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

* See schedules for children in transition from a younger to older age group: Pfizer | Moderna.
** Although use of mRNA COVID-19 vaccines is preferred, the Janssen vaccine may be offered in some situations.

View Interim Clinical Considerations for Use of COVID-19 Vaccines for details. Schedule is subject to change.

California COVID-19 Vaccination Program IMM-1396 (10/14/22) Page 2 of 2

COVID-19 Vaccine Timing by Age

Spanish: Calendario de la Vacuna COVID-19 por Edad

Description of moderate and severe immunocompromising conditions and treatment

Moderate and severe immunocompromising conditions and treatments include but are not limited to:

- Active treatment for solid tumor and hematologic malignancies
- Receipt of solid-organ transplant and taking immunosuppressive therapy
- Receipt of chimeric antigen receptor (CAR)-T-cell therapy or hematopoietic cell transplant (HCT) (within 2 years of transplantation or taking immunosuppressive therapy)
- Moderate or severe primary immunodeficiency (e.g., DiGeorge syndrome, Wiskott-Aldrich syndrome)
- Advanced HIV infection (people with HIV and CD4 cell counts less than 200/mm^3, history of an AIDS-defining illness without immune reconstitution, or clinical manifestations of symptomatic HIV) or untreated HIV infection
- Active treatment with high-dose corticosteroids (i.e., 20 mg or more of prednisone or equivalent per day when administered for 2 or more weeks), alkylating agents, antimetabolites, transplant-related immunosuppressive drugs, cancer chemotherapeutic agents classified as severely immunosuppressive, tumor necrosis factor (TNF) blockers, and other biologic agents that are immunosuppressive or immunomodulatory

Clinical Guidance for COVID-19 Vaccination | CDC

COVID-19 Vaccine & Booster Safety

- COVID-19 vaccines were evaluated in tens of thousands of participants in clinical trials.
- Hundreds of millions of people have safely received a COVID-19 vaccine.
- Adverse reactions are usually mild-moderate and include pain at the injection site, fatigue, headache, myalgia.
- Serious safety problems are rare.
  - Rare cases of myocarditis and pericarditis have occurred most frequently, although not exclusively, in adolescent and young adult males.
    - The risk of myocarditis is much higher from COVID-19 infection than it is from the vaccine, and myocarditis is usually much more serious after COVID-19 infection than after immunization.
    - This risk can be mitigated by extending the interval between primary series doses to 8 weeks.

Safety of COVID-19 Vaccines | CDC; Clinical Guidance for COVID-19 Vaccination | CDC; Cardiac Complications After SARS-CoV-2 Infection and mRNA COVID-19 Vaccination — PCORnet, United States, January 2021–January 2022 | MMWR (cdc.gov)

History of prior or current SARS-CoV-2 infection

- Growing epidemiologic evidence indicates that vaccination following SARS-CoV-2 infection further increases protection from subsequent infection and hospitalization, including in the setting of increased circulation of more infectious SARS-CoV-2 strains.
- People with known current SARS-CoV-2 infection should defer any COVID-19 vaccination, including booster vaccination, at least until recovery from the acute illness (if symptoms were present) and criteria to discontinue isolation have been met.
- In addition, people who recently had SARS-CoV-2 infection may consider delaying a primary series dose or booster dose by 3 months from symptom onset or positive test (if infection was asymptomatic).

Clinical Guidance for COVID-19 Vaccination | CDC

COVID-19 Vaccine Product Guide

COVID-19 Vaccine Product Guide

Check vaccine labels and EUA fact sheets before use to avoid mix-ups.
EUA fact sheets supersede info on vials and carton. Refer to CDC Product Guide for more information.

	Pfizer				
	Infant/Toddler 6 months–4 years*	Pediatric Primary Series 5–11 years	Bivalent Booster 5-11 years	Adol/Adult Primary Series 12+ years	Bivalent Booster 12+ years
			"Bivalent" on label		
Packaging	Maroon Cap	Orange Cap	Orange Cap	Gray Cap	Gray Cap
Doses Per Vial	10 doses	10 doses	10 doses	6 doses	6 doses
Carton Size	100 doses	100 doses	100 doses	60 doses	60 doses
Min. Standard Order	100 doses	100 doses	100 doses	300 doses	300 doses
NDC-Unit of Use (vial)	59267-0078-01	59267-1055-01	59267-0565-01	59267-1025-01	59267-0304-01
CVX Code	219	218	301	217	300
Storage Limits Before Puncture: Label vaccine with expiration and use-by dates.					
ULT (-90ºC to -60ºC)	Until expiration				
Thermal Shipper	⊘				
Freezer	⊘				
Refrigerator (2–8ºC)	Up to 10 weeks (write the date on carton)				
Expiration Date	12 months from manufacture date printed on vial and carton or check product website.				
Administration					
Diluent (supplied)	2.2 mL per vial	1.3 mL per vial	1.3 mL per vial	**Do not dilute.**	**Do not dilute.**
Dose Volume–Primary/Additional	0.2 mL† (3 mcg dose)	0.2 mL† (10 mcg dose)	N/A	0.3 mL (30 mcg dose)	N/A
Dose Volume–Booster	N/A	**Do not use for boosters.**	0.2 mL† (10 mcg dose)	**Do not use for boosters.**	0.3 mL (30 mcg dose)
Refrigerator Thaw Time (2º to 8ºC/ 36°F to 46°F) (Do not refreeze)	Up to 2 hours in carton	Up to 4 hours in carton	Up to 4 hours in carton	Up to 6 hours in carton	Up to 6 hours in carton
Room Temp Thaw Time	Vial: 30 minutes at up to 25ºC (77ºF)				
Total Time at Room Temp (Do not refreeze)	Up to 12 hours (including thaw time) at up to 25ºC (77ºF)				
Storage Limits After Puncture: Record puncture and use-by time on vial label.					
Use-By Limit (Discard Time After 1st Puncture)	Discard after 12 hours at 2°C to 25°C (35°F to 77°F)				

* Labels for Pfizer 6 months-4 years product may not reflect expanded age ranges. Refer to Provider Letter.
† Syringes in ancillary kits may require estimating volume between lines, or using private stock.

COVID-19 Vaccine Product Guide

Check vaccine labels and EUA fact sheets before use to avoid mix-ups.
EUA fact sheets supersede info on vials and carton. Refer to CDC Product Guide for more information.

	Moderna			
	Infant/Toddler 6 months–5 years	Pediatric 6-11 years*	Adol/Adult 12+ years	Bivalent Booster 6+ years
	Magenta Border	Purple Border	Light Blue Border	Gray Border
Packaging	Dark Blue Cap	Dark Blue Cap	Red Cap	Blue Cap
Doses Per Vial	10 doses	5 doses	10-11 doses	5-10 doses
Carton Size	100 doses	50 doses	100 doses	50-100 doses
Min. Standard Order	100 doses	100 doses	100 doses	100 doses
NDC-Unit of Use (vial)	80777-0279-05	80777-0275-05	80777-0273-10	80777-0282-05
CVX Code	228	221	207	229
Storage Limits Before Puncture: Label vaccine with expiration and use-by dates.				
ULT (-90ºC to -60ºC)	⊘			
Thermal Shipper	⊘			
Freezer	Until expiration at -50ºC to -15ºC (-58ºF to 5ºF)			
Refrigerator	Up to 30 days (write the date on carton) at 2–8ºC (36-46ºF)			
Expiration Date	Check product website or QR code.			
Administration				
Diluent	**Do not dilute.**			
Dose Volume–Primary/Additional	0.25 mL† (25 mcg dose)	0.5 mL (50 mcg dose)	0.5 mL (100 mcg dose)	N/A
Dose Volume–Booster	N/A	**Do not use for boosters, despite label.***	**Do not use for boosters.**	**Ages 12+:** 0.5 mL **Ages 6-11:** .25 mL†
Refrigerator Thaw Time (2º to 8ºC/ 36°F to 46°F) (Do not refreeze)	2 hours (Let vial stand at room temp for 15 min before administering.)	2 hours (Let vial stand at room temp for 15 min before administering.)	2.5 hours (Let vial stand at room temp for 15 minutes before administering.)	2 hours (Let vial stand at room temp for 15 minutes before administering.)
Room Temp Thaw Time	45 minutes at 15º to 25ºC (59º to 77ºF)	45 minutes at 15º to 25ºC (59º to 77ºF)	1 hour at 15° to 25°C (59° to 77°F)	45 minutes at 15° to 25°C (59° to 77°F)
Total Time at Room Temp (Do not refreeze)	Store up to 24 hours at 8°C to 25°C (46°F to 77°F)			
Storage Limits After Puncture: Record puncture and use-by time on vial label.				
Use-By Limit (Discard Time After 1st Puncture)	Discard after 12 hours at 2°C to 25°C (36°F to 77°F)			

* Labels for early shipments of Moderna 6-11 years (dark blue cap/purple border) product do not reflect authorized age ranges. Refer to Provider Letter.
† Syringes in ancillary kits may require estimating volume between lines, or using private stock.

COVID-19 Vaccine Product Guide

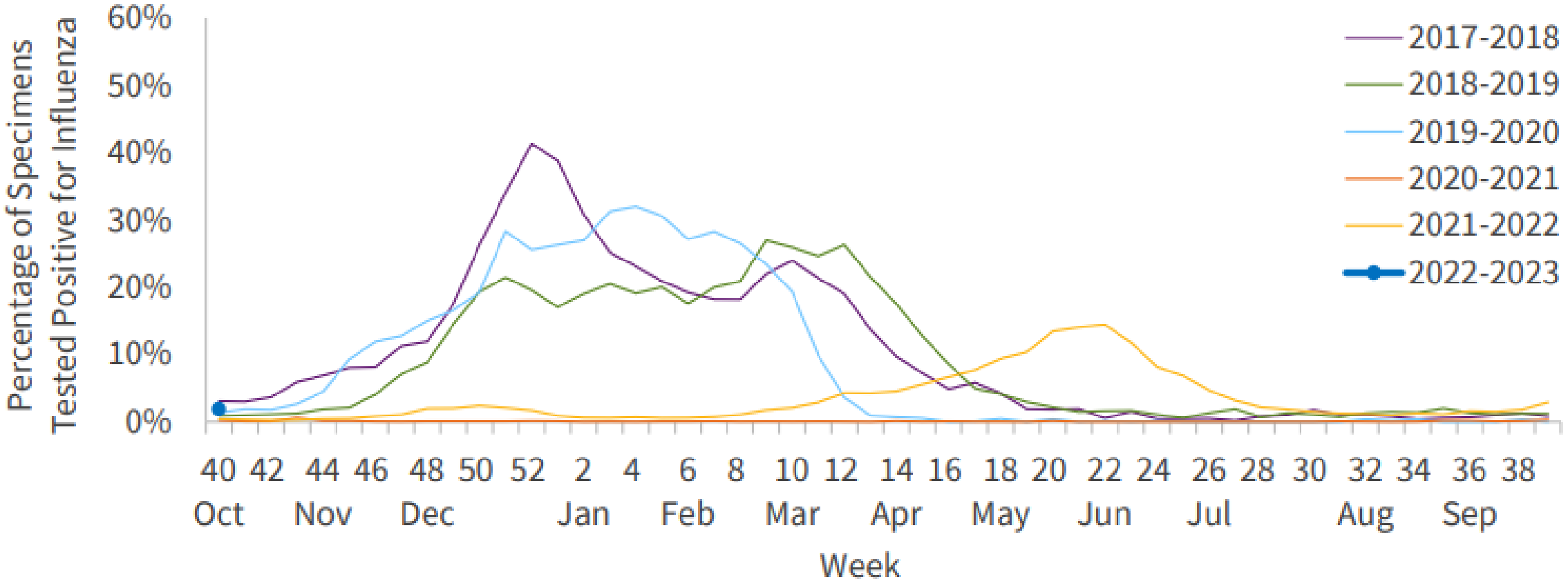
Check vaccine labels and EUA fact sheets before use to avoid mix-ups.
EUA fact sheets supersede info on vials and carton. Refer to CDC Product Guide for more information.

	Janssen (J&J)	Novavax
	Adult 18+ years	Adol/Adult 12+ years
Packaging	Blue Cap	Royal Blue Cap
Doses Per Vial	5 doses	10 doses
Carton Size	50 doses	100 doses
Min. Standard Order	100 doses	100 doses
NDC-Unit of Use (vial)	59676-0580-05	80631-0100-01
CVX Code	212	211
Storage Limits Before Puncture		
ULT (-90ºC to -60ºC)	⊘	
Thermal Shipper	⊘	
Freezer	⊘	
Refrigerator (2–8ºC)	Until expiration	
Expiration Date	Check product website, QR code, or call 800-565-4008	Check product website.
Administration		
Diluent	**Do not dilute**	
Dose Volume–Primary/Additional	0.5 mL	0.5 mL (5 mcg)
Dose Volume–Booster	0.5 mL	N/A
Refrigerator Thaw Time	N/A. If needed immediately, thaw at room temperature.	N/A
Room Temp Thaw Time	Carton: up to 4 hrs Vial: about 1 hour at 25°C (77°F) max	N/A
Total Time at Room Temp (Do not refreeze)	Store up to 12 hours at 9°C to 25°C (47°F to 77°F)	N/A
Storage Limits After Puncture		
Use-By Limit (Discard Time After 1st Puncture)	Discard after 6 hours at 2° to 8°C (36°F to 46°F) or 2 hours at 25°C (77°F) max	Discard after 6 hours at 2° to 25°C (36° to 77°F)

Label vaccine with expiration date, puncture and use-by time. Strictly comply with manufacturer guidance.

Influenza Vaccination

Percentage of Influenza Detections at Clinical Sentinel Laboratories in CA, 2017–2023 Season to Date



Note: Data have been shifted so that Week 1 aligns across years.

California Influenza and Respiratory Disease Surveillance

Influenza Season: 2021-22 Burden Estimates

CDC estimates* that, from **October 1, 2021** through **June 11, 2022**, there have been:

8,000,000 – 13,000,000
flu illnesses

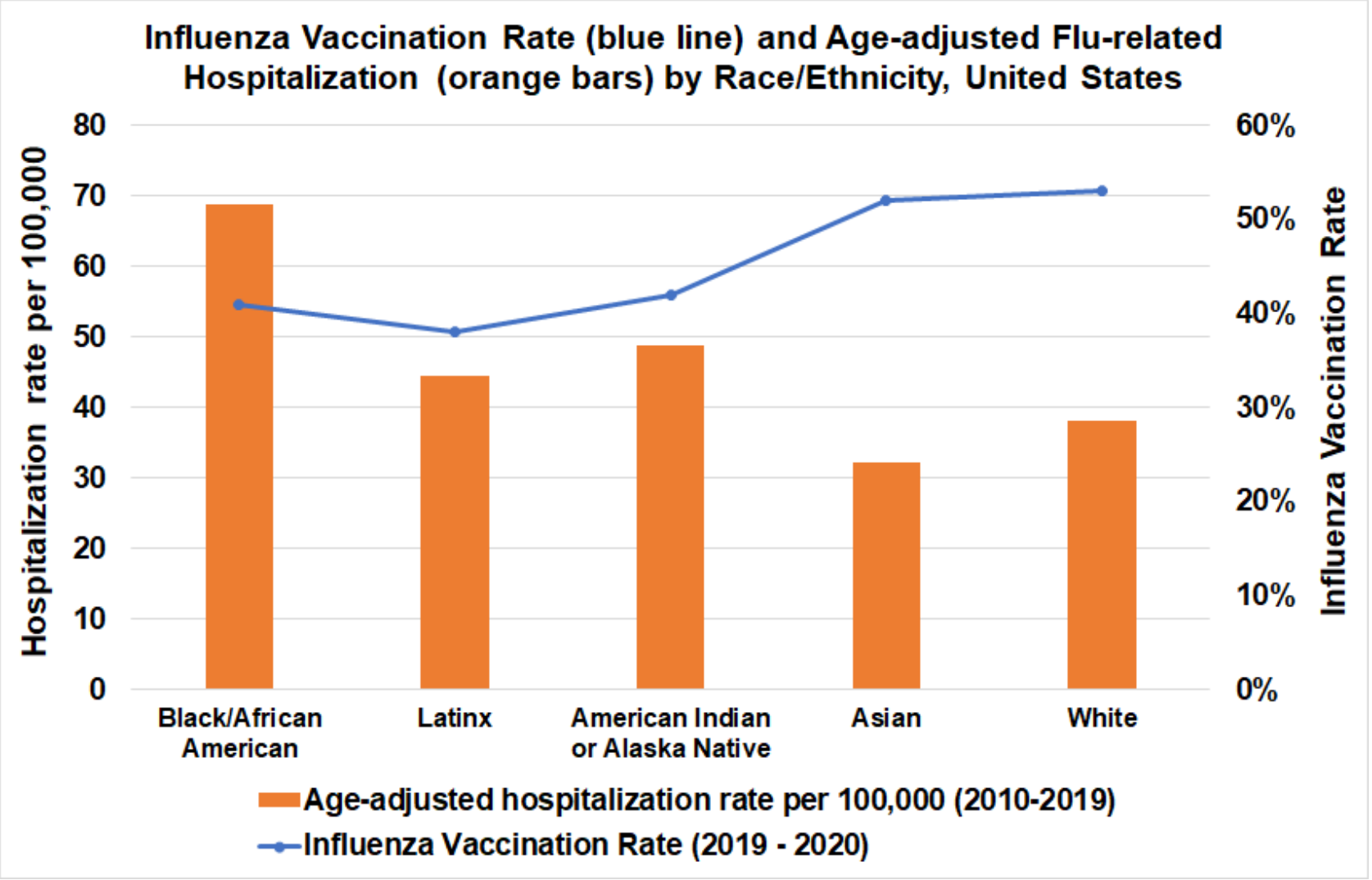
3,700,000 – 6,100,000
flu medical visits

82,000 – 170,000
flu hospitalizations

5,000 – 14,000
flu deaths

2021-2022 U.S. Flu Season: Preliminary In-Season Burden Estimates | CDC

Influenza Vaccination Rate and Age-Adjusted Flu-Related Hospitalization by Race/Ethnicity, United States



Vital Signs: Influenza Hospitalizations and Vaccination Coverage by Race and Ethnicity—United States, 2009–10 Through 2021–22 Influenza Seasons | MMWR (cdc.gov); QuickStats: Age-Adjusted Percentage of Adults Aged ≥18 Years Who Had an Influenza Vaccination in the Past 12 Months, by Sex and Race/Ethnicity — National Health Interview Survey, United States, 2019 | MMWR (cdc.gov)

2019-20 Influenza Season: Burden Averted by Vaccination

During the 2019-2020 season, nearly **52%** of the U.S. population aged 6 months and older received an influenza vaccine and this **PREVENTED** an estimated:

7.5M

illnesses

About the same as the population of the Bay Area

105K

hospitalizations

Enough people to fill both Oracle Park and the Oakland Coliseum

6,300

deaths

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

Estimated Influenza Illnesses, Medical visits, and Hospitalizations Averted by Vaccination in the United States — 2019–2020 Influenza Season | CDC

Past Seasons Estimated Influenza Disease Burden Averted by Vaccination | CDC

2022-23 Influenza Vaccine Composition

Quadrivalent vaccines for use in the 2022-2023 influenza season contain the following:

Egg-based vaccines:

- an A/Victoria/2570/2019 (H1N1)pdm09-like virus;
- an A/Darwin/9/2021 (H3N2)-like virus*;
- a B/Austria/1359417/2021 (B/Victoria lineage)-like virus*; and
- a B/Phuket/3073/2013 (B/Yamagata lineage)-like virus.

Cell culture- or recombinant-based vaccines:

- an A/Wisconsin/588/2019 (H1N1)pdm09-like virus;
- an A/Darwin/6/2021 (H3N2)-like virus*;
- a B/Austria/1359417/2021 (B/Victoria lineage)-like virus*; and
- a B/Phuket/3073/2013 (B/Yamagata lineage)-like virus.

* Updated strains from prior year

MMWR, Influenza Activity and Composition of the 2022–23 Influenza Vaccine — United States, 2021–22 Season (cdc.gov)

A Flu Shot is the Best Protection Against Flu

- **Core recommendation:** Annual influenza vaccination is recommended for all people with HIV aged 6 months and older who do not have contraindications
- New recommendation for 2022-2023: Adults aged ≥65 years should preferentially receive a higher dose or adjuvanted influenza vaccine. If none of these three vaccines is available at an opportunity for vaccine administration, then any other age-appropriate influenza vaccine should be used.

Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season | MMWR (cdc.gov)

New ≥65-year Preferential Recommendation

What are the higher dose and adjuvanted influenza vaccines?

- Fluzone High-Dose Quadrivalent (HD-IIV4): contains 4x the hemagluttinin (HA) dose/virus than standard dose vaccines (SD-IIV's)
- Flublok Quadrivalent (RIV4): recombinant vaccine which contains 3x the HA dose/virus than SD-IIV's
- Fluad Quadrivalent (aIIV4): contains the adjuvant MF59

What is the evidence for the preferential recommendation?

- Effectiveness
  - Evidence favors HD-IIV in preventing influenza illness, outpatient visits, hospitalization, and death.
  - For influenza hospitalizations, evidence favors HD-IIV, RIV, and aIIV, though extent of evidence varies.
- Safety
  - Each vaccine has demonstrated safety in prelicensure trials.
  - Increased frequency of some reactogenicity events in some studies of HD-IIV and aIIV, but most were mild or moderate.

Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season | MMWR (cdc.gov); GRADE: Higher Dose and Adjuvanted Influenza Vaccines for Adults Aged ≥65 Years | CDC; ACIP June 22-23, 2022 Presentation Slides; ACIP February 23-24, 2022 Presentation Slides

People with HIV are at Higher Risk of Serious Influenza Illness

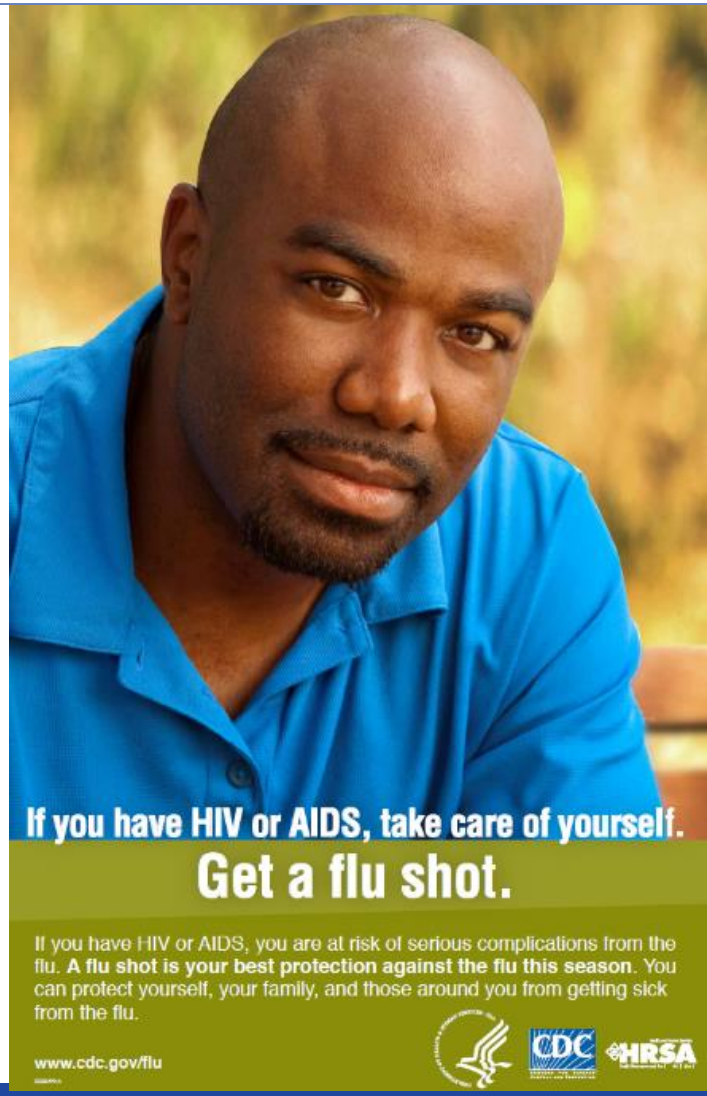
- People with HIV have a higher risk of developing serious flu-related complications.
  - Increased risk for heart- and lung-related hospitalizations in people with HIV during flu season.
  - Some people at risk for prolonged flu virus shedding.
- Many people with HIV have conditions that increase their risk:
  - Older age – over half of people with HIV in California are over 50 years of age.
  - Chronic medical problems – cardiovascular disease, chronic lung disease, kidney disease, and diabetes are more common in people living with HIV.
  - Immune suppression – indicated by a low CD4 T-cell count or not receiving antiretroviral treatment.

Grohskopf LA, Alyanak E, Ferdinands JM, et al. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices, United States, 2021–22 Influenza Season. MMWR Recomm Rep 2021;70(No. RR-5):1–28. DOI: http://dx.doi.org/10.15585/mmwr.rr7005a1.

Influenza Vaccines are Effective in People with HIV

- Randomized studies in adults with HIV have shown that flu vaccination can reduce the risk of flu illness.
  - In one study inactivated influenza vaccine was 75% effective at preventing confirmed influenza illness.

- Flu vaccination works much better for people living with HIV who are receiving ART.
  - Seroconversion after vaccination for H1N1 was 71% among people on antiretroviral therapy (ART) vs. 35% among people not receiving ART.



Madhi SA, et al. Clin Infect Dis. 2011 Jan 01;52(1):128-37 Summary of Immunogenicity, Efficacy, and Effectiveness of Influenza Vaccines: https://www.cdc.gov/flu/professionals/acip/background/immunogenicity.htm

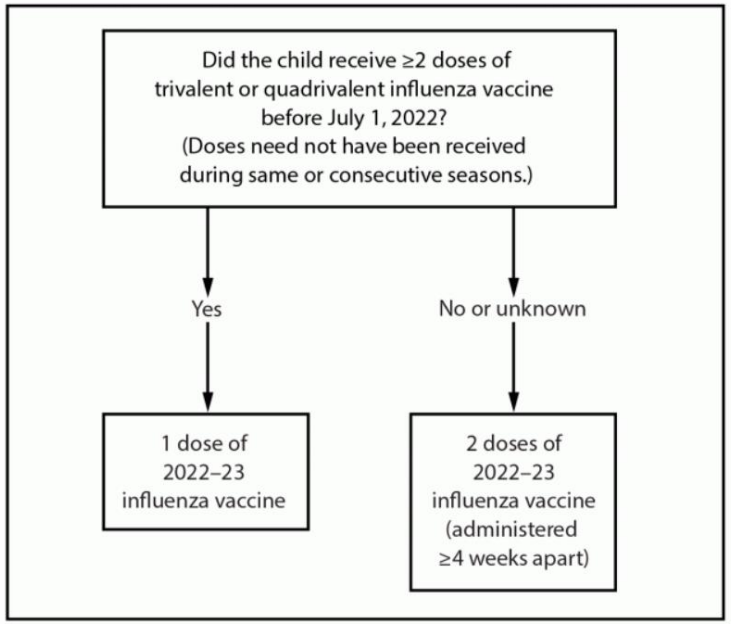
Live Attenuated Influenza Vaccine (LAIV4)

- **Contraindicated in people with HIV (AIII graded recommendation)**
  - Uncertain but biologically plausible risk associated with live virus
  - Limited data on efficacy in people with HIV
- Quadrivalent
- Standard-dose, nonadjuvanted IIVs
- Licensed for persons aged 2 through 49 years
- Egg-based

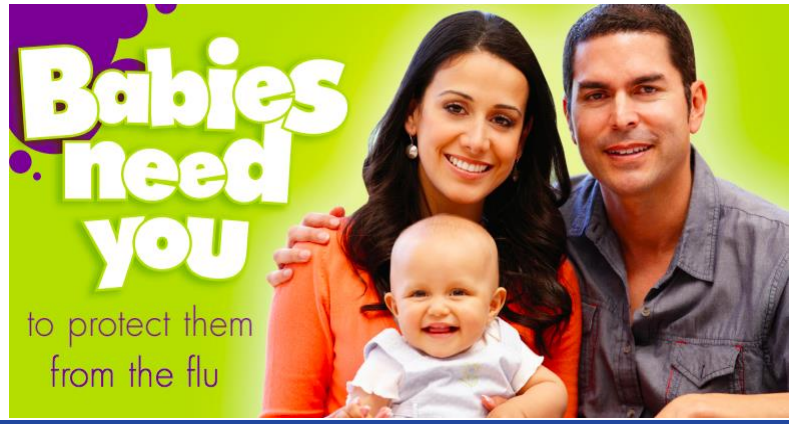
Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season (cdc.gov)

High Priority Groups

- Children 6 – 59 months
- Children & adolescents 6 mos. – 18 yrs. taking aspirin or salicylates
- Adults ≥ 50 years
- Pregnant people
- All ages with chronic medical conditions
  - Immunocompromised, including HIV
  - Respiratory: asthma, COPD
  - Metabolic: diabetes, obesity
  - Cardiovascular, renal, hepatic, neurologic, hematologic
  - Obesity (extreme, BMI ≥ 40 for adults)
- Nursing home residents
- American Indians/Alaska Natives
- Healthcare personnel (not just clinical staff), and household contacts/caregivers of children aged <5 years, adults aged ≥50 years, and people with medical conditions associated with increased risk of severe complications from influenza

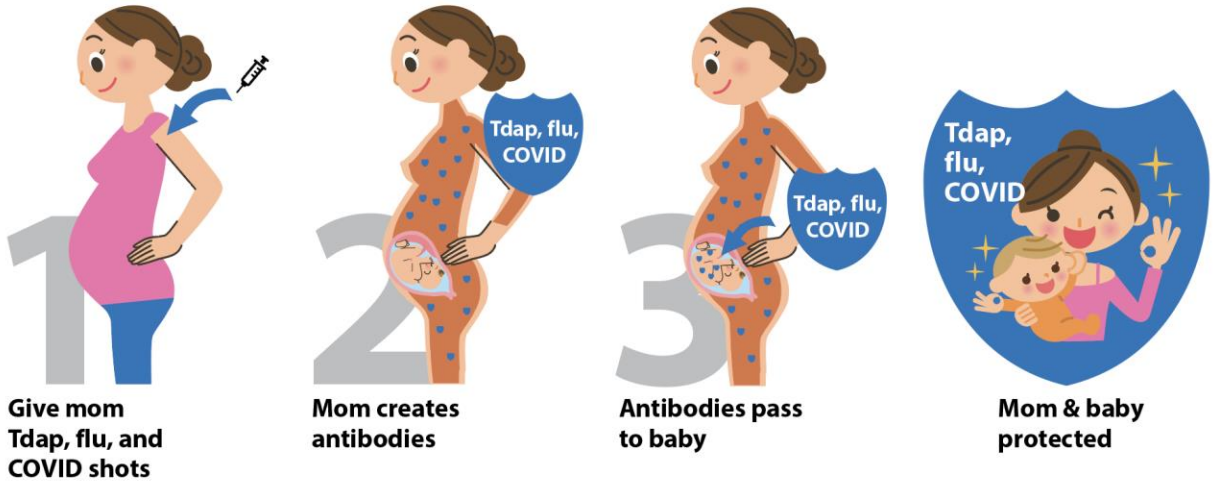


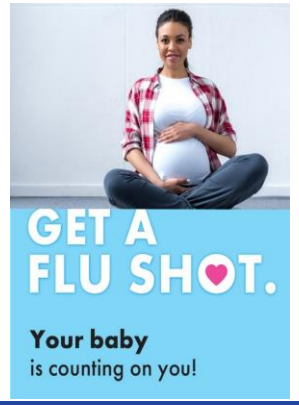
ACIP Influenza vaccine dosing algorithm for children 6 months through 8 years (Source)



Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season (cdc.gov)

Immunization During Pregnancy is Important





Link to infographic

When to Vaccinate?

- **Older adults:** Not too early, after July/August

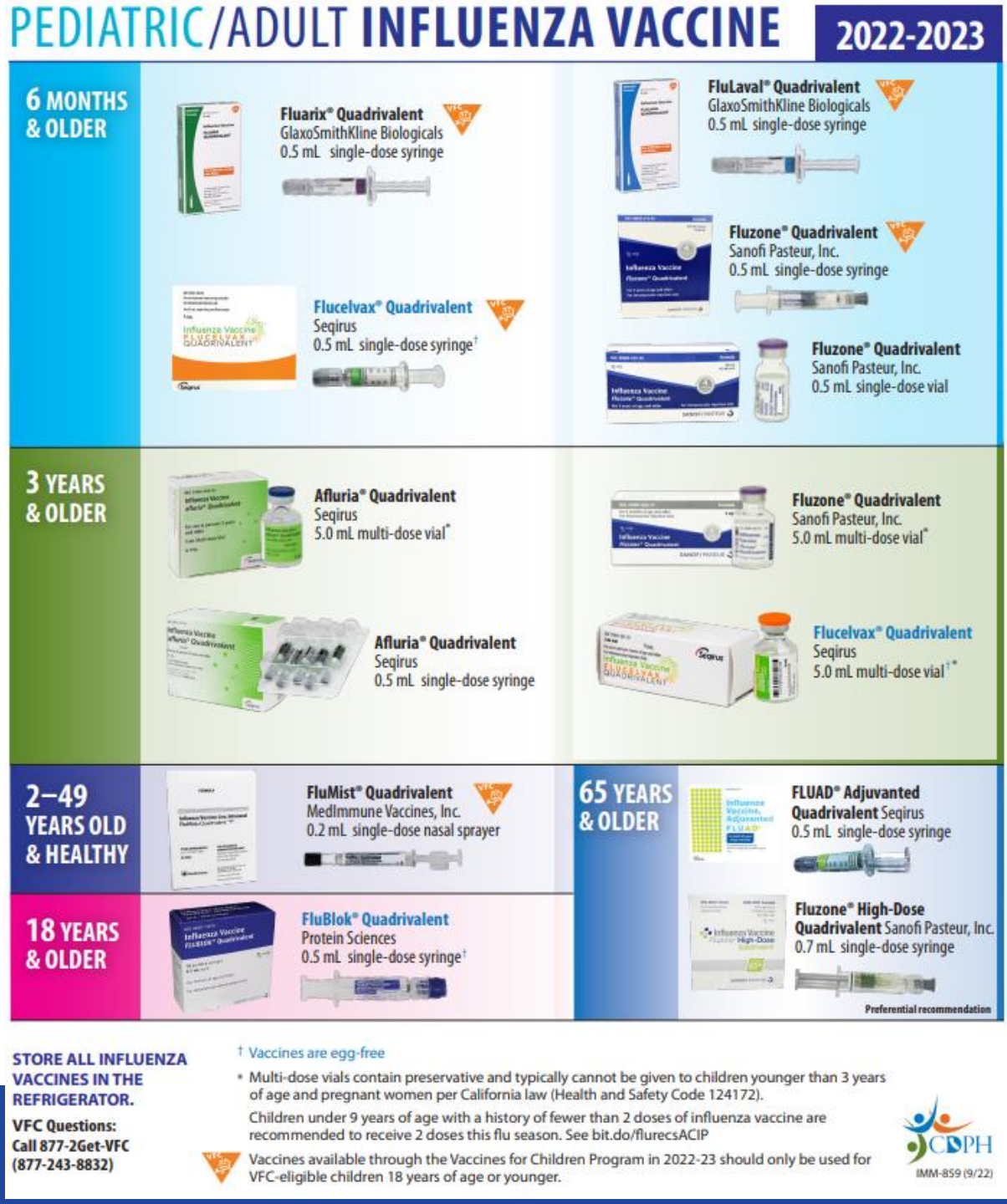
- **Pregnant people**
  - ✓ During any trimester, preferably in September or October
  - ✓ Flu vaccination may be considered in July or August for pregnant people in the 3rd trimester to help protect infants against flu in the first few months of life.

- **All others:** by the end of October, before flu begins spreading in the community.
  - ✓ If your practice is planning dedicated flu clinics or outreach events, September and October are good months to offer.

Continue vaccinating until the last flu dose expires! Flu most commonly peaks in February and significant activity can continue into May. Avoiding missed opportunities is more important than precise timing!

Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season (cdc.gov)

CDPH Flu ID Guide

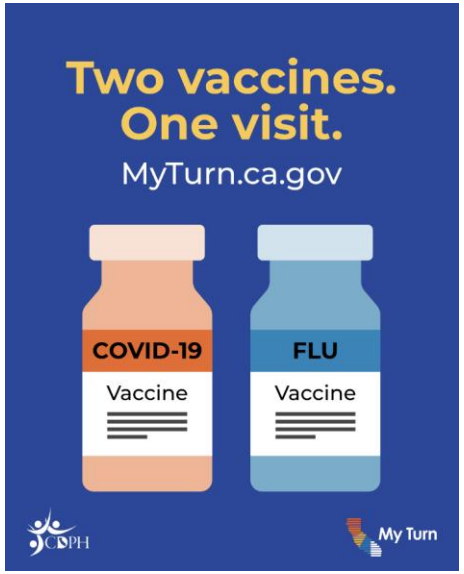


Vaccinate ALL 58

IMM-859 PEDIATRIC/ADULT INFLUENZA VACCINE (eziz.org)

Co-administration of Flu and COVID-19 Vaccines

- Routine administration of all age-appropriate doses of vaccines simultaneously is recommended as best practice.
  - This includes adjuvanted or high-dose influenza vaccines; administer in separate limbs.
- With both influenza and SARS-CoV-2 circulating, getting both vaccines is important for prevention of severe disease, hospitalization, and death.
- LAIV (live attenuated influenza vaccine) may be given on the same day as any other live or inactivated vaccine. However, if two live vaccines are not given on the same day, they should be separated by at least 4 weeks.



IMM-1389_COVID-Coadministration-peds8-10-22 (eziz.org)
Clinical Guidance for COVID-19 Vaccination | CDC

CDC Adminstration of Influenza and COVID-19 Vaccines
Vaccine Administration, Route and Site | CDC

Monkeypox (MPX) Vaccination

Available MPX Vaccines

- JYNNEOS
  - Given as two dose series 28-days apart
  - Current recommended MPX vaccine
- ACAM 2000
  - Live, replicating vaccine that can be used for prevention of MPX under FDA IND (investigational new drug) and is used for prevention of smallpox in settings such as the military
  - Contraindicated in patients with HIV
  - Is not being used for MPX prevention in the current outbreak

JYNNEOS MPX Vaccine

- Full FDA approval for prevention of both smallpox and MPX for persons 18 years and over at high risk of smallpox or MPX infection
- For use in persons under 18, providers should consult with their local health department
- This vaccine is being used preferentially for MPX pre- and post-exposure prophylaxis during the current epidemic
- A live attenuated vaccine that is safe for use in immunocompromised patients, including those with HIV
- Given as two dose series 28-days apart
- CDC is providing federally purchased vaccine directly to state health departments and federal/federally funded entities, including VA, IHS, Bureau of Prisons, and HRSA selected Ryan White providers
- CDPH is receiving vaccine; the vaccine is being redistributed to Local Health Departments (LHDs). LHDs are sharing with community providers
- Contact your Local Health Jurisdiction (LHJ) if interested in becoming a vaccinator

Vaccine Eligibility

- Eligibility has expanded to include new groups and individuals
- Providers are well-positioned to identify their patients who would be eligible for vaccination
- Please encourage these patients to get vaccinated and ensure those who already received one dose return for their second
- Complete CDPH guidance: Considerations for Expanded MPX Post- and Pre-Exposure Prophylaxis (ca.gov)

Vaccine Eligibility

- If someone was **exposed** to MPX ≤ 14 days ago, vaccinate them with 2 doses of JYNNEOS with 28 days between the 1st and 2nd dose (Post-exposure prophylaxis, PEP and PEP++).

- If someone is in a **high-risk group** (including HIV status, next slide), vaccinate them with 2 doses of JYNNEOS with 28 days between the 1st and 2nd dose (Pre-exposure prophylaxis, PrEP).

Vaccine Eligibility

- **Any man or trans person who has sex with men or trans persons**
- **Any man or trans person who is taking or is eligible for HIV PrEP**
- **Anyone living with HIV**, particularly those with a CD4 count <350/mm3, an unsuppressed HIV viral load, or an opportunistic infection
- **People and their partners with high-risk sexual activity** (recent history of sexually transmitted infections, sex at commercial sex venues, sex at events in geographic areas with high MPX transmission)
- **HCWs who are likely to collect laboratory specimens from persons with MPX** (e.g., persons working in sexual health clinics or clinical settings that serve at risk populations).

CDPH Considerations for Expanded MPX Post- and Pre-Exposure Prophylaxis

JYNNEOS Administration

- Intradermal (alternative)
  - **0.1mL dose**
  - Two-dose schedule four weeks, 28 days, apart.
  - For individuals ≥ 18 years old **without** a history of keloid
- Subcutaneous (standard)
  - **0.5mL dose**
  - Two-dose schedule four weeks, 28 days, apart.
  - For individuals ≤ 18 years old and those **with** a history of keloid

JYNNEOS Administration

Table 2. Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

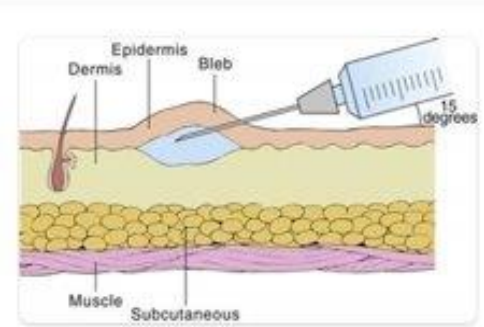
JYNNEOS vaccine regimen	Route of administration	Injection volume	Recommended number of doses	Recommended interval between 1st and 2nd dose
Alternative regimen				
People age ≥18 years	ID	0.1 mL	2	28 days
Standard regimen				
People age <18 years	Subcut	0.5 mL	2	28 days
People of any age who have a history of developing keloid scars	Subcut	0.5 mL	2	28 days

CDC Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

Intradermal Administration (ID)

Intradermal administration involves injecting the vaccine superficially between the epidermis and the hypodermis layers of the skin, typically of the volar aspect (inner side) of the forearm. If the volar aspect of the forearm is not an option (e.g., strong patient preference), intradermal administration of vaccine may be performed at the upper back below the scapula or at the deltoid. Producing a noticeable pale elevation of the skin (wheal) with the intradermal injection is desirable but not required. Please refer to related resources, including intradermal administration teaching tools and the JYNNEOS Preparation & Administration Summary (Alternative Regimen) for further details on intradermal vaccine administration.

A person who presents for their second JYNNEOS vaccine dose who is still experiencing erythema or induration at the site of intradermal administration of the first vaccine dose (e.g., the forearm) should have the second dose administered intradermally in the contralateral forearm or if that is not an option, in the upper back below the scapula, or at the deltoid.

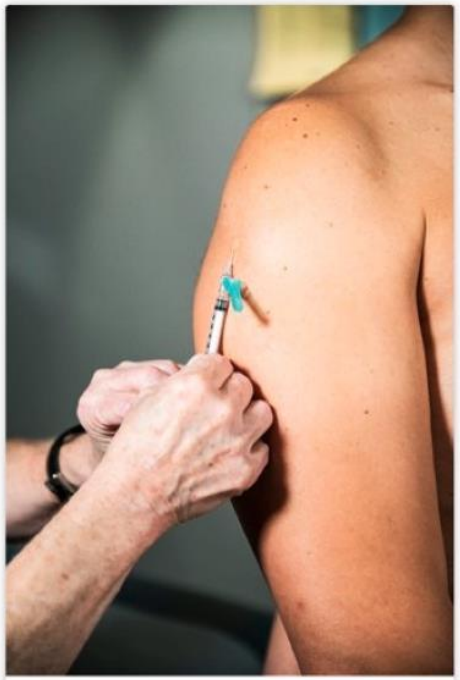


Intradermal Administration

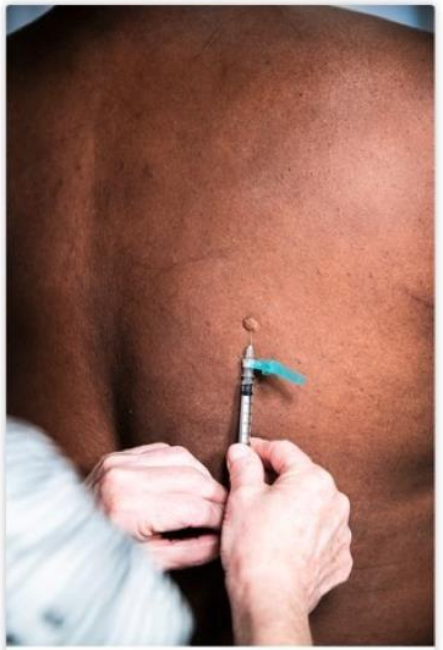
- Recommended route of vaccination is intradermal for adults aged 18 years-old or greater without a history of keloid

- Preferred location is volar surface of forearm

- If alternative sites desired can administer over deltoid or upper back below scapula in cases of patient preference (reduce stigma, marking, etc...)



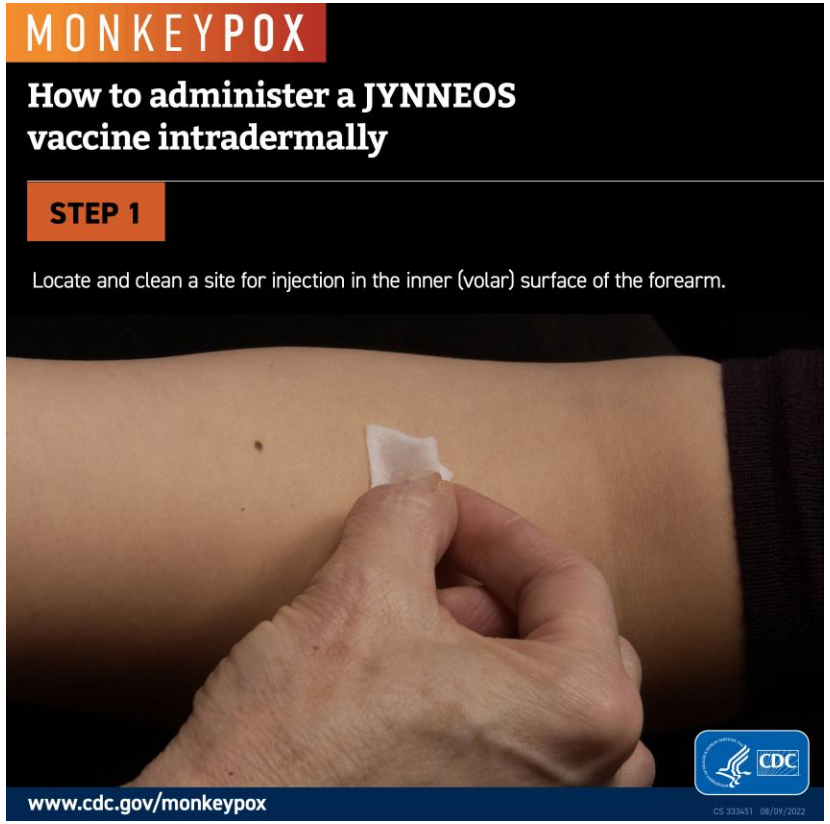
Example of intradermal administration at the deltoid.

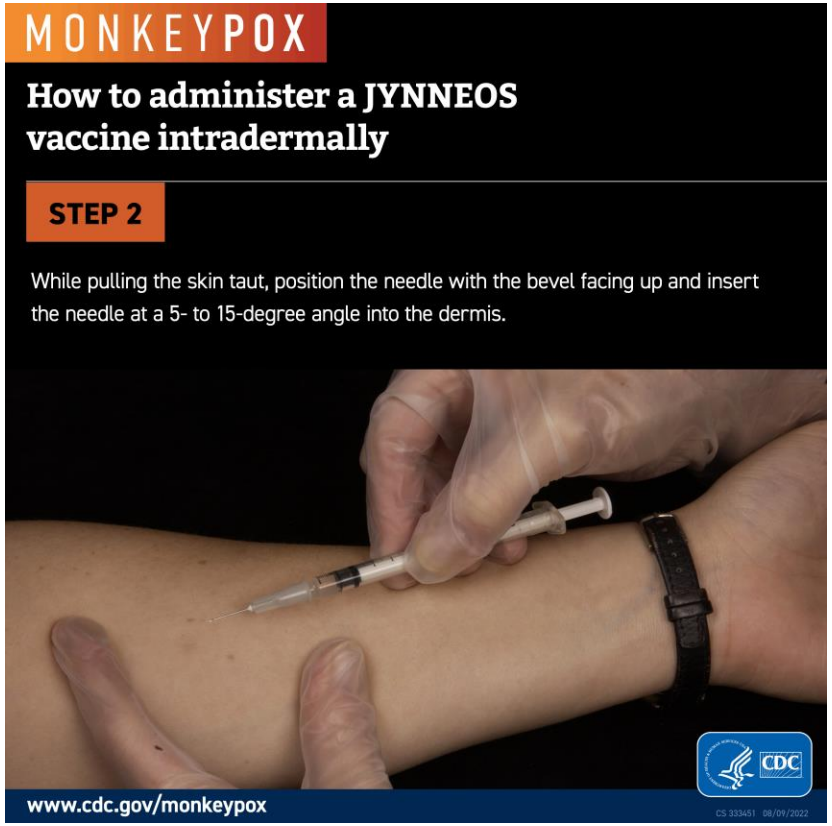


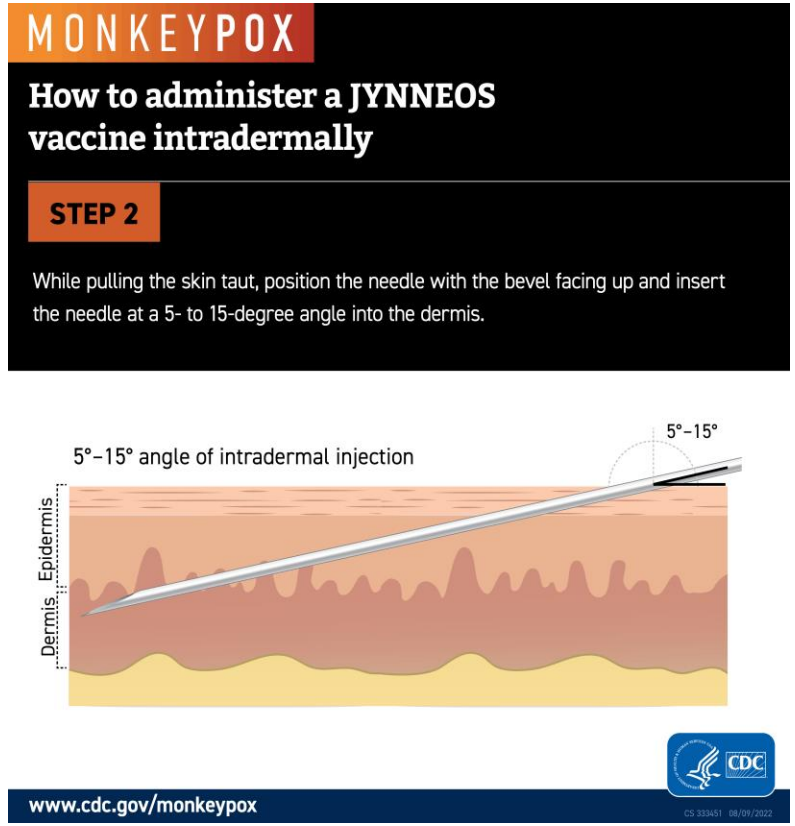
Example of intradermal administration at the upper back below the scapula.

CDC Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

Intradermal Administration

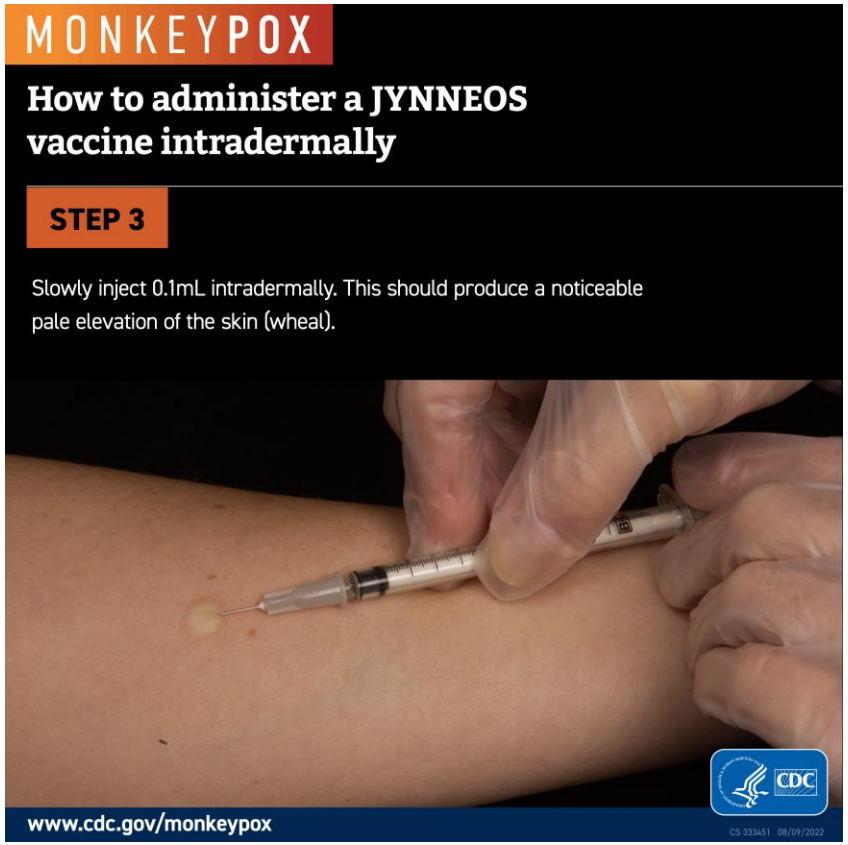


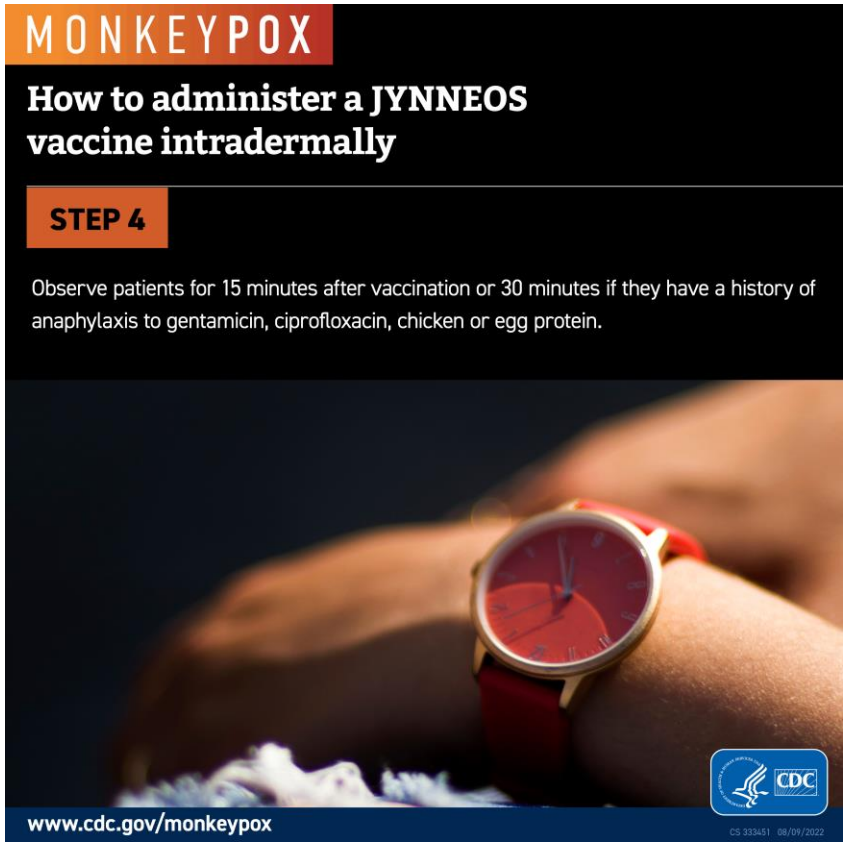




CDC Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

Intradermal Administration





CDC Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

Intradermal Administration

- Most common side effect is injection site reactions.
  - Erythema and induration more common after ID admin
  - Pain at injection site more common after SQ administration
- Do not administer JYNNEOS vaccine to individuals with a known history of a severe allergic reaction (e.g., anaphylaxis) after a previous dose of JYNNEOS.
- People with a history of anaphylaxis to vaccine component (gentamicin, ciprofloxacin, egg protein) are considered to have a precaution to vaccination.
  - Providers should discuss risks and benefits with potential recipients.
  - They may be vaccinated with a 30-minute observation period.

CDC Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

JYNNEOS Coadministration Considerations

- In general, JYNNEOS may be administered without regard to timing of other vaccines.
  - Administer each injection in a different injection site.
- Flu vaccine and JYNNEOS vaccine may be given at the same time.
- Special considerations for COVID-19 vaccines:
  - Someone with recent COVID-19 vaccination: do not delay JYNNEOS if eligible
  - Someone with recent JYNNEOS vaccination: some people, particularly adolescent or young adult males, ***might consider*** delaying COVID-19 vaccination for 4 weeks after JYNNEOS vaccination.

CDC Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

JYNNEOS in People Living with HIV

- Multiple studies evaluating JYNNEOS in people living with HIV with CDC counts ranging from 100 to 750 cells/mm3
- No safety issues or reduced immunogenicity in these populations
- Another trial specifically enrolling people with a prior diagnosis of AIDS who were virologically suppressed and had CD4 counts between 100 and 500, there were no serious safety concerns, and the vaccine appeared efficacious based on immunogenicity at standard dosing
- Immunogenicity among people with HIV who have CD4 counts below 100 cells/mm^3 or who are not virologically suppressed remains unknown.

CDC People Living with HIV

JYNNEOS in People Living with HIV

Specific Population	JYNNEOS	ACAM2000
People with congenital or acquired immune deficiency disorders, including those taking immunosuppressive medications and people living with HIV (regardless of immune status)	Administer as indicated based on age and history of keloids. (Table 2)	Do not administer.

JYNNEOS in People Living with HIV

Table 2. Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

JYNNEOS vaccine regimen	Route of administration	Injection volume	Recommended number of doses	Recommended interval between 1st and 2nd dose
Alternative regimen				
People age ≥18 years	ID	0.1 mL	2	28 days
Standard regimen				
People age <18 years	Subcut	0.5 mL	2	28 days
People of any age who have a history of developing keloid scars	Subcut	0.5 mL	2	28 days

CDC Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

Other Adult Vaccinations for People Living with HIV

Human Papillomavirus (HPV)

- Rationale for vaccination:
  - People with HIV have a high burden of complications from HPV infection including genital warts, cervical cancer, and anal cancer.
  - Vaccine most beneficial prior to natural exposure to an HPV subtype
- All adolescents and young adults with HIV (13 to 26 years; not previously vaccinated): **three doses of the recombinant HPV nonavalent vaccine.**
- People with HIV aged 27 to 45 years who are not adequately vaccinated: shared clinical decision-making regarding HPV vaccination is recommended.
- For people who had received the older recombinant HPV bivalent or quadrivalent vaccine, some experts would consider additional vaccination with recombinant HPV nonavalent vaccine.

Varicella Zoster Virus (VZV)

- Varicella-zoster virus (VZV) primary infection causes chickenpox and reactivation later in life results in shingles.
- Rationale: incidence of shingles is much higher in people with HIV.
- People with HIV ≥18 years: two doses of recombinant zoster vaccine.
- Some experts will delay vaccination until the patient has viral suppression or a CD4 count >200 cells/mm3 to ensure a robust vaccine response.

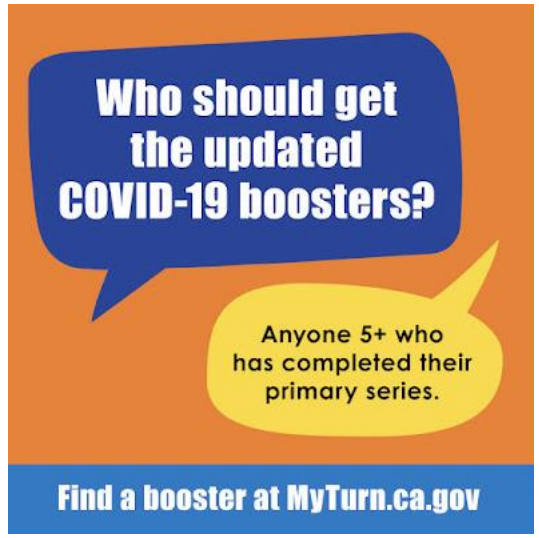
Meningococcal vaccine

- *Neisseria meningitidis* can cause meningitis – a severe infection that can result in hearing loss, brain damage, and death.
- Rationale for vaccination:
  - Increased risk for severe disease
  - Data to support vaccine efficacy in adolescents and young adults with HIV
  - Multiple meningitis outbreaks have been documented among men who have sex with men (MSM), including large Meningococcus serogroup C outbreak among MSM in Florida (2021 – 2022).
- Meningococcus serogroup A, C, W, Y (MenACWY) vaccine is recommended every 5 years.
- Meningococcus serogroup B vaccine not routinely indicated; can be provided if additional risks for severe infection (e.g., asplenia) or for short-term protection during an outbreak.

Resources

COVID-19 Resources on EZIZ

- Includes links to useful community toolkits, webinars, factsheets, flyers, etc.
  - New materials to promote the updated boosters
- Tools are segmented by audience, including LatinX, Native American, African American/Black, Pregnant/Breastfeeding, LGTBQ, Rural Communities, Long-Term Care and Aging Adults, Faith, Parents, Incarcerated Populations, etc.



Resources

#DontWaitVaccinate Campaign

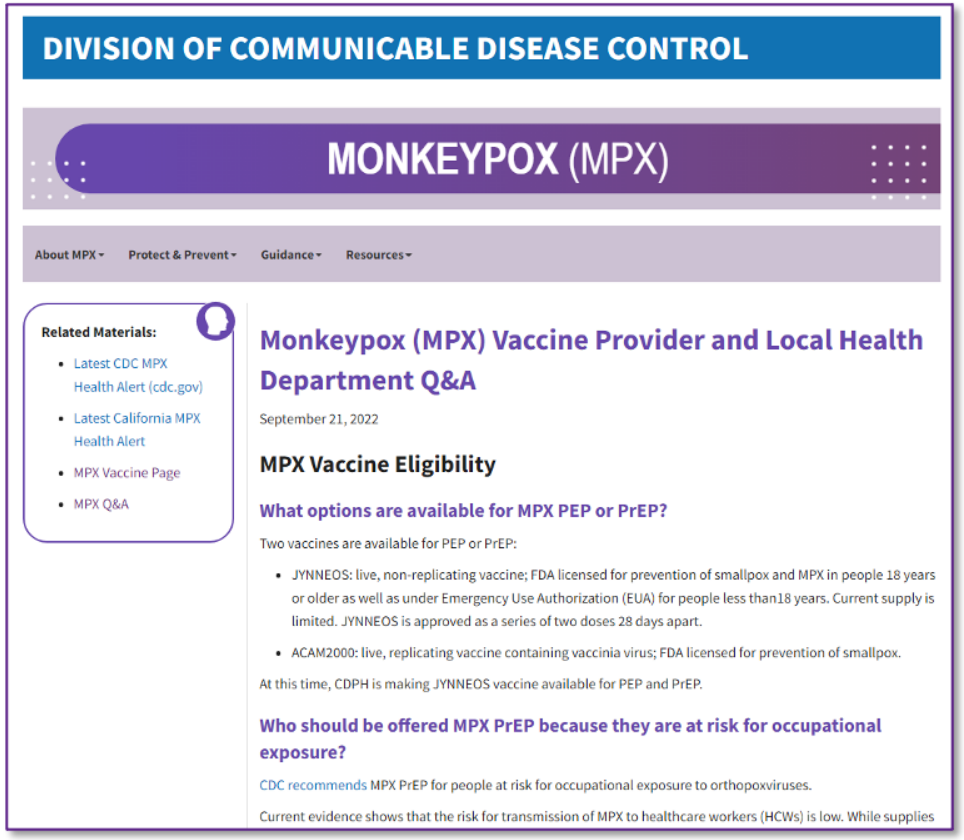
- Campaign created to address the decrease in immunization rates during the COVID-19 pandemic and promote flu immunization
- A library of customizable social media messages and images at https://www.immunizeca.org/

EZIZ

- Many flu resources are available for download at: https://eziz.org/resources/flu-promo-materials/
- Some print materials are available for FREE from your local health department.

MPX Resources

- Vaccine Q&A for Providers
- Vaccine Q&A for Public
- Vaccines Page:
  - Resource Links
  - Allocation Process
- Local Health Departments Page:
  - PEP++ Guidance



EZIZ MPX Resources

Includes:

- Intradermal
- Clinical guidance
- Vaccine information
- Storage and handling
- Standing orders
- Coding information
- Screening checklist

EZIZ MPX Page

Additional Resources Available from CDC

- Flu Information for Health Professionals
- Prevent Seasonal Flu (for patients)
- Frequently Asked Flu Questions (2022-23)
- The Difference between Flu and COVID-19
- Flu information for Parents with Young Children
- Information for Schools and Childcare Providers
- Flu Print Resources

Flu Information

Flu:

A Guide for Parents

Influenza (flu) is a contagious respiratory illness caused by influenza viruses that infect the nose, throat and lungs. Flu is different from a cold, and usually comes on suddenly. Each year flu causes millions of illnesses, hundreds of thousands of hospitalizations, and tens of thousands of deaths in the United States.

Flu can be very dangerous for children. CDC estimates that since 2010, between 6,000 and 26,000 children younger than 5 years old have been hospitalized from flu each year in the U.S. Flu vaccine is safe and helps protect children from flu.

What parents should know

How serious is flu?

While flu illness can vary from mild to severe, children often need medical care because of flu. Children younger than 5 years old and children of any age with certain long-term health problems are at increased risk of flu complications like pneumonia, bronchitis, sinus and ear infections. Some health problems that are known to make children more vulnerable to flu include asthma, diabetes and disorders of the brain or nervous system.

How does flu spread?

Flu viruses are thought to spread mainly by droplets made when someone with flu coughs, sneezes or talks. These droplets can land in the mouths or noses of people nearby. A person also can get flu by touching something that has flu virus on it and then touching their mouth, eyes, or nose.

What are flu symptoms?

Flu symptoms can include fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills, feeling tired and sometimes vomiting and diarrhea (more common in children than adults). Some people with the flu will not have a fever.

Protect your child

How can I protect my child from flu?

The first and best way to protect against flu is to get a yearly flu vaccine for yourself and your child.

- Flu vaccination is recommended for everyone 6 months and older every year. Flu shots and nasal spray flu vaccines are both options for vaccination.
- It's especially important that young children and children with certain long-term health problems get vaccinated.
- Caregivers of children at higher risk of flu complications should get a flu vaccine. (Babies younger than 6 months are at higher risk for serious flu complications, but too young to get a flu vaccine.)
- Pregnant people should get a flu vaccine to protect themselves and their baby from flu. Research shows that flu vaccination during pregnancy protects the baby from flu for several months after birth.
- Flu viruses are constantly changing and so flu vaccines are updated often to protect against the flu viruses that research indicates are most likely to cause illness during the upcoming flu season.

Are flu vaccines safe?

Flu vaccines have an excellent safety record. Millions of people have safely received flu vaccines for decades. Flu shots and nasal spray flu vaccines are both options for vaccination. Different types of flu vaccines are licensed for different ages. Each person should get one that is appropriate for their age. CDC and the American Academy of Pediatrics recommend an annual flu vaccine for all children 6 months and older.

What are the benefits of getting a flu vaccine?

- **A flu vaccine can keep you and your child from getting sick.** When vaccine viruses and circulating viruses are matched, flu vaccination has been shown to reduce risk of getting sick with flu by about 40 to 60%.
- **Flu vaccines can keep your child from being hospitalized from flu.** One recent study showed that flu vaccine reduced children's risk of flu-related pediatric intensive care unit admission by 74%.
- **Flu vaccine can be life saving in children.** A study using data from recent flu seasons found that flu vaccine reduced the risk of flu-associated death by half among children with higher risk medical conditions


thank
you!

Appendix

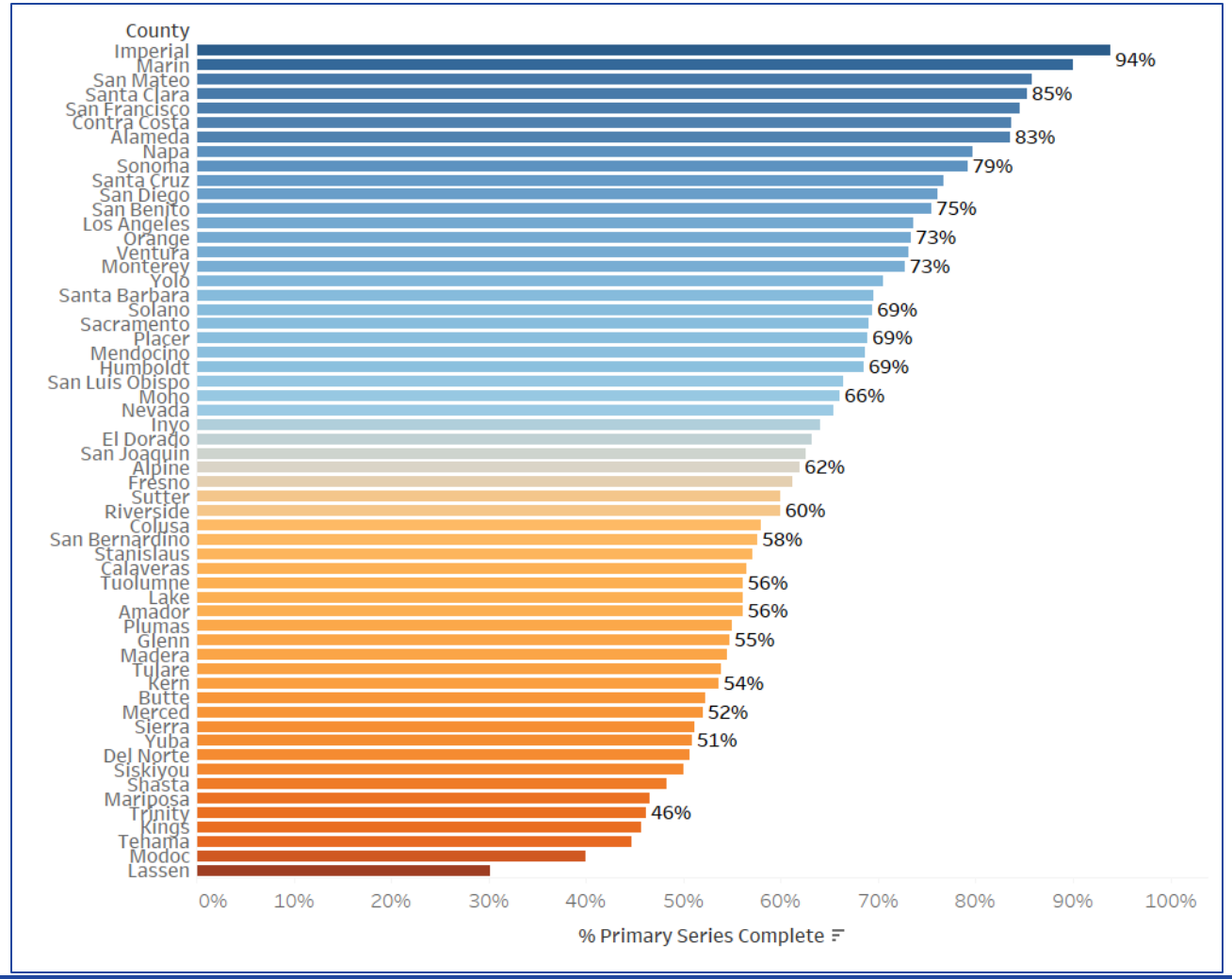
Ryan White Services and Vaccine Health Equity

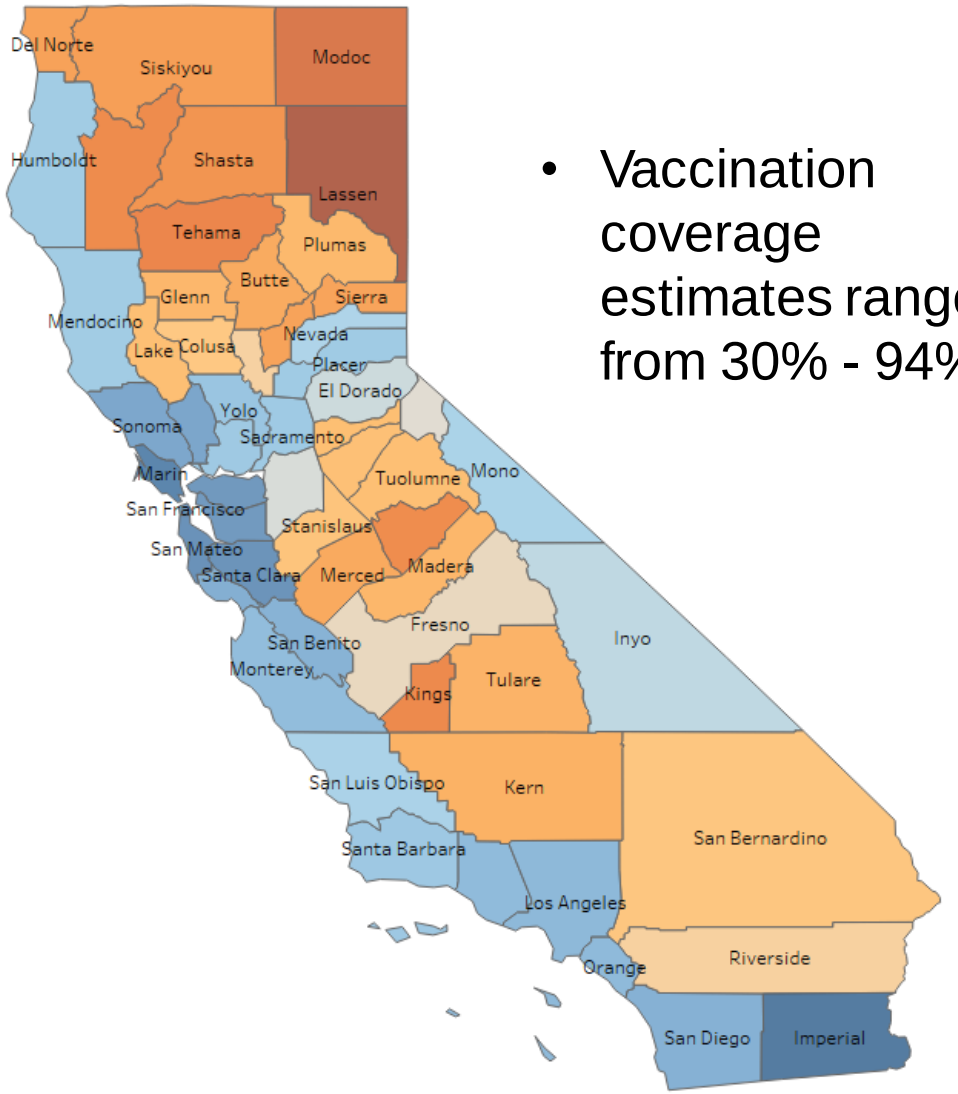
- Influenza and COVID-19 vaccine disparities exist by race and ethnicity
- When planning vaccination campaigns – Access, Acceptance, Confidence
- Ryan White services to anticipate and provide services to improve equity
  - Outreach to people not vaccinated
  - Transportation assistance or home vaccination options
  - Technological assistance for scheduling appointments - https://myturn.ca.gov/

Vaccinate with Confidence
Strategy to Reinforce Confidence in Covid-19 Vaccines

Geographic Disparities in Primary Series Rates

% Total Population Primary Series Completed, all ages by county





- Vaccination coverage estimates range from 30% - 94%

COVID-19 Vaccine FAQ's

1. What is the updated COVID-19 booster?

- The **updated COVID-19 boosters** are formulated to better protect against the most recently circulating COVID-19 variant. They contain a spike protein component shared by the BA4 and BA5 Omicron variants. They can help restore protection against newer variants.

2. Who is eligible to receive a COVID-19 updated (bivalent) booster?

- Anyone age 5 years and older who has completed their COVID-19 primary series. The updated booster is recommended at least 2 months after the last primary series or booster dose.

3. Which bivalent booster vaccines are available?

- Pfizer-BioNTech bivalent booster is available for anyone 5 years of age and older.
- Moderna bivalent booster is available for anyone 6 years and older.

CDC: COVID-19 Vaccines for Moderately to Severely Immunocompromised People. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/immuno.html Clinician Outreach and Communication Activity (COCA) Webinar. Therapeutic Options to Prevent Severe COVID-19 in Immunocompromised People. August 12, 2021. https://emergency.cdc.gov/coca/ppt/2021/081221_slide.pdf

COVID-19 Vaccine FAQs Continued

4. What if someone recently had a COVID-19 infection?

- At a minimum, defer any COVID-19 vaccination, including bivalent booster vaccination, until recovery from the acute illness (if symptoms were present) and criteria to discontinue isolation have been met.
- In addition, people who recently had SARS-CoV-2 infection may consider delaying any COVID-19 vaccination, including bivalent booster vaccination, by 3 months from symptom onset or positive test (if infection was asymptomatic).

5. Who might benefit most from getting a bivalent booster now?

- People who are immunocompromised.
- People with medical conditions that increase their risk of getting very sick from COVID-19 (e.g., people with heart, lung, or kidney disease; diabetes; or dementia).
- People who live with someone who is immunocompromised, at higher risk for severe disease, or can't be vaccinated due to age or other reasons.
- People who are at higher risk of exposure to COVID-19 (e.g., live or work in a LTCF or in a community where the COVID-19 level is high).

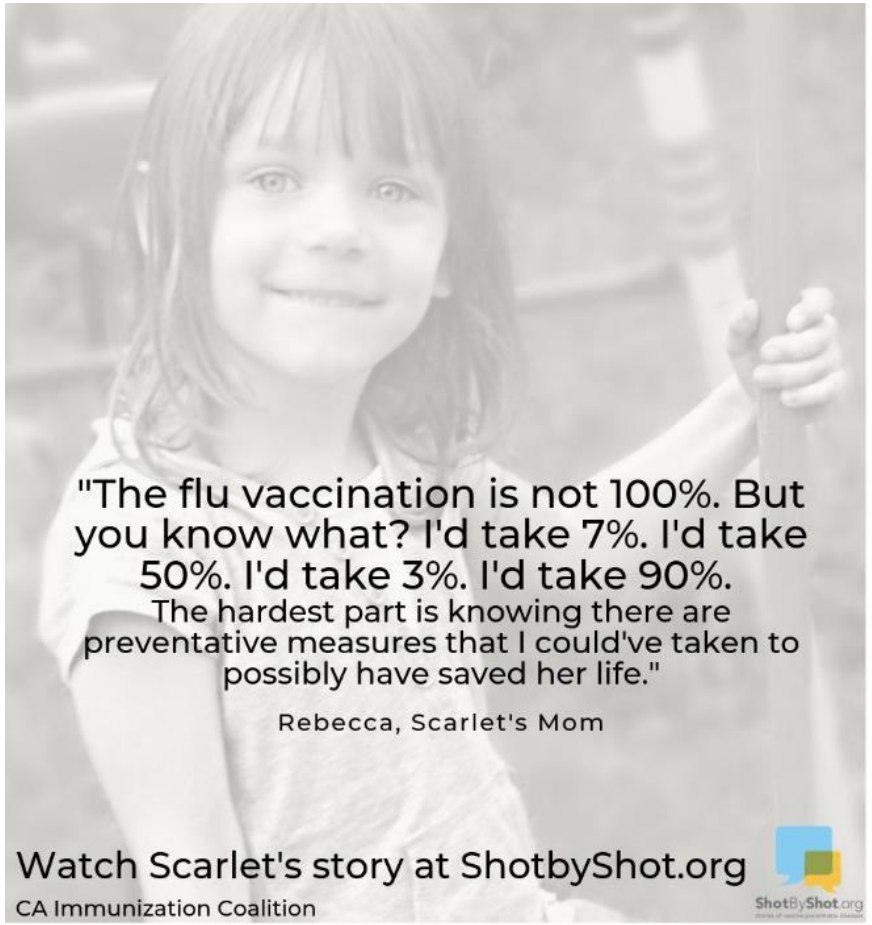
CDC. COVID-19 Vaccines. https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

Flu FAQ #1 – Can the flu vaccine cause the flu?

- No, flu vaccines cannot cause flu illness.
- Flu vaccines given by injection are made with either inactivated (killed) viruses or with only a single protein from the flu virus.
- The nasal spray vaccine (live attenuated influenza vaccine, or LAIV) contains live viruses that are attenuated (weakened) so that they will not cause illness.

Flu FAQ #2 – Why get the flu vaccine if it's not 100% effective?

- Flu vaccine prevents millions of illnesses and flu-related doctor visits each year.
- While flu vaccine is not 100% effective at preventing infection, it can still help protect against severe disease and death.
- During the 2019-2020 flu season, flu vaccination prevented ~ 7.5 million influenza illnesses, 3.7 million influenza-associated medical visits, 105,000 influenza-associated hospitalizations, and 6,300 influenza-associated deaths. Those illnesses and deaths were prevented even when flu vaccine was only 39% effective.



HIV-Specific Influenza FAQs

1. Should older adults with HIV preferentially receive the higher dose (Fluzone High-Dose and FluBlok) or adjuvanted (Fluad) influenza vaccine?

- **Yes, the ACIP now recommends that all adults 65 years and older—including those living with HIV—preferentially receive any one of the higher dose or adjuvanted influenza vaccines.** Use of high-dose inactivated influenza vaccine is associated with decreased incidence of influenza and greater antibody response in adults without HIV aged ≥65 years. Vaccination should also not be delayed if a specific product is not readily available.

2. Are high-dose (Fluzone High-Dose) and adjuvanted vaccine (Fluad) recommended for people with HIV younger than 65 years of age?

- **No**. Fluzone High-Dose and Fluad are licensed only for people age 65 years and older and are not recommended for younger people. FluBlok, a recombinant influenza vaccine that contains a higher dose than standard-dose influenza vaccines, is licensed for people 18 years and older. One study found greater immunogenicity in individuals with HIV aged ≥18 years who were given high-dose influenza vaccine compared with standard-dose inactivated vaccine.

3. What if I cannot receive an influenza vaccine and I have a high-risk exposure to influenza?

- Postexposure antiviral chemoprophylaxis is an option within 48 hours of the exposure
- Oseltamivir (or inhaled Zanamivir) for 7 days

Fluzone High-Dose study: DiazGranados CA et al. N Engl J Med 2014; 371:635-645 [Note: study evaluated a trivalent version of the vaccine]
Fluzone in younger adults with HIV: McKittrick N, et al. Ann Intern Med. 2013;158:19-26.