Medi-Cal Rx

2024 Immunization Update: COVID-19, Influenza, RSV, Pneumococcal, Polio, Meningococcal, HiB, HepB, and Mpox

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Each year, the California Medi-Cal DUR Program issues an annual summary of updates on immunization guidelines, products, and/or research in collaboration with the California Department of Public Health (CDPH) Immunization Branch. This summary includes all updates since the 2023 Immunization Update was published on November 1, 2023. For reference, the most recently recommended immunization schedules for the United States can be accessed on the Centers for Disease Control and Prevention (CDC) website:

- Recommendations for Ages 18 Years or Younger, United States, 2025
- Recommendations for Ages 19 Years or Older, United States, 2025

Learning Objectives

- Describe the updated vaccines currently available for SARS-CoV-2, which is the virus that causes coronavirus disease 2019 (COVID-19).
- Discuss strategies for improving vaccination rates and vaccine confidence among high-risk populations for the three respiratory viruses co-circulating this fall and winter: SARS-CoV-2, influenza virus, and respiratory syncytial virus (RSV).
- Review the updated Advisory Committee on Immunization Practices (ACIP) recommendations for COVID-19, influenza, RSV, pneumococcal, polio, meningococcal, *Haemophilus influenzae* type b (Hib), hepatitis B (HepB), and mpox vaccines.

Effective vaccines are available for the three respiratory viruses responsible for the most hospitalizations during fall and winter: SARS-CoV-2, influenza, and RSV. The ACIP recommends that all persons aged 6 months or older receive annual influenza and COVID-19 vaccines and that all adults aged 75 years or older and those aged 60 – 74 years at increased risk for severe RSV disease receive one dose of RSV vaccine. RSV vaccine (Abrysvo®) is also recommended from September through January for pregnant people during weeks 32 through 36 of pregnancy. RSV immunization with a monoclonal antibody (nirsevimab) is also recommended for infants younger than 8 months if prenatal vaccination was not given and in high-risk children between 8 and 19 months.

Several recent studies looking at vaccination coverage in the United States have found low rates of vaccination among adults, nursing home residents, and pregnant people, leaving many susceptible to severe outcomes of respiratory illnesses. In California, CDPH data show that only

a tiny percentage of eligible Californians have received the appropriate respiratory virus vaccines. Additional resources and information for California providers can be found on the Respiratory Virus Prevention page on the CDPH website and the Flu & Respiratory Disease Prevention Promotional Materials page on the California Vaccines for Children website, managed by the CDPH Immunization Branch.

General vaccination coverage among children and adolescents is also declining. A national study found that during the 2023-24 school year, kindergarten coverage with state-required vaccinations declined to <93% for all reported vaccines, down from 95% in the 2019-2020 school year. Further, the vaccine exemption rate increased to 3.3% from 3.0% the year before and increased in 41 jurisdictions, exceeding 5% in 14. Another study found that among children born in 2020, vaccination coverage was 4 – 14 percentage points lower among children who were eligible for the Vaccines for Children (VFC) program, which provides routine vaccines at no cost to eligible children, than among those children who were not eligible for the VFC program. Finally, data from the National Immunization Survey-Child (NIS-Child) were analyzed to estimate coverage for children in the United States with the childhood vaccines recommended by the ACIP by 24months of age. This study found that coverage of most childhood vaccines was lower among children born between 2020 and 2021 (during or after the height of the healthcare disruption from the COVID-19 pandemic) than those born between 2018 and 2019. The authors found that disparities by race and ethnicity, health insurance status, poverty status, and urbanicity persist, and coverage also varied widely by jurisdiction, especially for the influenza vaccine.

For strategies to help improve vaccination coverage, CDPH developed a communications toolkit that includes tools and resources for talking with parents about vaccines, which is available on the Routine Immunizations page on the CDPH website.

COVID-19 Vaccine

COVID-19 remains a public health concern, causing millions of illnesses, hundreds of thousands of hospitalizations, and tens of thousands of deaths each year in the United States. In 2023, COVID-19 was the 10th leading cause of death. On June 27, 2024, the ACIP recommended 2024 – 2025 COVID-19 vaccination for all persons aged 6 months or older to target currently circulating strains of SARS-CoV-2 and provide additional protection against severe COVID-19.

Research has shown that COVID-19 vaccines can reduce the risk of urgent care or emergency department visits, hospitalization, and critical illness (admission to the intensive care unit or death). A review of the effectiveness of COVID-19 vaccines among adults aged 18 years or older found that within the first two months after vaccination with the 2023-2024 COVID-19 vaccines:

- The risk of critical illness from COVID-19 was reduced by almost 70%.
- The risk of hospitalization from COVID-19 was reduced by about 50%.
- The risk of COVID-19 urgent care and emergency department visits was reduced by about 50%.

The U.S. Food and Drug Administration (FDA) advised manufacturers of licensed and authorized COVID-19 vaccines that the 2024 – 2025 COVID-19 vaccines should be monovalent JN.1 vaccines. Based on the further evolution of SARS-CoV-2 and a rise in cases of COVID-19, the agency subsequently determined and advised manufacturers that the preferred JN.1-lineage for the COVID-19 vaccines is the KP.2 strain, if feasible. Subsequently, all licensed and authorized 2024 – 2025 COVID-19 vaccines were updated to more closely target currently circulating variants and provide better protection against serious consequences of COVID-19, including hospitalization and death on the following timeline:

- August 22, 2024: The FDA approved and granted Emergency Use Authorization (EUA) for updated mRNA COVID-19 vaccines (2024 – 2025 formula) to include a monovalent (single) component that corresponds to the Omicron variant KP.2 strain of SARS-CoV-2.
- August 30, 2024: The FDA granted an EUA for an updated version of the Novavax COVID-19 Vaccine, Adjuvanted (2024 – 2025 formula), authorized for use in individuals aged 12 years or older. It includes a monovalent (single) component corresponding to the Omicron variant JN.1 strain of SARS-CoV-2.

On October 23, 2024, the ACIP voted that, in addition to the previously recommended 2024 – 2025 vaccination, all adults aged 65 years or older and people between ages 6 months and 64 years who are moderately or severely immunocompromised are recommended to receive a second dose of a 2024 – 2025 COVID-19 vaccine. While the recommended interval between doses is 6 months, the minimum recommended interval between doses is 2 months. The ACIP also recommended additional doses (i.e., three or more doses) of the 2024 – 2025 COVID-19 vaccine under shared clinical decision-making for people aged 6 months or older who are moderately or severely immunocompromised, with a minimum interval between doses of 2 months.

For those who are receiving their initial COVID-19 vaccination series, at least two doses of the 2024 – 2025 COVID-19 vaccine are recommended, and depending on vaccination history, more may be needed. After the initial vaccination series is completed, the recommended interval between doses for an additional 2024-2025 COVID-19 vaccine dose is 6 months, while the minimum recommended interval between doses is 2 months.

In addition, because COVID-19 can cause severe disease in infants younger than 6 months of age who are ineligible to receive the COVID-19 vaccine, providers need to promote maternal vaccination. There are many resources for providers and patients available on the COVID-19 Vaccination for Women Who Are Pregnant or Breastfeeding page on the CDC website. One recent study found that COVID-19 associated hospitalization rates among infants younger than 6 months of age were higher than those among any other age group except adults aged 75 years or older. Among approximately 1,000 hospitalized infants with COVID-19, 22% were admitted to an intensive care unit, and nine died while hospitalized. The percentage of hospitalized infants whose mothers had been vaccinated during pregnancy was 18% from October 2022 to September 2023 and decreased to less than 5% from October 2023 to April 2024.

For additional information about 2024 – 2025 COVID-19 vaccine recommendations in people 6 months of age or older, providers may refer to the following guidelines published in the *Morbidity and Mortality Weekly Report* (MMWR), which is available on the CDC website:

- Use of COVID-19 Vaccines for Persons Aged ≥6 Months: Recommendations of the Advisory Committee on Immunization Practices — United States, 2024-2025
- Use of Additional Doses of 2024–2025 COVID-19 Vaccine for Adults Aged ≥65 Years and Persons Aged ≥6 Months with Moderate or Severe Immunocompromise: Recommendations of the Advisory Committee on Immunization Practices — United States, 2024

Additional resources and information about influenza and COVID-19 vaccines, including a communications toolkit for providers, can be found on the Flu & COVID-19 Vaccines page on the CDPH website.

Influenza Vaccine

Routine annual influenza vaccination continues to be recommended for everyone 6 months of age or older without contraindications. As there have been no confirmed detections of circulating B/Yamagata lineage viruses worldwide since March 2020, experts recommended removing this strain, resulting in trivalent flu vaccines that include two influenza A viruses (H1N1 and H3N2) and one influenza B virus.

For the 2024 – 2025 season, inactivated influenza vaccines (IIVs), recombinant influenza vaccine (RIV3), and live attenuated influenza vaccine (LAIV3) are available. U.S. IIV3s and LAIV3 (egg-based) influenza vaccines contain hemagglutinin (HA) derived from the following influenza viruses:

- A/Victoria/4897/2022 (H1N1) pdm09-like virus
- A/Thailand/8/2022 (H3N2)-like virus (different strain from last season)
- B/Austria/1359417/2021 (Victoria lineage)-like virus

U.S. cell culture-based inactivated (ccIIV3) and RIV3 vaccines contain HA derived from the following influenza viruses:

- A/Wisconsin/67/2022 (H1N1) pdm09-like virus,
- A/Massachusetts/18/2022 (H3N2)-like virus (different strain from last season)
- B/Austria/1359417/2021 (Victoria lineage)-like virus

Adults aged 65 years or older should preferentially receive either high-dose inactivated (HD-IIV3) or adjuvanted inactivated (aIIV3) influenza vaccines. However, any other age-appropriate inactivated product may be given if those are unavailable. In addition, the ACIP recommends HD-IIV3 and aIIV3 influenza vaccines as acceptable options for influenza vaccination of solid organ transplant recipients aged 18 through 64 years who are on immunosuppressive medication regimens, without a preference over other age-appropriate IIV3s or RIV3.

Children aged 6 months through 8 years require two doses of influenza vaccine administered at least 4 weeks apart during their first vaccination season for optimal protection. For additional information about influenza vaccine recommendations, including an influenza vaccine dosing algorithm for children aged 6 months through 8 years, providers may refer to the Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices – United States, 2024–25 Influenza Season, published in the MMWR, which is available on the CDC website.

To improve influenza vaccination rates among children and adolescents, providers should refer to the California Vaccines for Children website, managed by the CDPH Immunization Branch. Helpful resources include Tips for Speaking with Parents about Flu Vaccine: How to Address Common Concerns, also available in Spanish.

RSV Vaccine

RSV is a significant cause of respiratory illness and hospitalizations during fall and winter in the United States. RSV immunizations are recommended for older adults, pregnant people, and infants. Previously, the ACIP recommended that adults aged 60 or older receive a single dose of the RSV vaccine using shared clinical decision-making. On June 26, 2024, the ACIP voted to update this recommendation, stating that all adults aged 75 years or older and those aged 60 – 74 years at increased risk for severe RSV disease should receive a single dose of any of the three FDA-approved RSV vaccines. Conditions that increase the risk for severe illness include:

- Chronic heart or lung disease
- Weakened immune system
- Certain other medical conditions
- Living in a nursing home

For a complete list of medical conditions that lead to an increased risk of severe RSV, refer to Clinical Overview of RSV, which can be found on the CDC website.

As of spring 2024, 20% – 25% of U.S. adults aged 60 years or older were estimated to have received RSV vaccine. RSV vaccination is recommended as a single lifetime dose only. Adults who have already received RSV vaccination are not recommended to receive another dose.

For additional information about RSV vaccine recommendations in adults aged 60 years or older, providers may refer to the Use of Respiratory Syncytial Virus Vaccines in Adults Aged ≥60 Years: Updated Recommendations of the Advisory Committee on Immunization Practices – United States, 2024, published in the MMWR, which is available on the CDC website.

To protect infants and some young children from RSV, the CDC recommends either the maternal RSV vaccine (Abrysvo) for pregnant people during weeks 32 – 36 of pregnancy or an RSV immunization with a monoclonal antibody (nirsevimab) for babies given after birth and for some young children ages 8 – 19 months. Ensuring birthing hospital VFC enrollment and establishing protocols to offer nirsevimab to eligible infants before hospital discharge might increase nirsevimab administration within the first week of life.

On January 7, 2025, the FDA announced safety labeling changes to the Prescribing Information for both Abrysvo and Arexvy as a post-marketing observational study suggested an increased risk of Guillain-Barré syndrome (GBS) during the 42 days following vaccination. The FDA determined that the evidence suggests increased risks of GBS but that available evidence is insufficient to establish a causal relationship. FDA has further determined that the benefits of vaccination with Abrysvo and Arexvy continue to outweigh their risks.

Additional resources and information about RSV, including a communications toolkit for providers, can be found on the RSV (Respiratory Syncytial Virus) page on the CDPH website.

Pneumococcal Vaccine

On June 17, 2024, the FDA approved a 21-valent pneumococcal conjugate vaccine (PCV21) for adults aged 18 years or older. While PCV21 added eight new serotypes, it does not contain certain serotypes available in other licensed vaccines. On June 27, 2024, the ACIP and the CDC recommended using PCV21 as an option for adults aged 19 years or older who are currently recommended to receive a PCV dose.

On October 23, 2024, the ACIP recommended a single dose of PCV for all adults aged 50 years or older who are PCV-naïve or have unknown vaccination history. The updated, expanded age-based recommendation is expected to improve pneumococcal disease prevention in adults aged 50 – 64 years, particularly among demographic groups experiencing higher disease rates. The risk-based recommendation for adults aged 19 – 49 years is unchanged.

For additional information about clinical guidance for implementing pneumococcal vaccine recommendations for adults, providers may refer to the Use of 21-Valent Pneumococcal Conjugate Vaccine Among U.S. Adults: Recommendations of the Advisory Committee on Immunization Practices – United States, 2024 and the Expanded Recommendations for Use of Pneumococcal Conjugate Vaccines among Adults aged ≥50 Years: Recommendations of the Advisory Committee on Immunization Practices – United States, 2024. Both articles are published in the MMWR and are available on the CDC website.

Polio Vaccine

On June 21, 2023, the ACIP recommended an inactivated polio vaccine (IPV) for all adults known or suspected to be unvaccinated or incompletely vaccinated against polio. This is an update from the previous recommendation for adults known to be at increased risk for poliovirus exposure. Risk-based recommendations for IPV boosters have not changed.

For additional information about inactivated polio vaccine recommendations, providers may refer to the Use of Inactivated Polio Vaccine Among U.S. Adults: Updated Recommendations of the Advisory Committee on Immunization Practices – United States, 2023, published in the MMWR, which is available on the CDC website.

Meningococcal Vaccine

On October 20, 2023, the FDA approved a pentavalent vaccine (MenACWY-TT/MenB-FHbp) that provides coverage against the most common serogroups causing meningococcal disease in adolescents and young adults aged 10 – 25 years (*Neisseria meningitidis* serogroups A, B, C, W, and Y). MenACWY-TT/MenB-FHbp may be used for routine vaccination when both MenACWY and MenB are indicated at the same visit for healthy persons aged 16 – 23 years when shared clinical decision-making (SDCM) favors the administration of the MenB vaccine. SDCM is used in this age group, as MenB vaccination is not a routine recommendation in this population and provides only short-term protection (1 – 2 years) against most strains of serogroup B meningococcal bacteria circulating in the United States. Vaccination decisions should be informed by the characteristics, values, and preferences of the individual patient and the clinical discretion of the health care provider.

On October 25, 2023, the ACIP recommended that MenACWY-TT/MenB-FHbp may also be administered to persons aged 10 years or older who are at increased risk for meningococcal disease because of persistent complement deficiencies, complement inhibitor use, or functional or anatomic asplenia.

On October 24, 2024, the ACIP updated its recommendations for the other licensed meningococcal serogroup B vaccine (MenB-4C) to align the dosing interval and schedule with the updated FDA label and to harmonize with ACIP recommendations for the use of MenB-FHbp. ACIP now recommends MenB-4C as a 2-dose series with doses administered at intervals of 0 and 6 months for healthy adolescents and young adults aged 16 – 23 years based on shared clinical decision-making and as a 3-dose series with doses administered at 0, 1 – 2, and 6 months for persons aged 10 years or older at increased risk.

For additional information about meningococcal vaccine recommendations, providers may refer to the Use of the Pfizer Pentavalent Meningococcal Vaccine Among Persons Aged ≥10 Years: Recommendations of the Advisory Committee on Immunization Practices – United States, 2023 and the New Dosing Interval and Schedule for the Bexsero MenB-4C Vaccine: Updated Recommendations of the Advisory Committee on Immunization Practices – United States, October 2024. Both articles are published in the MMWR and are available on the CDC website.

HiB Vaccine

In June 2023, the ACIP recommended that Vaxelis®, a pediatric hexavalent combination vaccine approved to prevent diphtheria, tetanus, pertussis, polio, *Haemophilus influenzae* type b (Hib), and hepatitis B, be included as a preferential recommendation for American Indian and Alaska Native infants based on the Hib component. Hib disease is a rare but serious bacterial infection that disproportionally affects American Indian and Alaska Native infants. Previously, PedvaxHIB® was the only Hib vaccine preferentially recommended over other Hib vaccine options for these infants because it provides a protective antibody response after the first dose.

For additional information about the DTaP-IPV-Hib-HepB vaccine recommendation, providers may refer to the Use of Haemophilus influenzae Type b–Containing Vaccines Among American Indian and Alaska Native Infants: Updated Recommendations of the Advisory Committee on Immunization Practices – United States, 2024, published in the MMWR, which is available on the CDC website.

HepB Vaccine

On September 11, 2024, the FDA approved updates to the package insert for Heplisav-B® [HepB vaccine (recombinant), adjuvanted], Section 8.1 (Pregnancy) to include human data that do not suggest an increased risk for both significant congenital disabilities and miscarriage. Providers can now administer Engerix-B®, Heplisav-B®, Recombivax HB®, or Twinrix® to pregnant persons needing HepB vaccination.

On November 29, 2024, the FDA announced that PreHevbrio® (Hepatitis B Vaccine, Recombinant) was voluntarily withdrawn from the market due to the bankruptcy of the company and the termination of its operations. The voluntary withdrawal was not due to any concerns over the safety or efficacy of the vaccine. For vaccine series started with PreHevbrio®, another HepB vaccine licensed for adults should be given to complete the series. Importantly, people with a severe allergy to yeast should not receive any currently available HepB vaccine, as PreHevbrio® was the only HepB option not manufactured using yeast cells.

For additional information about the universal HepB vaccine recommendation, providers may refer to the Updated Recommendation for Universal Hepatitis B Vaccination in Adults Aged 19–59 Years – United States, 2024, published in the MMWR, available on the CDC website.

Mpox Vaccine

Mpox (formerly known as monkeypox) is a disease caused by infection with a virus known as *Monkeypox virus* (MPXV). Mpox is usually transmitted through close, sustained physical contact, including sexual contact, day-to-day household contact, and within the healthcare setting (in the absence of access to or appropriate use of personal protective equipment). There has also been transmission from contact with certain live or dead wild animals.

There are two subclades of MPXV: clade I and clade II. Both types spread the same way and can be prevented using the same methods.

- Clade I is the type responsible for the current rise of cases in Central and Eastern Africa. Historically, clade I caused higher numbers of severe illnesses than clade II, with up to 10% of people dying from it. However, recent outbreaks have seen much lower death rates of about 1-3.3%. On November 15, 2024, the California Department of Public Health (CDPH) confirmed the first documented case of clade I mpox in the U.S. following the patient's travel to an affected area. The patient has recovered, and no additional associated cases were reported. The second case of clade I mpox in the U.S. was confirmed in Georgia on January 14, 2025, by a traveler from a country experiencing sustained mpox transmission.

The patient is in isolation and is recovering; no additional associated cases have been reported. The risk of clade I infection to the general public remains low.
- Clade II is the type that caused the global outbreak that began in 2022 and has been circulating within the U.S. and California since that time. Clade II mpox infections are typically less severe than clade I mpox infections, with more than 99.9% of people surviving. Clade II is endemic to West Africa.

People at risk of mpox infection should ideally be vaccinated before exposure, although the mpox vaccine can also be administered as post-exposure prophylaxis (PEP). As PEP, the mpox vaccine should be given as soon as possible, ideally within 4 days of exposure; however, administration 4 – 14 days after exposure may still provide some protection against severe mpox disease.

The CDC recommends preventive vaccination against mpox for individuals who may be at risk given their personal or partner(s) health history:

- Gay, bisexual, or other men who have sex with men and transgender, nonbinary, or gender-diverse persons who have more than one sex partner or anticipate having more than one sex partner or have a recent diagnosis of chlamydia, gonorrhea, or syphilis in the past 6 months.
- Persons of any gender or sexual orientation who:
  - In the past 6 months, had or anticipate having sex at a commercial sex venue (like a sex club or bathhouse) or large commercial event where mpox transmission may occur.
  - Have a sex partner with any of the above risks or who anticipate experiencing any of the above scenarios.
  - Are at risk for occupational exposure to orthopoxviruses (e.g., certain people who work in a laboratory or a healthcare facility).
  - Anticipate having sexual or intimate contact while traveling to countries where there is ongoing person-to-person clade I mpox spread.

Persons who have HIV, are immunosuppressed, or have significant skin conditions (e.g., eczema) are at risk for more severe mpox illness. Vaccination may be crucial for these persons if they experience or anticipate any of the above scenarios. Mpox vaccine is still not recommended for the general public.

There are two vaccines licensed for the prevention of mpox in the US:

- JYNNEOS® vaccine is licensed to prevent mpox and is recommended by the ACIP as a 2-dose series, 4 weeks apart, for individuals aged 18 years or older at risk for mpox infection. During the current clade II mpox outbreak, JYNNEOS has been the dominant vaccine used in the U.S. JYNNEOS became commercially available for purchase in April 2024.

- ACAM2000® vaccine has been approved since 2007 to prevent smallpox disease. On August 29, 2024, the FDA approved a new indication for ACAM2000 to prevent mpox disease in individuals at high risk for mpox infection. Although the U.S. has an ample supply of ACAM2000 in the Strategic National Stockpile, this vaccine has more side effects and contraindications than JYNNEOS and is not commercially available.

Mpox vaccines are expected to be protective against MPXV, regardless of clade. There are also no differences in the CDC vaccine recommendations for clade I or clade II mpox. People who have already received both recommended doses of the mpox vaccine or who have already had mpox infection are not recommended to get additional mpox vaccines. The vaccine is not recommended for people who already have mpox symptoms.

Current information about vaccines to prevent mpox disease can be found on the FDA Mpox Response page on the FDA website. For additional information about contraindications, precautions, and recommendations for vaccinating special populations, providers may refer to the Detailed the Use of JYNNEOS (Smallpox and Monkeypox Vaccine, Live, Nonreplicating) for Preexposure Vaccination of Persons at Risk for Occupational Exposure to Orthopoxviruses: Recommendations of the Advisory Committee on Immunization Practices – United States, 2022, published in the MMWR, available on the CDC website.

Mpox prevention information is also available on CDPH's Sexual Health Toolkits and Campaign Materials page. Casual contact, like one might have during travel, in an office, classroom, or store, is unlikely to pose significant risks for transmission of mpox.