

Chapter 2:

Vaccine Access for Adults Enrolled in Medicaid

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Key Points

- Vaccines are a cost-effective tool to promote public health. However, low uptake of recommended adult vaccines has resulted in preventable disease, death, and economic burden.
- Medicaid vaccine coverage is more restrictive for some adults than vaccine coverage under other sources of health insurance. Under current law, Medicaid enrollees in the new adult group have coverage of all vaccines recommended by the Advisory Committee on Immunization Practices (ACIP) without cost sharing, but coverage of vaccines for other adults in Medicaid is optional, and states can determine which vaccines to cover and whether to apply cost sharing.
- These differences in vaccine coverage policies among adult eligibility groups have resulted in unequal access to some ACIP-recommended vaccines. For almost two out of every five (38.2 percent) Medicaid-enrolled adults, vaccine coverage is optional and varies by state. This includes adults eligible on the basis of disability, those age 65 and older, parents and caretaker relatives, and pregnant women.
- Medicaid-enrolled adults have lower vaccination rates than those with private insurance for nearly all vaccines. The difference in vaccination rates among pregnant women is particularly stark. The influenza vaccination rate was almost 21 percentage points lower for pregnant women enrolled in Medicaid than it was for those enrolled in private insurance.
- The U.S. House of Representatives passed legislation that would require Medicaid to cover vaccines recommended by ACIP without cost sharing for all enrollees. This coverage requirement matches those already in place for the new adult group and for most people with private insurance. This legislation has not yet been considered by the U.S. Senate.
- It is the view of the Commission that mandatory Medicaid coverage of all recommended vaccines without cost sharing is a necessary first step to ensuring vaccine access and preventing illness, hospitalization, and death from vaccine-preventable diseases.
- In addition to limited coverage, a number of factors contribute to low vaccination rates among Medicaid enrollees, including limited provider access and availability and inadequate support and education for beneficiaries.
- The Commission will continue exploring issues related to vaccine access for adults enrolled in Medicaid and consider policy options that would meaningfully address barriers to access and improve adult vaccination rates.

CHAPTER 2: Vaccine Access for Adults Enrolled in Medicaid

The COVID-19 pandemic has brought attention to the importance of vaccination in preventing illness and death. However, low vaccine uptake of recommended adult vaccines has resulted in preventable disease, death, and economic burden. In 2019, only 40 percent of adults had received age-appropriate vaccinations (Commonwealth 2021). During the same year, nearly 50,000 individuals died from influenza and pneumonia. These two vaccine-preventable diseases (VPDs) were the ninth leading cause of death in the United States (Xu et al. 2021). Researchers estimate that VPDs among adults in the United States cost between \$9 billion and \$26 billion annually (Ozawa et al. 2016).

While rates for adults are generally lower than the goals set by public health officials, adults covered by Medicaid have lower vaccination rates than those covered by private insurance across nearly all vaccines. Limited coverage and requirements for cost sharing both pose barriers to access. Although federal statute requires that those in the new adult group have coverage of all recommended vaccines without cost sharing, Medicaid coverage of vaccines for other adults is optional, and states can determine which vaccines to cover and whether to require cost sharing. In contrast, vaccines are considered a mandatory service for children and are provided without cost sharing, as discussed in later sections. At the time of this writing, the U.S. House of Representatives has passed H.R. 5376, the Build Back Better Act, which would extend the requirement to cover recommended vaccines without cost sharing to all adults enrolled in Medicaid. The U.S. Senate has not yet acted on this legislation.

In addition to coverage and cost sharing, other factors contribute to lower adult vaccination rates in Medicaid. Low payments to purchase

and administer vaccines may decrease provider willingness to administer vaccines and thus reduce access for Medicaid beneficiaries. Some states limit the types of providers who may administer vaccines (e.g., excluding pharmacists). This can be particularly problematic for Medicaid-enrolled adults who may be less likely to have a medical home and therefore may need more options to access vaccines. Finally, some beneficiaries may be unwilling or hesitant to receive vaccines. Additional outreach and education for Medicaid enrollees may also be needed to improve vaccination rates in the program.

In the Commission's view, mandatory Medicaid coverage of all recommended vaccines is a necessary first step to ensuring vaccine access and preventing illness, hospitalization, and death from VPDs. Without universal coverage of recommended vaccines, many Medicaid beneficiaries face considerable hurdles to vaccination. But coverage alone may not be sufficient to substantially improve vaccination rates. Federal and state efforts should address other barriers to access by improving provider availability and beneficiary support. The Commission is currently evaluating a range of options and may make specific recommendations in future reports.

The chapter begins by discussing the role of vaccines in promoting public health. We then review Medicaid coverage requirements for recommended vaccines and summarize recent federal proposals to require vaccine coverage for all Medicaid enrollees. Next, we discuss the rates at which Medicaid enrollees receive vaccines compared to those enrolled in other forms of insurance. Then, the chapter highlights several considerations to improve vaccine access for Medicaid enrollees. The chapter ends with a brief discussion of the Commission's next steps to identify and evaluate potential policies that could improve access and vaccination rates for Medicaid enrollees.

Vaccines and Public Health

Vaccines are an important tool in promoting public health. Vaccines can prevent illness, hospitalization, and death. Common VPDs among adults include influenza, pneumococcal disease, herpes zoster (shingles), and pertussis (whooping cough). The federal Advisory Committee on Immunization Practices (ACIP) recommends vaccines based on age and medical criteria, along with vaccination history. For example, ACIP has most recently reviewed the relevant evidence on COVID-19 vaccines and made recommendations for their use based on age, health status, and other risk factors. The Centers for Disease Control and Prevention (CDC) establishes an immunization schedule for children and adults based on ACIP recommendations (Box 2-1).

Despite the availability of vaccines and coverage by many payers, the United States continues to see cases and deaths from VPDs. The CDC estimates that since 2010, somewhere between 140,000 and 710,000 influenza-related hospitalizations and 12,000 and 56,000 influenza-related deaths have occurred per year. Each year, an estimated 150,000 individuals are hospitalized because of pneumococcal pneumonia, and 5,000 die from the disease. Chronic hepatitis B affects between 700,000 and 1.4 million people, and the human papillomavirus (HPV) causes over 27,000 cases of cancer each year (CDC 2021a).

Improving vaccination rates among adults and reducing the number of preventable deaths is a major priority for public health officials. The U.S. Department of Health and Human Services (HHS) periodically establishes federal public health priorities, including national objectives to increase vaccination and reduce preventable disease. For example, Healthy People 2030 set a goal to increase the influenza vaccination rate to 70 percent from the 49.2 percent of individuals six months or older who were vaccinated against influenza during the 2017–2018 influenza season. Although vaccination rates have increased, the United States did not meet influenza and many

other national vaccination targets that were established under Healthy People 2020.¹

Low vaccination rates may be of particular concern for people covered by Medicaid. One study suggests that compared to commercially insured individuals, Medicaid enrollees may have a higher incidence of VPDs for which vaccinations were recommended based on certain risk factors. These include pneumococcal and meningococcal diseases as well as hepatitis A and B (Krishnarajah et al. 2014). The higher incidence rates of these VPDs in Medicaid compared to commercial insurance may reflect differences in demographics, socioeconomic status, and health status of those enrolled under each type of coverage.

The economic burden of vaccine-preventable diseases

There are also economic costs of VPDs. Estimates range in quantifying the extent of this burden. One study found that VPDs cost the United States approximately \$9 billion annually. This study focused on the costs related to 10 vaccines recommended for adults age 19 and older and estimated that costs from unvaccinated individuals account for almost 80 percent of the total annual cost (\$7.1 billion) (Ozawa et al. 2016).² An earlier study estimated that the annual cost of four VPDs among adults 50 years and older totaled \$26.7 billion, with influenza accounting for \$16 billion (McLaughlin et al. 2015).

Limited research exists on the cost of VPDs to Medicaid specifically. However, after a hepatitis A outbreak in West Virginia, researchers examined hepatitis A-related medical costs among Medicaid enrollees in the state. Within the first 19 months of the outbreak, researchers estimated that the hepatitis-related medical costs ranged from \$1.4 million to \$5.6 million. As of February 2021, the outbreak was still ongoing and had resulted in hospitalizations for about half of the individuals with hepatitis A and 23 reported deaths (Batdorf et al. 2021).

BOX 2-1. The Role of the Advisory Committee on Immunization Practices

The Advisory Committee on Immunization Practices (ACIP) develops recommendations on the use of vaccines approved by the U.S. Food and Drug Administration. It was established in 1964 by the Surgeon General, and in 1972, it was designated as a federal advisory committee (Smith et al. 2014). ACIP is composed of 15 voting members who make recommendations on vaccines, 8 members who represent other federal agencies, and 30 non-voting members who represent organizations with expertise regarding immunization, including medical associations.³

ACIP develops recommendations for children, adolescents, and adults after reviewing several different types of evidence and considering a number of factors. It reviews vaccine safety, efficacy, and effectiveness data and considers the severity of the associated disease in the population. It considers the age groups for which the recommendations should be applied and the feasibility of implementing a potential recommendation (CDC 2020a). In addition, ACIP considers economic analyses during its review process. ACIP's charter was updated in 2004 to formally recognize the role of economic studies, and in more recent years, the Centers for Disease Control and Prevention (CDC) established guidance on economic studies presented to the committee to ensure that any analysis is uniform, understandable, and high quality (Smith et al. 2014).

ACIP typically meets publicly at least three times a year to discuss these factors and vote on recommendations. The approved recommendations are made to the CDC, which then sets the vaccine schedule for children and adults.

ACIP recommendations not only inform clinical practice, but they also serve as the basis for vaccine coverage across insurance programs. The Patient Protection and Affordable Care Act (ACA, P.L. 111-148, as amended) requires coverage of essential health benefits in commercial, non-grandfathered plans and exchange plans and for certain Medicaid beneficiaries receiving benchmark or benchmark-equivalent coverage through an alternative benefit plan (e.g., new adult group). The definition of preventive services under the ACA includes all ACIP-recommended vaccines (§ 2713 of the ACA). The ACIP recommendations also establish which vaccines should be purchased and administered through the Vaccines for Children program (CDC 2019).

Cost effectiveness of recommended vaccines

Beyond the individual and public health benefits of preventing disease through vaccination, most recommended vaccines are cost effective; that is, the cost of vaccination is less than the eventual cost of untreated disease. One systematic review of cost-effectiveness studies for adult vaccines found that the majority of published studies reported favorable cost-effectiveness profiles for adult vaccinations. Several vaccines (influenza;

pneumococcal; tetanus; and tetanus, diphtheria, and pertussis (Tdap)) were found to be cost saving, and other vaccines (HPV and shingles) generally were found to have a cost-effectiveness ratio equal to or below \$100,000 per quality-adjusted life-year saved (Leidner et al. 2019).

In Oregon, the Health Evidence Review Commission (HERC) also found ACIP-recommended vaccines to be effective, both with regard to cost and clinical effectiveness. HERC creates a prioritized list of health services to support the Medicaid program

in making decisions about covered benefits, and in its ranking of health services, HERC included all ACIP-recommended vaccines in the category of prevention services with evidence of effectiveness. The priority list ranks this category third out of 662 services in terms of cost and clinical efficacy (OHA 2021).

Coverage and Financing of Vaccines for Children in Medicaid

As part of the response to the 1989 to 1991 measles epidemic, Congress created the Vaccines for Children (VFC) program under the Omnibus Budget Reconciliation Act of 1993 (P.L. 103-66) (CDC 2020b). Children under 19 years old who are Medicaid eligible, uninsured, underinsured, or an American Indian or Alaska Native are eligible to receive vaccinations through the VFC program (§ 1928(b) of the Social Security Act (the Act)).⁴ HHS estimates that over half of young children and one-third of adolescents in the United States are eligible to receive vaccinations through this program (HHS 2020). The program provides coverage of all vaccines recommended by ACIP.

States must cover all ACIP-recommended vaccines for children under the mandatory early and periodic screening, diagnostic, and treatment (EPSDT) benefit (§ 1905(r)(1)(B)(iii) of the Act). States receive these vaccines through the VFC program. Vaccines provided through the VFC program are purchased directly by the CDC at a discounted price and then distributed to the state (e.g., state health departments), which in turn distributes them at no charge to registered VFC providers (§ 1928(a) of the Act). Neither the beneficiary nor the state is charged for any vaccine provided through the VFC program, but providers can bill for the office visit or administration of the vaccine (CDC 2020b). States may require Medicaid providers to register with VFC to ensure that any vaccine provided as part of a Medicaid-covered visit uses vaccines available

through the VFC program. Similarly, a registered VFC provider must be an enrolled Medicaid provider to bill the Medicaid program for vaccine administration (CDC 2020c).

While the CDC has the lead responsibility for policy development and implementation of the VFC program, the VFC program is established under the Medicaid statute (§ 1928 of the Act) and is fully funded by the federal government through the Medicaid program (i.e., there is no required state contribution). In fiscal year (FY) 2020, federal Medicaid spending was \$4.6 billion for the VFC program (CMS 2021a).

Coverage of Vaccines for Adults in Medicaid

Vaccines are covered under Medicaid's preventive services benefit and are treated differently than other prescription drugs (§ 1905(a)(13)(B) of the Act). Vaccines are explicitly excluded from the definition of a covered outpatient drug, which is used to designate drugs included in the Medicaid Drug Rebate Program (MDRP) (§ 1927(k)(2)(B) of the Act). This means that states do not have to cover vaccines manufactured by companies participating in the MDRP, and manufacturers do not have to provide rebates for these products.

Vaccine coverage for adults under Medicaid is more restrictive than vaccine coverage under other sources of health insurance. The Patient Protection and Affordable Care Act (ACA, P.L. 111-148, as amended) requires that all non-grandfathered plans and exchange plans cover preventive services, including those vaccines recommended by ACIP, without cost sharing (§ 2713 of the ACA). This means that the vast majority of individuals with private health insurance plans have coverage of ACIP-recommended vaccines without cost sharing. Medicare enrollees, including those dually eligible for both Medicare and Medicaid, receive most vaccines through Part B and Part D but may be

subject to cost sharing for vaccines covered under Part D.

Under current law, Medicaid coverage of vaccines for adults can vary by population. As part of the coverage expansion to the new adult group, the ACA required that these beneficiaries receive benchmark or benchmark-equivalent coverage, also known as an alternative benefit plan (ABP) (§ 1902(k)(1) of the Act) and that ABPs provide coverage of essential health benefits (EHB) (§ 1937(b)(5) of the Act). As part of the EHB, preventive services must be provided without cost sharing, and this includes coverage of all ACIP-recommended vaccines (42 CFR 440.347).⁵ For Medicaid beneficiaries not receiving coverage through an ABP, such as adults eligible on the basis of disability, those age 65 and older, parents and caretaker relatives, and pregnant women, vaccine coverage is optional.⁶ In these cases, states are not required to cover all ACIP-recommended vaccines and vary in which vaccines they opt to cover. In addition, states may require cost sharing (within federal guidelines) for vaccines.⁷ For those enrolled in Medicaid managed care, coverage and cost sharing vary by plan.

These differences in vaccine coverage requirements among adult eligibility groups and the variation in state coverage policies have resulted in unequal access to some ACIP-recommended vaccines. In FY 2019, approximately 51.8 million adults enrolled in Medicaid, of which 19.5 million (37.6 percent of adults) were in the new adult group and had mandatory coverage of vaccines without cost sharing (MACPAC 2021a). An additional 12.5 million adults (24.1 percent of adults) were dually eligible for Medicare and Medicaid and would have received vaccine coverage through Medicare. This means that for almost two out of every five Medicaid-enrolled adults (38.2 percent), coverage of vaccines and any related cost sharing vary by state.

Researchers at the CDC examined variations in vaccine coverage, beneficiary cost sharing, and payment across state Medicaid programs in 2018–2019. All 49 states included in the

study offered some vaccine coverage for adults. However, only about half of states (24) covered all ACIP-recommended vaccines. The vast majority (48) covered at least one vaccine for influenza in addition to Tdap, MMR (measles, mumps, and rubella), varicella, and pneumococcal disease. Fewer states covered the HPV (9-valent human papillomavirus), Hib (haemophilus influenzae type b), and herpes zoster (shingles) vaccines. Additionally, some Medicaid-covered adults may be subject to cost sharing for vaccines. Among the 44 Medicaid programs surveyed, 15 states had cost sharing requirements on adult vaccines (Granade et al. 2020).

The U.S. House of Representatives passed the Build Back Better Act on November 19, 2021. It would require coverage of ACIP-recommended vaccines without cost sharing for all Medicaid enrollees, matching coverage requirements already in place for the new adult group and for most people with private insurance. This provision would provide comparable vaccine coverage to the 38 percent of Medicaid-enrolled adults for whom coverage of vaccines and any related cost sharing currently varies by state. At the time of this writing, the U.S. Senate has not passed the Build Back Better Act. If passed, the bill would go into effect on the first day of the fiscal quarter following a year after enactment.

To encourage coverage for preventive care for those not enrolled in the new adult group, the ACA provided a 1 percentage point increase in the federal medical assistance percentage (FMAP) applied to expenditures for adult vaccinations and clinical preventive services (§ 4106(b) of ACA). The specified preventive services are those assigned a grade of A or B by the U.S. Preventive Services Task Force and approved vaccines recommended by ACIP, along with their administration. In order for states to claim the FMAP increase for these services, states must cover all the recommended preventive services and adult vaccines (and their administration) in their standard Medicaid benefit package without cost sharing (CMS

2013a). The CDC study found that 12 of the 44 states responding to the survey had claimed the 1 percentage point FMAP increase under this provision (Granade et al. 2020).

The Build Back Better Act would also phase out the 1 percentage point FMAP increase for states that cover all recommended vaccines without cost sharing. For states that covered all ACIP-recommended vaccines without cost sharing as of the date of enactment, they may receive the 1 percentage point FMAP increase on vaccines and their administration for the first eight fiscal quarters beginning on or after the effective date of the mandatory vaccine coverage provisions.

Coverage of COVID-19 vaccines

In response to the COVID-19 pandemic, Congress passed legislation to ensure that all Medicaid beneficiaries have coverage of COVID-19 vaccines during the public health emergency (PHE) and for a period of time after the PHE. The Families First Coronavirus Response Act (FFCRA, P.L. 116-272), signed into law on March 18, 2020, provides a 6.2 percentage point increase to the FMAP for Medicaid expenditures on or after January 1, 2020, through the end of the quarter in which the PHE ends if states meet certain conditions (§ 6008 of FFCRA). Coverage of COVID-19 vaccines is required as part of terms of the FMAP increase under the FFCRA. States must cover COVID-19 vaccines and their administration for Medicaid beneficiaries without cost sharing, with certain exceptions. Additionally, states must make payments to providers for the administration of the vaccine or provider visit during which a vaccine is administered. This requirement applies even if the vaccine is supplied to the provider at no cost, as is the case under the current federal purchasing arrangement. According to the Centers for Medicare & Medicaid Services (CMS), all states and territories are currently claiming the FMAP increase under the FFCRA.

The American Rescue Plan Act of 2021 (ARPA, P.L. 117-2), signed into law on March 11, 2021,

made coverage of COVID-19 vaccines and the administration of such vaccines mandatory for the period beginning on the date of enactment and ending on the last day of the first calendar quarter that begins one year after the last day of the COVID-19 PHE (§ 9811(a)(1) of ARPA). During this period, cost sharing is prohibited for COVID-19 vaccines and the administration of such vaccines (§ 9811(a)(3) of ARPA). Additionally, mandatory coverage of COVID-19 vaccines and their administration was extended to certain limited-benefit groups (e.g., individuals eligible for medically needy coverage, individuals eligible only for family planning benefits) that otherwise would not have Medicaid coverage of the vaccine (§ 9811(a)(2) of ARPA).⁸ Furthermore, states will receive 100 percent FMAP on expenditures made for COVID-19 vaccines and their administration while the mandatory coverage requirement is in place (§ 9811(b) of ARPA).

Vaccination Rates

As noted earlier, adult vaccination rates are lower for those with Medicaid coverage compared to those with private insurance. In the following sections, we describe differences in vaccination rates by source of coverage and by race and ethnicity. Additionally, we compared influenza vaccination rates for adults and children across sources of coverage. We also analyzed influenza and Tdap vaccination rates among pregnant women enrolled in Medicaid compared to those enrolled in private insurance and those without insurance. Estimates are reported where sample size permits.

This analysis uses the National Health Interview Survey (NHIS) to estimate vaccination rates for eight ACIP-recommended vaccines (Table 2A-1). The NHIS is a cross-sectional household interview survey conducted annually in all 50 states and the District of Columbia by the National Center for Health Statistics. It includes approximately 87,500 people in 35,000 households each year, though

the sample size can vary. The survey includes information on health insurance coverage, health care utilization and access, health conditions and behaviors, and demographic and socioeconomic information (NCHS 2019).

Adult vaccination rates by primary source of health coverage

Medicaid-enrolled adults had lower vaccination rates than privately insured adults for nearly all vaccines included in this analysis (Table 2-1). The only exception was the pneumococcal vaccine; the vaccination rate for Medicaid enrollees was 3.7 percentage points higher than for privately

insured individuals. This may reflect a difference in health status because ACIP recommends the pneumococcal vaccine only for adults 19 to 64 years old if they have an additional risk factor such as chronic heart, lung, or liver disease or immunocompromising conditions. Adults with Medicaid are more likely to report fair or poor health status than those with private insurance and thus may be more likely to have a risk factor included in the ACIP recommendation (MACPAC 2021b). Vaccination rates for Tdap had the largest gaps between Medicaid and private insurance; the vaccination rate for those privately insured was almost 13 percentage points higher than Medicaid for Tdap and about 10 percentage points

TABLE 2-1. Vaccination Rates for Adults (19 Years and Older), by Vaccine and Primary Source of Health Coverage, 2015–2018

Vaccine	Primary source of coverage ¹			
	Total	Medicaid or CHIP ²	Private ³	Uninsured ⁴
Influenza	43.6%	32.8%	40.8%*	16.3%*
Tetanus	62.6	56.7	66.7*	50.1*
Tdap	29.2	22.6	35.2*	16.3*
Pneumococcal	25.2	16.9	13.3*	9.3*
Herpes zoster (shingles)	22.9	7.4	12.8*	4.3*
Hepatitis A	16.9	16.9	20.6*	13.9*
Hepatitis B	32.1	33.7	38.8*	26.2*
HPV	33.1	32.6	36.0*	19.8*

Notes: Tdap is tetanus, diphtheria, and pertussis. HPV is human papillomavirus. For the herpes zoster (shingles) vaccine, the analysis was limited to adults 50 years and older. For HPV, the analysis was limited to adults 19 to 26 years old.

* Difference from Medicaid is statistically significant at the 0.05 level.

¹ Total includes all non-institutionalized individuals age 19 and older, regardless of coverage source. In this table, the following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid, other, uninsured. Not separately shown are the estimates for those covered by Medicare and by any type of military health plan or other federal government-sponsored programs.

² Medicaid or CHIP also includes persons covered by other state-sponsored health plans. Medicaid and CHIP coverage are combined because it was determined through validation processes that respondents could not accurately distinguish between the two programs.

³ Private health insurance coverage excludes plans that paid for only one type of service, such as accidents or dental care.

⁴ Individuals were defined as uninsured if they did not have any private health insurance, Medicaid, CHIP, Medicare, state- or other government-sponsored health plan, or military plan. Individuals were also defined as uninsured if they had only Indian Health Service coverage or had only a private plan that paid for one type of service, such as accidents or dental care.

Sources: MACPAC, 2021, analysis of 2015–2018 National Health Interview Survey data.

higher for tetanus. Uninsured individuals had lower vaccination rates than enrollees with both Medicaid and private insurance.

Race and ethnicity. Vaccination rates varied across racial and ethnic groups within each source of coverage. However, there appear to be smaller racial and ethnic disparities in Medicaid compared to private insurance.

Looking at adults with Medicaid coverage, the differences across racial and ethnic groups are mixed. White, non-Hispanic adults covered by Medicaid generally had a similar or higher vaccination rate than people of color, but that was not always the case (Table 2-2). For example, vaccination rates for influenza among Medicaid adults who are Hispanic (34.2 percent); Asian,

non-Hispanic (40.5 percent); and American Indian or Alaska Native, non-Hispanic (52.4 percent) were higher compared to white, non-Hispanic adults covered by Medicaid (30.9 percent), whereas Black, non-Hispanic adults in Medicaid (31.5 percent) had a similar rate to white, non-Hispanic adults (Table 2A-2). However, vaccination rates for tetanus and Tdap were highest among white, non-Hispanic adults covered by Medicaid (64.9 and 30.1 percent, respectively), compared to Black, non-Hispanic (46.4 and 15.9 percent, respectively), Hispanic (53.4 and 17.9 percent, respectively), and Asian, non-Hispanic (43.5 and 16.8 percent, respectively) adults with Medicaid coverage.

TABLE 2-2. Difference in Vaccination Rates for Adults (19 Years and Older) within Medicaid, by Vaccine and Race and Ethnicity, 2015–2018

Vaccine	Statistically significant difference within Medicaid compared to white, non-Hispanic individuals				
	Black, non-Hispanic	Hispanic	Asian, non-Hispanic	American Indian or Alaska Native, non-Hispanic	Other
Influenza	–	Higher	Higher	Higher	–
Tetanus	Lower	Lower	Lower	–	–
Tdap	Lower	Lower	Lower	–	–
Pneumococcal	–	Lower	Lower	–	–
Herpes zoster (shingles)	–	–	–	–	–
Hepatitis A	–	–	Higher	–	–
Hepatitis B	Lower	–	–	–	–
HPV	–	–	–	–	–

Notes: Tdap is tetanus, diphtheria, and pertussis. HPV is human papillomavirus. For the herpes zoster (shingles) vaccine, the analysis was limited to adults 50 years and older. For HPV, the analysis was limited to adults 19 to 26 years old.

Lower means that the race and ethnicity group had a lower vaccination rate than the white, non-Hispanic group that was statistically significant. Higher means that the race and ethnicity group had a higher vaccination rate than the white, non-Hispanic group that was statistically significant. – means that the difference was not statistically significant.

Sources: MACPAC, 2021, analysis of 2015–2018 National Health Interview Survey data.

There are fewer statistically significant differences across racial and ethnic groups within Medicaid for other vaccines (Table 2-2). This is in contrast to the differences in vaccination rates by racial and ethnic groups for those with private insurance (Table 2A-2). White, non-Hispanic adults with private insurance generally had higher vaccination rates than Black, non-Hispanic or Hispanic adults with private insurance for most vaccines; however, we did not test these differences within the private insurance group for statistical significance.

Vaccination rates were more similar between Medicaid and private insurance among people of color than for white, non-Hispanic adults (Table 2-3). The vaccination rate for white, non-Hispanic adults with private insurance was greater than white, non-Hispanic adults with Medicaid by a

statistically significant margin for six of the eight vaccines (influenza, tetanus, Tdap, herpes zoster (shingles), hepatitis A, and hepatitis B). In contrast to white, non-Hispanic adults, the vaccination rate for Black, non-Hispanic and Hispanic adults with private insurance was higher than those with Medicaid by a statistically significant margin for only four of the eight vaccines (tetanus, Tdap, hepatitis A, and hepatitis B). Similarly, the vaccination rate for Asian, non-Hispanic adults with private insurance was higher than those with Medicaid by a statistically significant margin for three of the eight vaccines (tetanus, Tdap, and hepatitis B). These data suggest that a key driver in the overall difference in vaccination rates between Medicaid and private insurance is the difference in vaccination rates among white, non-Hispanic adults.

TABLE 2-3. Difference in Vaccination Rates for Adults (19 Years and Older) between Medicaid and Private Insurance, by Vaccine and Race and Ethnicity, 2015–2018

Vaccine	Statistically significant difference between Medicaid and private insurance					
	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian, non-Hispanic	American Indian or Alaska Native, non-Hispanic	Other
Influenza	Lower	–	–	–	–	Lower
Tetanus	Lower	Lower	Lower	Lower	–	–
Tdap	Lower	Lower	Lower	Lower	–	Lower
Pneumococcal	Higher	Higher	Higher	–	–	–
Herpes zoster (shingles)	Lower	–	–	–	–	–
Hepatitis A	Lower	Lower	Lower	–	–	Lower
Hepatitis B	Lower	Lower	Lower	Lower	–	–
HPV	–	–	–	–	–	Lower

Notes: Tdap is tetanus, diphtheria, and pertussis. HPV is human papillomavirus. For the herpes zoster (shingles) vaccine, the analysis was limited to adults 50 years and older. For HPV, the analysis was limited to adults 19 to 26 years old.

Lower means that Medicaid had a lower vaccination rate than private insurance that was statistically significant. Higher means that Medicaid had a higher vaccination rate than private insurance that was statistically significant. – means that the difference was not statistically significant.

Sources: MACPAC, 2021, analysis of 2015–2018 National Health Interview Survey data.

Vaccination rates among children compared to adults

Children enrolled in Medicaid also had a lower influenza vaccination rate than privately insured children, but the gap was narrower than it was for adults. For children enrolled in Medicaid, the influenza vaccine is covered without cost sharing through the VFC program. Similar to adults, children enrolled in Medicaid (47.2 percent) have a lower influenza vaccination rate than those in private insurance (49.8 percent) (Table 2-4). Although the difference was statistically significant, the gap was smaller for children than it was for adults. For children, the rate difference was 2.5 percentage points, versus 8.1 percentage points among adults.

Vaccination rates among pregnant women

Both the influenza and Tdap vaccines are recommended by ACIP for pregnant women. Influenza is more likely to cause severe illness

in pregnant women, and the influenza vaccine reduces the risk of hospitalization for pregnant women by an average of 40 percent (CDC 2021b). Each year, approximately 1,000 infants are hospitalized due to pertussis. Tdap administration during pregnancy can help prevent pertussis among infants who are too young to be vaccinated against the disease (CDC 2021c). HHS recently identified Tdap vaccinations among pregnant women as a high public health priority and set a new 2030 Healthy People goal to increase the vaccination rate (ODPHP 2021b).⁹

The influenza vaccination rate was almost 21 percentage points lower for pregnant women enrolled in Medicaid (36.5 percent) than it was for those enrolled in private insurance (57.5 percent) (Table 2-5). For Tdap, pregnant women with Medicaid coverage (41.4 percent) had a vaccination rate about 12 percentage points lower than those privately insured (53.8 percent). Given that Medicaid covers 43 percent of all births in the United States, this disparity in vaccination rates is particularly concerning (MACPAC 2021c).

TABLE 2-4. Influenza Vaccination Rates, by Population and Primary Source of Coverage, 2015–2018

Population	Primary source of coverage ¹			
	Total	Medicaid or CHIP ²	Private ³	Uninsured ⁴
Adults, 19 years and older	43.6%	32.8%	40.8%*	16.3%*
Children, 0–18 years	47.8	47.2	49.8*	26.7*

Notes:

* Difference from Medicaid is statistically significant at the 0.05 level.

¹ Total includes all non-institutionalized individuals regardless of coverage source. In this table, the following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid, other, uninsured. Not separately shown are the estimates for those covered by Medicare and by any type of military health plan or other federal government-sponsored programs.

² Medicaid or CHIP also includes persons covered by other state-sponsored health plans. Medicaid and CHIP coverage are combined because it was determined through validation processes that respondents could not accurately distinguish between the two programs.

³ Private health insurance coverage excludes plans that paid for only one type of service, such as accidents or dental care.

⁴ Individuals were defined as uninsured if they did not have any private health insurance, Medicaid, CHIP, Medicare, state- or other government-sponsored health plan, or military plan. Individuals were also defined as uninsured if they had only Indian Health Service coverage or had only a private plan that paid for one type of service, such as accidents or dental care.

Source: MACPAC, 2021, analysis of 2015–2018 National Health Interview Survey data.

TABLE 2-5. Vaccination Rates for Pregnant Women (18–49 Years Old), by Vaccine and Primary Source of Health Coverage, 2015–2018

Population	Primary source of coverage ¹			
	Total	Medicaid or CHIP ²	Private ³	Uninsured ⁴
Influenza	47.8%	36.5%	57.5%*	19.0%*
Tdap	47.5	41.4	53.8*	†

Notes: Tdap is tetanus, diphtheria, and pertussis.

* Difference from Medicaid is statistically significant at the 0.05 level.

† Estimate not reported due to small sample size or unreliability because it has a relative standard error greater than or equal to 30 percent.

¹ Total includes all non-institutionalized individuals age 18 to 49 years old, regardless of coverage source. In this table, the following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid or CHIP, other, uninsured. Not separately shown are the estimates for those covered by Medicare and by any type of military health plan or other federal government-sponsored programs.

² Medicaid or CHIP also includes persons covered by other state-sponsored health plans. Medicaid and CHIP coverage are combined because it was determined through validation processes that respondents could not accurately distinguish between the two programs.

³ Private health insurance coverage excludes plans that paid for only one type of service, such as accidents or dental care.

⁴ Individuals were defined as uninsured if they did not have any private health insurance, Medicaid, CHIP, Medicare, state- or other government-sponsored health plan, or military plan. Individuals were also defined as uninsured if they had only Indian Health Service coverage or had only a private plan that paid for one type of service, such as accidents or dental care.

Source: MACPAC, 2021, analysis of 2015–2018 National Health Interview Survey data.

A 2020 study examined influenza and Tdap vaccination rates among pregnant women at one Florida hospital between 2016 and 2018. Before 2019, Florida’s Medicaid program did not cover these vaccines for adults during pregnancy. The study found that the Tdap vaccination rate during the recommended time during pregnancy was 55 percentage points lower for pregnant women enrolled in Medicaid (13.3 percent) compared to those with private insurance (68.6 percent). Similarly, the rate for influenza vaccination during pregnancy was higher for privately insured women (70.4 percent) than for women covered by Medicaid (35.6 percent). During the study’s time period, the hospital system offered these vaccines to postpartum mothers at no cost. Many women, especially those with Medicaid coverage, were vaccinated in the immediate postpartum period under this program. This led to an increase in the vaccination rates among Medicaid enrollees

for both Tdap (51.7 percent) and influenza (43.5 percent). These increases—once the vaccine was made available without cost—suggest that the state decision to not cover these vaccines during pregnancy might have depressed vaccinations among its enrollees (Merritt et al. 2020).

Improving Access for Medicaid-Enrolled Adults

Low vaccination rates among Medicaid enrollees are due to a number of factors. Limited coverage of recommended vaccines for some Medicaid enrollees has been a fundamental barrier. In addition, some Medicaid-enrolled adults are subject to cost sharing requirements for vaccines, which is associated with lower vaccination rates among low-income individuals. Specifically, one study found that each additional co-payment dollar on

vaccinations decreases influenza vaccination rates by 1 to 6 percentage points (Stoecker et al. 2017).

Low vaccination rates may also reflect limited provider access and availability and inadequate support and education for beneficiaries. Additionally, limitations of and variations in immunization information systems (IIS) make it challenging for states, plans, and providers to identify which beneficiaries may need vaccines. The extent to which each of these factors influences the vaccination rate is unclear. Moreover, some of these barriers are not limited to Medicaid but may be factors related to low vaccination rates in adults regardless of insurance type.

To shed light on the barriers to vaccine access for Medicaid-enrolled adults, MACPAC conducted 21 semistructured interviews with a wide range of stakeholders. We interviewed Medicaid officials from five states, Medicaid medical directors, federal officials, Medicaid managed care plans, providers, vaccine manufacturers, immunization experts, and consumer groups. In the following section, we share insights from these interviews.

Provider access and availability

In addition to coverage of vaccines, interviewees focused heavily on the key role of providers in vaccination. Adults who report that a provider both recommended and offered an influenza vaccine had higher vaccination rates (Lu et al. 2018). In our interviews, we heard concerns that low payment hinders a provider's willingness to administer vaccinations, which contributes to lower vaccination rates in Medicaid. Public health experts and providers also noted the need for improved vaccine access across a variety of settings beyond primary care settings.

Adequate payment. Payment adequacy was a primary concern among stakeholders. To provide vaccines to patients, providers face costs associated with purchasing the vaccine (e.g., up-front purchase cost but deferred payment), storing the vaccine (e.g., adequate refrigerator or freezer,

backup power, insurance), and administering the vaccine (e.g., staff time, documentation, billing across payers). Vaccine prices can vary, and adult vaccine providers have smaller economies of scale than pediatric providers because vaccine recommendations for adults include factors beyond age and demand is less predictable (Shen 2017). Given the uncertainty of demand among adults, some providers choose not to stock all recommended vaccines, viewing it as a financial liability.

The literature provides some evidence to support concerns about low payment in Medicaid. A recent study found that some Medicaid programs may not cover a provider's costs of purchasing or administering adult vaccines, with median Medicaid payment amounts for vaccines below the reported private sector price for 9 of 13 vaccines. Additionally, the median Medicaid payment to health care professionals to administer a single adult vaccination was \$13.62 for injection and \$13.98 for intranasal administration (Granade et al. 2020). Those median rates are below the \$15 to \$23 average estimated cost to providers for vaccine administration to adults (Yarnoff et al. 2019). Similarly, in a 2014 survey of family and general internal medicine physicians, the majority of respondents (55 percent) reported that they lost money administering vaccines to adult Medicaid beneficiaries, whereas 25 percent or less reported having lost money administering vaccines to adults covered by other public and private payers (Lindley et al. 2018). Research has shown a positive relationship between Medicaid payment rates and vaccination rates for children. One study found higher Medicaid payment rates were associated with increases in influenza vaccination rates among children (Yoo et al. 2010). Another study found that higher Medicaid payment for vaccine administration was positively associated with immunizations for children, which suggested that increasing Medicaid payment could increase the number of Medicaid-enrolled children getting vaccinations (Tsai 2018).

Higher payment rates for vaccine administration could also increase provider participation and in turn improve access to vaccines for Medicaid beneficiaries. Policymakers could consider options that create incentives for states to increase payment for vaccine administration. For example, ARPA provides a 100 percent FMAP for the COVID-19 vaccine and its administration through the last day of the first calendar quarter that begins one year after the last day of the COVID-19 PHE (§ 9811(b) of ARPA). Stakeholders in our interviews noted that increased federal match has led to the vast majority of states increasing payment

rates to equal Medicare rates for COVID-19 vaccine administration. Congress could consider increasing the federal match on administration of other vaccines to encourage provider participation and increase access. Any increase in the federal match would likely need to be greater than the 1 percentage point increase provided in Section 4106 of the ACA. Many stakeholders in our interviews stated that the 1 percentage point increase did not create a strong enough incentive for states to cover all recommended vaccines without cost sharing.

BOX 2-2. Federally Qualified Health Centers and Payment for Vaccinations

Federally qualified health centers (FQHCs) are community-based health care providers that provide comprehensive primary and preventive health care to low-income individuals in underserved areas. FQHCs receive federal funds from the Health Resources and Services Administration under Section 330 of the Public Health Service Act, and state Medicaid programs are required to cover their services, which are otherwise included in the Medicaid state plan (MACPAC 2017). FQHCs are required to provide preventive and primary health services, including vaccines, to all patients.

Medicaid payment rules for FQHCs differ from those of other providers because federal law has established a prospective payment system (PPS) that sets how FQHCs are paid for each encounter or visit (Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 (P.L. 106-554)). Under the PPS, FQHCs are paid a single rate for each billable visit, regardless of the number or types of services provided during the visit. The PPS rate, also called an encounter rate, is established for each FQHC based on the center's average cost to provide Medicaid-covered services to Medicaid beneficiaries during a base year; this base rate is then adjusted each year by the Medicare Economic Index to account for inflation. States also have the option to use an alternative payment methodology (APM) provided that the health center agrees to the method and that the APM pays at least what the health center would have received under the PPS.

Federal law requires that a billable visit include a face-to-face encounter with one of six types of core providers (physicians, physician assistants, nurse practitioners, clinical nurse-midwives, clinical psychologists, and clinical social workers). States have some flexibility in defining which services are included in the encounter or visit. Immunizations are considered services and costs incident to the services provided by the six core provider types and should be included in the total costs included in the PPS rate calculation (NACHC 2019).

BOX 2-2. (continued)

States have the flexibility to count encounters with other providers, such as nurses or pharmacists, as billable visits but are not required to do so. This means that immunization-only visits provided by a nurse or a pharmacist may not be considered a billable visit by the state Medicaid agency, and such a visit would not trigger payment of the encounter rate for the health center. Because the cost of immunizations should be included in the calculation of the encounter rate, the cost of an immunization-only visit would be paid indirectly across other billable visits. However, the inability to directly bill for this type of encounter in some states may create a perception of not getting paid, and thus, health centers may be reluctant to provide immunization-only visits (NACHC 2019).

One way to address this issue would be for states to recalculate the base encounter rate to include nurse and pharmacist encounters as a billable visit. This would allow health centers to bill the encounter rate for immunization-only visits with these providers. However, it would result in the encounter rate for all billable visits being lower, as the same costs would be divided by a larger number of visits. Alternatively, states could establish an APM in which immunizations are removed from the PPS calculations and paid for separately. Both of these options can be a considerable undertaking for the state, and many health centers are hesitant to make changes to the encounter rate, such as developing an APM, without more information on how potential changes could affect their overall revenue (NACHC 2019).

Expanding provider types. Vaccine access could also be improved by making vaccines available in more settings and from additional types of providers. Several interviewees noted that adults are less likely than children to have medical homes and more likely to access the health care system through providers such as pharmacists, hospital emergency room or urgent care staff, or a consulting specialist. Although many Medicaid programs allow payments to pharmacies and other providers beyond physicians, this is not universal. A recent CDC survey found that 31 state Medicaid programs paid pharmacists to administer vaccines, 29 state Medicaid programs paid nurse practitioners, and 4 states paid midwives (Granade et al. 2021). Many interviewees noted the success of allowing COVID-19 vaccination administration at multiple locations and commented that other adult vaccinations should be similarly accessible.¹⁰

Experience during the COVID-19 pandemic is changing how some states approach adult

vaccinations. For example, a few states changed their policies to allow pharmacies to administer and bill for the COVID-19 vaccine and are considering expanding the scope of allowable services provided at pharmacies. However, such actions may require changes to state scope of practice laws. Federal guidance encouraging vaccinations across a wide range of settings could also lead to more states allowing additional providers to bill for vaccinations under Medicaid.

Beneficiary support and education

Factors beyond payment can make it more challenging to vaccinate adults than children for multiple reasons. First, children generally have a medical home, and the age-based vaccination schedule is integrated into physician workflows. Second, there are vaccination requirements for children to attend school, which motivates parents to ensure that children are up to date on their required immunizations. Third, children have

greater vaccine access through the VFC program, which covers uninsured and Medicaid-eligible children.

Improving vaccination rates among adults in Medicaid may require additional education, support, and outreach to beneficiaries. As noted earlier, the vaccine schedule for adults is based on age, medical conditions, and vaccine history. Although some vaccines are universal for adults, such as the influenza vaccine, others depend on risk factors and age. Providers play an important role in educating beneficiaries about the value of immunization and identifying which vaccinations are recommended based on the beneficiary's health status and medical history.

Beneficiary advocates stressed the importance of using multiple reminder and outreach methods (e.g., text, phone call, mail). These should come from both trusted sources in the community and general public health campaigns (e.g., advertisements in grocery stores). They also noted that increased supports may be needed to help a beneficiary get to the pharmacy or doctor. Some interviewees pointed to the programs that ride-sharing companies such as Uber and Lyft have implemented during the pandemic to transport people to COVID-19 vaccine appointments.

The extent of beneficiary support needed to improve access may vary by patient, provider, and vaccine type. One study found that the median cost of vaccination was substantially higher for obstetrics and gynecology (OB-GYN) practices due to the increased time needed to counsel patients, administer vaccines, and manage inventory (Shen et al. 2019). These higher costs may be contributing to vaccination rates among pregnant women that are lower than goals set by public health experts. As noted earlier, vaccination rates are lower among pregnant women enrolled in Medicaid compared to those with private insurance.

There is concern that vaccine opposition and hesitancy are growing, and additional educational efforts may be necessary to encourage adults to get vaccinations at appropriate points. In

addition to public health campaigns and increased community engagement in vaccination efforts, some interviewees noted that providers may need to spend more time counseling patients about vaccines. For example, they may need to have multiple conversations with a patient about specific vaccine recommendations before the individual chooses to get vaccinated. Some stakeholders suggested that providers should be encouraged to counsel patients who may not be ready to be vaccinated, and they should be paid for their time.

Currently, most states only pay for vaccine administration but do not make a separate payment for counseling that does not result in a vaccination. During the COVID-19 pandemic, a few states (e.g., North Carolina) have begun to pay providers for providing counseling on the benefits of COVID-19 vaccination (NCDHHS 2021). As mentioned previously, one reason median costs of vaccination were substantially higher for OB-GYN practices was due to the increased time needed to counsel patients. A study found that among the patients seen by OB-GYN practices, 68 percent declined to receive recommended vaccines (Shen et al. 2019). To the extent that patients decline recommended vaccines due to a lack of understanding about vaccine benefits and risks, a separate payment for vaccine counseling could improve vaccination rates by allowing clinicians to increase the time they spend educating Medicaid beneficiaries on the benefits of receiving recommended vaccines during pregnancy.

In December 2021, CMS issued a press release indicating that it considers COVID-19 vaccine counseling visits for children under age 21 to be part of COVID-19 vaccine administration under the Medicaid EPSDT benefit. States will receive the 100 percent FMAP available under ARPA for these COVID-19 vaccine counseling visits. Additionally, CMS will require that states pay for and cover stand-alone vaccine counseling visits as part of vaccine administration required for all pediatric vaccines under the EPSDT benefit (CMS 2021b). To address vaccine hesitancy in adults, CMS could provide additional guidance on how states

can provide coverage of and payment for vaccine counseling visits.

Immunization information systems

It can be challenging for providers to identify which adult vaccinations are needed by their patients given that the beneficiary may have received recommended vaccines from another provider. Providers need access to a central source of vaccination records, such as an IIS, but many face systems interoperability issues. Some stakeholders have noted that state and local IIS need substantial improvements. Interviewees cited challenges with data quality and interoperability issues with provider electronic health record systems. This issue has become particularly challenging in tracking COVID-19 vaccinations.

Currently, state Medicaid programs can receive a 90 percent federal match rate for the design and development of immunization systems that are part of the state's Medicaid Management Information System (MMIS) and a 75 percent match for its ongoing maintenance.¹¹ In states where the IIS is developed, owned, and operated by a public health or other non-Medicaid agency, match is available at 50 percent (HCFA 2000). Many states have built stopgap solutions to better track COVID-19 vaccinations, but these processes may not be optimal for long-term data exchange for all vaccines. A few interviewees mentioned that additional federal guidance and technical assistance from CMS would be useful to help states understand what types of activities may be eligible for the enhanced matching rate as states develop an IIS or make additional improvements to integrate their MMIS and IIS.

Next Steps

It is the Commission's view that universal access to recommended vaccines for all Medicaid-enrolled adults is a necessary first step to improve vaccination rates. Although the Commission

recognizes that coverage is foundational to this effort, low vaccination rates may also result from limited provider access and availability and inadequate support and education for beneficiaries. We will continue to explore these issues and consider options that could improve provider availability and ensure adequate support and education for beneficiaries.

Policy options could achieve these goals by addressing payment adequacy, expanding provider networks, and improving support and education for beneficiaries. The Commission will assess these policy options with the goal to improve vaccination rates overall as well as reduce racial disparities among Medicaid enrollees. We will weigh the relative merits of various policy options and consider their effects on state and federal spending. In addition, we will consider how operationally complex any policy would be to administer.

We expect that any single policy option may have only a modest effect on vaccination rates. For this reason, we will consider how policies might be combined and how a multifaceted approach could more meaningfully address barriers to access and improve vaccination rates.

Endnotes

¹ Healthy People 2020 established a set of goals to improve the influenza vaccination rate among adults. The targets varied by population. For example, the target for pregnant women was an 80 percent influenza vaccination rate, compared with the baseline of 40.4 percent in 2012–2013. By 2016–2017, the rate increased to 53.5 percent (ODPHP 2021c). Healthy People 2020 also set goals to increase the percentage of adults vaccinated against pneumococcal disease and herpes zoster (shingles) (ODPHP 2021a). For pneumococcal disease, the target vaccination rate was 60 percent for non-institutionalized high-risk adults age 18 to 64. The baseline rate was 16.6 percent in 2008 and reached 24.3 percent in 2017 (ODPHP 2021d).

² The authors estimated the annual economic burden of diseases associated with 10 vaccines. These vaccines

protect against hepatitis A; hepatitis B; herpes zoster (shingles); HPV; influenza; measles, mumps, and rubella (MMR); meningococcal disease; pneumococcal disease; tetanus, diphtheria, and pertussis (Tdap/Td); and varicella (chicken pox) (Ozawa et al. 2016).

³ The Secretary of HHS (the Secretary) selects 15 voting members after an application and nomination process. One member is a consumer representative, and the other 14 members have expertise in vaccinology, immunology, pediatrics, internal medicine, nursing, family medicine, virology, public health, infectious diseases, and preventive medicine (CDC 2021d). Examples of professional organizations represented by non-voting members include the American Academy of Pediatrics, American Academy of Family Physicians, American College of Nurse-Midwives, American College of Obstetricians and Gynecologists, and American College of Physicians. To protect against potential conflicts of interest, the committee has explicit membership exclusion criteria, including individuals employed by vaccine manufacturers (CDC 2016).

⁴ Underinsured means the child has health insurance, but it does not cover vaccines, does not cover certain vaccines, or has a fixed dollar limit or cap for vaccines. Underinsured children are eligible to receive vaccines only at federally qualified health centers (FQHCs) or rural health clinics.

⁵ As of 2021, ACIP recommends 13 vaccinations for adults 19 years or older, including influenza; tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap or Td); measles, mumps, and rubella (MMR); varicella; recombinant zoster (shingles); HPV; pneumococcal conjugate (PCV13); pneumococcal polysaccharide (PPSV23); hepatitis A; hepatitis B; serogroup A, C, W, and Y meningococcal; serogroup B meningococcal; and haemophilus influenzae type b (Hib) vaccines. At the time of this writing, ACIP also recommends use of COVID-19 vaccines for everyone age 5 and older within the scope of the emergency use authorization or biologics license application for the particular vaccine (CDC 2021e).

⁶ MACPAC uses the term “pregnant women” as this is the term used in the statute and regulations. However, the term “birthing people” is being used increasingly, as it is more inclusive and recognizes that not all individuals who become pregnant and give birth identify as women. Vaccine coverage may be mandated through other requirements

such as the EPSDT benefit for adults 19 to 20 years old or if provided as part of pregnancy-related care (KFF 2017).

⁷ In Medicaid, co-payments are limited to nominal amounts and are typically less than \$4 for most beneficiaries (CMS 2013b).

⁸ ARPA extends coverage of COVID-19 vaccines to most beneficiaries receiving limited-benefit packages, including individuals eligible for only family planning benefits, individuals eligible for only tuberculosis-related benefits, individuals eligible for the optional COVID-19 group, individuals eligible for medically needy coverage, and limited-benefit groups authorized under Section 1115(a)(2) expenditure authority. States can provide coverage to the optional COVID-19 group, including coverage of COVID-19 vaccinations, only through the last day of the COVID-19 PHE.

⁹ This objective is currently categorized as developmental because there is not yet reliable baseline data.

¹⁰ The Public Readiness and Emergency Preparedness Act (PREP Act, P.L. 109-148) authorizes the Secretary to issue a declaration that provides immunity from liability arising from specified efforts to combat a disease or threat. On March 10, 2020, the Secretary issued a PREP Act declaration establishing that the COVID-19 pandemic constitutes a PHE warranting liability protections for the administration of medical countermeasures against COVID-19. Under subsequent amendments to the declaration, HHS has allowed a wide range of health professionals, including qualified pharmacy technicians, emergency medical technicians, and midwives, to administer COVID-19 vaccines. Additionally, the Secretary has allowed state-licensed pharmacists, and pharmacy interns or technicians acting under supervision of such pharmacist, to administer childhood vaccines for children age 3 through 18 or seasonal influenza vaccines to adults. The PREP Act declaration expressly preempts any state or local law that prohibits any covered persons who satisfy the requirements from ordering or administering COVID-19 vaccines, childhood vaccines, or seasonal influenza for adults. The PREP Act declaration extends protection for covered COVID-19 countermeasures through October 1, 2024 (ASPR 2022).

¹¹ Under the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH Act, Title XIII of

P.L. 111-5), states were eligible to receive a 90 percent match through HITECH funding to plan, design, develop, and implement systems that connect health care providers to IIS (ASTHO 2018). However, HITECH funding is not available after 2021.

References

- Association of State and Territorial Health Officials (ASTHO). 2018. *Medicaid 90/10 funding fact sheet for immunization information systems*. Arlington, VA: ASTHO. <https://www.astho.org/globalassets/pdf/medicaid-90-10-match-factsheet.pdf>.
- Batdorf, S.J., M.G. Hofmeister, T.C. Surtees, et al. 2021. Estimated Medicaid costs associated with Hepatitis A during an outbreak—West Virginia, 2018–2019. *Morbidity and Mortality Weekly Report* 70, no. 8. <https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7008a2-H.pdf>.
- The Commonwealth Fund (Commonwealth). 2021. *Adults with age-appropriate vaccines*. Washington, DC: Commonwealth. <https://datacenter.commonwealthfund.org/topics/adults-age-appropriate-vaccines>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2021a. Vaccine-preventable adult diseases. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/adults/vpd.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2021b. Flu vaccine safety and pregnancy. Atlanta, GA: CDC. https://www.cdc.gov/flu/highrisk/qa_vacpregnant.htm.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2021c. Tdap (pertussis) vaccine and pregnancy. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/pregnancy/hcp-toolkit/tdap-vaccine-pregnancy.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2021d. ACIP committee members. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/acip/members/index.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2021e. Recommended adult immunization schedule. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2021f. ACIP recommendations. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/acip/recommendations.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2020a. Role of the advisory committee on immunization practices in CDC’s vaccine recommendations. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/acip/committee/role-vaccine-recommendations.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2020b. About VFC. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/programs/vfc/about/index.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2020c. VFC Medicaid FAQs and other eligibility issues. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/programs/vfc/providers/questions/qa-medicaid.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2019. VFC-ACIP vaccine resolutions. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/programs/vfc/providers/resolutions.html>.
- Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services. 2016. Advisory committee on immunization practices: Application for membership. Atlanta, GA: CDC. <https://www.cdc.gov/vaccines/acip/committee/downloads/nominations.pdf>.
- Centers for Medicare & Medicaid Services (CMS), U.S. Department of Health and Human Services. 2021a. *Fiscal year 2022: Justification of estimates for appropriations committees*. Baltimore, MD: CMS. <https://www.cms.gov/files/document/fy2022-cms-congressional-justification-estimates-appropriations-committees.pdf>.

Centers for Medicare & Medicaid Services (CMS), U.S. Department of Health and Human Services. 2021b. Biden-Harris administration makes 100% federal Medicaid matching funds available for state expenditures on certain COVID-19 vaccine counseling visits for children and youth. December 2, 2021, press release. Baltimore, MD: CMS. <https://www.cms.gov/newsroom/press-releases/biden-harris-administration-makes-100-federal-medicaid-matching-funds-available-state-expenditures>.

Centers for Medicare & Medicaid Services (CMS), U.S. Department of Health and Human Services. 2013a. Letter from Cindy Mann to state Medicaid directors regarding “Affordable Care Act Section 4106 (preventative services).” February 1, 2013. <https://www.medicaid.gov/Federal-Policy-Guidance/downloads/SMD-13-002.pdf>.

Centers for Medicare & Medicaid Services (CMS), U.S. Department of Health and Human Services. 2013b. Medicaid and Children’s Health Insurance programs: Essential health benefits in alternative benefit plans, eligibility notices, fair hearing and appeal processes, and premium and cost sharing; Exchanges: Eligibility and enrollment; Final rule. Federal Register 78, no. 135 (July 15): 42273. <http://www.gpo.gov/fdsys/pkg/FR-2013-07-15/pdf/2013-16271.pdf>.

Granade, C., R. McCord, A. Bhatti, et al. 2021. Availability of adult vaccination services by provider type and setting. *American Journal of Preventive Medicine* 60, no. 5: 692–700. <https://pubmed.ncbi.nlm.nih.gov/33632648/>.

Granade, C., R. McCord, A. Bhatti, et al. 2020. State policies on access to vaccination services for low-income adults. *JAMA Network Open* 3, no. 4: e203316. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2764810>.

Kaiser Family Foundation (KFF). 2017. *Data note: Medicaid’s role in providing access to preventive care for adults*. Washington, DC: KFF. <http://files.kff.org/attachment/Data-Note-Medicoids-Role-in-Providing-Access-to-Preventive-Care-for-Adults>.

Krishnarajah, G., C. Carroll, J. Priest, et al. 2014. Burden of vaccine-preventable disease in adult Medicaid and commercially insured populations. *Human Vaccines & Immunotherapeutics* 10, no. 8: 2460–2467. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4896801/pdf/khvi-10-08-10929303.pdf>.

Leidner, A., N. Murthy, H. Chesson, et al. 2019. Cost-effectiveness of adult vaccinations: A systematic review. *Vaccine* 37, no. 2: 226–234. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6545890/>.

Lindley, M., L. Hurley, B. Beaty, et al. 2018. Vaccine financing and billing in practices serving adult patients: A follow-up survey. *Vaccine* 36, no. 8: 1093–1100. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5807000/pdf/nihms937255.pdf>.

Lu, P.J., A. Srivastav, A. Amaya, et al. 2018. Association of provider recommendation and offer and influenza vaccination among adults aged ≥18 years—United States. *Vaccine* 36, no. 6: 890–898. <https://www.sciencedirect.com/science/article/pii/S0264410X17317590?via%3Dihub>.

McLaughlin, J., J. McGinnis, L. Tan, A. Mercatante, and J. Fortuna. 2015. Estimated human and economic burden of four major adult vaccine-preventable diseases in the United States, 2013. *The Journal of Primary Prevention* 36, 4: 259–273. <https://pubmed.ncbi.nlm.nih.gov/26032932/>.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021a. Exhibit 14: Medicaid enrollment by state, eligibility group, and dually eligible status, FY 2019 (thousands). In *MACStats: Medicaid and CHIP data book*. December 2021. Washington, DC: MACPAC. <https://www.macpac.gov/wp-content/uploads/2015/01/EXHIBIT-14.-Medicaid-Enrollment-by-State-Eligibility-Group-and-Dually-Eligible-Status-FY-2019-thousands.pdf>.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021b. Exhibit 43: Coverage, demographic, and health characteristics of non-institutionalized individuals age 19–64 by primary source of health coverage, 2019. In *MACStats: Medicaid and CHIP data book*. December 2021. Washington, DC: MACPAC. <https://www.macpac.gov/wp-content/uploads/2015/11/EXHIBIT-43.-Coverage-Demographic-and-Health-Characteristics-of-Non-Institutionalized-Individuals-Age-19%E2%80%9364-by-Primary-Source-of-Health-Coverage-2019.pdf>.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021c. Chapter 2: Advancing maternal and infant health by extending the postpartum coverage period. In *Report to Congress on Medicaid and CHIP*. March 2021. Washington, DC: MACPAC. <https://www.macpac.gov/wp-content/uploads/2021/03/Chapter-2-Advancing-Maternal-and-Infant-Health-by-Extending-the-Postpartum-Coverage-Period.pdf>.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2017. *Medicaid payment policy for federally qualified health centers*. December 2017. Washington, DC: MACPAC. <https://www.macpac.gov/wp-content/uploads/2017/12/Medicaid-Payment-Policy-for-Federally-Qualified-Health-Centers.pdf>.

Merritt, T., S. Rasmussen, M. Bright, et al. 2020. Variation in Tdap and influenza vaccination coverage among pregnant women by insurance type—Florida, 2016–2018. *Morbidity and Mortality Weekly Report* 69, no. 3: 27–76. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6903a4.htm>.

National Association of Community Health Centers (NACHC). 2019. *Strategies to address policy barriers to adult immunizations in federally qualified health centers*. Bethesda, MD: NACHC. <https://www.nachc.org/wp-content/uploads/2019/12/Adult-Immunization-White-Paper-12.10.19.pdf>.

National Center for Health Statistics (NCHS), U.S. Department of Health and Human Services. 2019. *National Health Interview Survey: Survey description*. Hyattsville, Maryland: NCHS. https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2018/srvydesc.pdf.

North Carolina Department of Health and Human Services (NCDHHS). 2021. “Special bulletin COVID-19 #168: vaccination counseling code reimbursement.” June 21, 2021. Subsequently updated in “Special bulletin COVID-19 #170” on July 9, 2021, and “Special bulletin COVID-19 #184” on September 24, 2021. <https://medicaid.ncdhhs.gov/blog/2021/06/21/special-bulletin-covid-19-168-vaccination-counseling-code-reimbursement>.

Office of the Assistant Secretary for Preparedness & Response (ASPR), U.S. Department of Health and Human Services. 2022. *Public Readiness and Emergency Preparedness Act*. Washington, DC: ASPR. <https://aspr.hhs.gov/legal/PREPAct/Pages/default.aspx>.

Office of Disease Prevention and Health Promotion (ODPHP), U.S. Department of Health and Human Services. 2021a. Healthy People 2020: Immunization and infectious diseases. Washington, DC: ODPHP. <https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives>.

Office of Disease Prevention and Health Promotion (ODPHP), U.S. Department of Health and Human Services. 2021b. Healthy People 2030: Vaccination. Washington, DC: ODPHP. <https://health.gov/healthypeople/objectives-and-data/browse-objectives/vaccination>.

Office of Disease Prevention and Health Promotion (ODPHP), U.S. Department of Health and Human Services. 2021c. Healthy People 2020: Immunization and infectious diseases: IID-12.14 Increase the percentage of pregnant women who are vaccinated against seasonal influenza. Washington, DC: ODPHP. <https://www.healthypeople.gov/2020/data-search/Search-the-Data?nid=6362>.

Office of Disease Prevention and Health Promotion (ODPHP), U.S. Department of Health and Human Services. 2021d. Healthy People 2020: Immunization and infectious diseases: IID-13.2 Increase the percentage of non-institutionalized high-risk adults aged 18 to 64 years who are vaccinated against pneumococcal disease. Washington, DC: ODPHP. <https://www.healthypeople.gov/2020/data-search/Search-the-Data?nid=4671>.

Oregon Health Authority (OHA). 2021. Prioritized list of health services. <https://www.oregon.gov/oha/HPA/DSI-HERC/Pages/Prioritized-List.aspx>.

Ozawa, S., A. Portnoy, H. Getaneh, et al. 2016. Modeling the economic burden of adult vaccine-preventable diseases in the United States. *Health Affairs* 35, no. 11: 2124–2132. <https://www.healthaffairs.org/doi/10.1377/hlthaff.2016.0462>.

Shen, A., O. Khavjou, G. King, et al. 2019. Provider time and costs to vaccinate adult patients: Impact of time counseling without vaccination. *Vaccine* 37, no. 6: 792–797. <https://www.sciencedirect.com/science/article/pii/S0264410X19300015?via%3Dihub>.

Shen, A. U.S. Department of Health and Human Services, The National Vaccine Program Office. 2017. Provider payment for adult immunization. April 19, 2017. https://www2.cdc.gov/vaccines/ed/pickup/ciinc/2017/CIINC_4_19_2017.pdf.

Smith, J., A. Hinman, and L. Pickering. 2014. History and evolution of the advisory committee on immunization practices—United States, 1964–2014. *Morbidity and Mortality Weekly Report*. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6342a5.htm>.

Stoecker C., A. Stewart, and M. Lindley. 2017. The cost of cost-sharing: the impact of Medicaid benefit design on influenza vaccination uptake. *Vaccines* 5, no. 1: 1–8. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5371744/pdf/vaccines-05-00008.pdf>.

Tsai, Y. 2018. Payments and utilization of immunization services among children enrolled in fee-for-service Medicaid. *Medical Care* 56, no. 1: 54–61. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5776675/pdf/nihms934513.pdf>.

U.S. Department of Health and Human Services (HHS). 2020. *FY 2021 budget and performance*. Baltimore, MD: HHS. <https://www.hhs.gov/sites/default/files/fy-2021-budget-in-brief.pdf>.

Xu, J., S. Murphy, K. Kochanek, and E. Arias. 2021. Deaths: Final data for 2019. *National Vital Statistics Reports* 70, no. 8. <https://www.cdc.gov/nchs/data/nvsr/nvsr70/nvsr70-08-508.pdf>.

Yarnoff B., D. Kim, F. Zhou, et al. 2019. Estimating the costs and income of providing vaccination to adults and children. *Medical Care* 57, no. 6: 410–416. https://journals.lww.com/lww-medicalcare/Abstract/2019/06000/Estimating_the_Costs_and_Income_of_Providing.5.aspx.

Yoo, B.K., A. Berry, M. Kasajima, and P. Szilagyi. 2010. Association between Medicaid reimbursement and child influenza rates. *Pediatrics* 126, no. 5: e998–e1010. <https://publications.aap.org/pediatrics/article-abstract/126/5/e998/65295/Association-Between-Medicaid-Reimbursement-and?redirectedFrom=PDF>.

APPENDIX 2A: Vaccination Rates for Adults by Primary Source of Health Coverage

TABLE 2A-1. Vaccines Included in Analysis

Vaccines	Recommendation for adult population
Influenza	Annually for individuals age six months or older
Tetanus	A booster dose is given every 10 years, or after 5 years in the case of a severe or dirty wound or burn.
Tdap	<p>Any adult 19 years of age or older who has never received a dose of Tdap should get one as soon as feasible. This should be followed by either a Td or Tdap shot every 10 years.</p> <p>Pregnant women should get a dose of Tdap during each pregnancy, preferably during the early part of gestation in weeks 27 through 36.</p>
Pneumococcal	All adults 65 years or older, people 2 through 64 years old with certain medical conditions, and adults 19 through 64 years old who smoke cigarettes
Herpes zoster (shingles)	Immunocompetent adults age 50 years and older
Hepatitis A	<p>Adults at risk for infection or severe disease from hepatitis A virus and for adults requesting protection against hepatitis A virus without acknowledging a risk factor</p> <p>In some cases, vaccination before travel, for postexposure prophylaxis, in settings providing services to adults, and during outbreaks</p>
Hepatitis B	<p>In 2021, adults at risk for hepatitis B virus infection, including universal vaccination of adults in settings in which a high proportion have risk factors for hepatitis B infection and vaccination of adults requesting protection from hepatitis B virus without acknowledging a specific risk factor</p> <p>In 2022, any adult age 19 to 59 who has not previously been vaccinated or adults age 60 and older who have risk factors for hepatitis B virus</p>
HPV	<p>Everyone through age 26 years if not adequately vaccinated previously</p> <p>Vaccination is not recommended for everyone older than age 26 years. However, some adults age 27 through 45 years may decide to get the HPV vaccine based on clinician guidance.</p>

Notes: Tdap is tetanus, diphtheria, and pertussis. Td is tetanus and diphtheria. HPV is human papillomavirus.

Source: CDC, 2021e, 2021f.

TABLE 2A-2. Vaccination Rates for Adults (19 Years and Older), by Vaccine, Race and Ethnicity, and Primary Source of Health Coverage, 2015–2018

Vaccine	Race and ethnicity	Primary source of coverage ¹			
		Total	Medicaid or CHIP ²	Private ³	Uninsured ⁴
Influenza	White, non-Hispanic	47.1%	30.9%	42.7%*	14.6%*
	Black, non-Hispanic	35.8	31.5	32.9	15.8*
	Hispanic	33.7	34.2^	34.5	17.1*
	Asian, non-Hispanic	47.9	40.5^	46.3	21.2*
	American Indian or Alaska Native, non-Hispanic	47.0	52.4^	49.9	25.0*
	Other	47.0	52.4^	49.9	25.0*
Tetanus	White, non-Hispanic	67.8%	64.9%	71.1%*	57.8%*
	Black, non-Hispanic	50.7	46.4^	53.9*	43.8
	Hispanic	53.3	53.4^	58.8*	43.5*
	Asian, non-Hispanic	53.0	43.5^	57.0*	38.5
	American Indian or Alaska Native, non-Hispanic	66.5	63.0	65.5	69.3
	Other	64.6	61.3	67.3	58.2
Tdap	White, non-Hispanic	34.2%	30.1%	39.8%*	22.0%*
	Black, non-Hispanic	18.1	15.9^	21.6*	12.4
	Hispanic	19.1	17.9^	25.3*	10.5*
	Asian, non-Hispanic	25.7	16.8^	29.8*	15.8
	American Indian or Alaska Native, non-Hispanic	28.6	22.9	35.0	31.5
	Other	36.5	26.1	42.3*	28.2
Pneumococcal	White, non-Hispanic	28.8%	18.7%	13.8%*	10.2%*
	Black, non-Hispanic	20.9	16.9	12.4*	9.1*
	Hispanic	15.9	15.3^	11.6*	8.1*
	Asian, non-Hispanic	18.6	13.3^	12.1	7.7
	American Indian or Alaska Native, non-Hispanic	22.2	17.5	12.0	15.9
	Other	24.0	14.2	15.1	13.5

TABLE 2A-2. (continued)

Vaccine	Race and ethnicity	Primary source of coverage ¹			
		Total	Medicaid or CHIP ²	Private ³	Uninsured ⁴
Herpes zoster (shingles)	White, non-Hispanic	26.5%	8.2%	14.3%*	4.7%*
	Black, non-Hispanic	11.0	5.4	6.5	1.7*
	Hispanic	12.1	6.2	7.7	4.3
	Asian, non-Hispanic	18.5	9.3	11.7	1.2*
	American Indian or Alaska Native, non-Hispanic	19.4	12.0	13.6	13.9
	Other	19.6	9.7	10.9	6.4
Hepatitis A	White, non-Hispanic	16.1%	16.1%	19.5%*	13.5%*
	Black, non-Hispanic	14.9	15.0	17.9*	12.5
	Hispanic	18.0	17.5	23.0*	13.6*
	Asian, non-Hispanic	26.2	25.3 [^]	29.0	22.0
	American Indian or Alaska Native, non-Hispanic	16.0	17.1	17.4	15.0
	Other	24.5	19.3	30.4*	22.8
Hepatitis B	White, non-Hispanic	32.0%	34.9%	38.8%*	29.5%*
	Black, non-Hispanic	30.3	30.0 [^]	34.9*	30.1
	Hispanic	29.7	33.1	36.9*	20.2*
	Asian, non-Hispanic	40.2	35.7	46.1*	26.6*
	American Indian or Alaska Native, non-Hispanic	34.3	37.0	39.6	31.1
	Other	41.8	42.3	48.5	36.4
HPV	White, non-Hispanic	35.6%	34.5%	37.3%	21.0%*
	Black, non-Hispanic	30.6	30.9	33.3	22.0
	Hispanic	27.2	31.7	31.4	15.8*
	Asian, non-Hispanic	30.9	30.6	32.7	16.7
	American Indian or Alaska Native, non-Hispanic	28.4	†	†	†
	Other	44.3	27.6	49.5*	43.3

Notes: Tdap is tetanus, diphtheria, and pertussis. HPV is human papillomavirus. For the herpes zoster (shingles) vaccine, the analysis was limited to adults 50 years and older. For HPV, the analysis was limited to adults 19 to 26 years old.

* Difference from Medicaid is statistically significant at the 0.05 level.

[^] Within Medicaid, difference from white, non-Hispanic individuals is statistically significant at the 0.05 level.

† Estimate not reported due to too small of a sample size or unreliability because it has a relative standard error greater than or equal to 30 percent.

¹ Total includes all non-institutionalized individuals age 19 and older, regardless of coverage source. In this table, the following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid, other, uninsured. Not separately shown are the estimates for those covered by Medicare and by any type of military health plan or other federal government-sponsored programs.

² Medicaid or CHIP also includes persons covered by other state-sponsored health plans. Medicaid and CHIP coverage are combined because it was determined through validation processes that respondents could not accurately distinguish between the two programs.

³ Private health insurance coverage excludes plans that paid for only one type of service, such as accidents or dental care.

⁴ Individuals were defined as uninsured if they did not have any private health insurance, Medicaid, CHIP, Medicare, state- or other government-sponsored health plan, or military plan. Individuals were also defined as uninsured if they had only Indian Health Service coverage or had only a private plan that paid for one type of service, such as accidents or dental care.

Source: MACPAC, 2021, analysis of 2015–2018 National Health Interview Survey data.

TABLE 2A-3. Vaccination Rates for Influenza among Children (0–18 Years), by Race and Ethnicity and Primary Source of Health Coverage, 2015–2018

Race and ethnicity	Primary source of coverage ¹			
	Total	Medicaid or CHIP ²	Private ³	Uninsured ⁴
White, non-Hispanic	46.4%	42.6%	49.0%*	19.8%*
Black, non-Hispanic	44.7	44.3	44.8	32.5*
Hispanic	48.8	51.7 [^]	48.9	29.5*
Asian, non-Hispanic	61.4	60.7 [^]	62.5	41.6*
American Indian or Alaska Native, non-Hispanic	53.5	59.5 [^]	41.9	52.8
Other	50.0	44.0	55.6*	25.3*

Notes:

* Difference from Medicaid is statistically significant at the 0.05 level.

¹ Total includes all non-institutionalized individuals age 0–18 years, regardless of coverage source. In this table, the following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid, other, uninsured. Not separately shown are the estimates for those covered by Medicare and by any type of military health plan or other federal government-sponsored programs.

² Medicaid or CHIP also includes persons covered by other state-sponsored health plans. Medicaid and CHIP coverage are combined because it was determined through validation processes that respondents could not accurately distinguish between the two programs.

³ Private health insurance coverage excludes plans that paid for only one type of service, such as accidents or dental care.

⁴ Individuals were defined as uninsured if they did not have any private health insurance, Medicaid, CHIP, Medicare, state- or other government-sponsored health plan, or military plan. Individuals were also defined as uninsured if they had only Indian Health Service coverage or had only a private plan that paid for one type of service, such as accidents or dental care.

Source: MACPAC, 2021, analysis of 2015–2018 National Health Interview Survey data.

