Proposed Changes to Existing Measure for HEDIS®[1] MY 2026: Adult Immunization Status (AIS-E)

NCQA seeks comments on proposed modifications to the HEDIS *Adult Immunization Status (AIS-E)* measure. AIS-E assesses the percentage of adults who are up to date on routine vaccinations recommended for adults by the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP). The measure includes separate indicators for influenza; tetanus and diphtheria (Td) or tetanus, diphtheria and acellular pertussis (Tdap); zoster; pneumococcal; and hepatitis B immunization.

AIS-E is specified for the commercial, Medicaid and Medicare product lines and uses the HEDIS Electronic Clinical Data Systems (ECDS) reporting standard to capture receipt of vaccinations using data from electronic sources including administrative claims, immunization registries and EHRs. The measure is stratified by age, race and ethnicity for each product line. Proposed measure updates are described below.

New COVID-19 Indicator

COVID-19 vaccination helps prevent infection and severe symptoms of infection. Since 2020, ACIP has recommended COVID-19 vaccines and vaccination schedules to protect against severe outcomes. In June 2024, ACIP recommended that people 6 months and older receive an updated 2024–2025 vaccine, regardless of a history of COVID-19 vaccination.[2] But despite the importance and proven effectiveness of vaccination, particularly for adults, uptake of COVID-19 vaccines is low. The CDC estimates that around 21.8% of adults 18 and older received the 2023–2024 COVID-19 vaccine, and an estimated 40% of adults 65 and older received at least one dose of the 2023–2024 updated vaccine. [3] The CDC also estimates adults 65 and older account for more than 70% of COVID-19-associated hospitalizations.[4] In October 2024, ACIP recommended a second dose of 2024–2025 vaccine for people 65 and older and for people who are moderately or severely immunocompromised.[5] Refer to the *Adult Immunization Status Workup* for details on the evidence and guidelines.

Given the move toward annual COVID-19 vaccination, NCQA proposes a new indicator that assesses COVID-19 vaccination for adults 19 years of age and older who received their annual COVID-19 vaccine. Refer to the *Adult Immunization Status Specifications* and Table 1 below for more details on the proposed numerator and denominator.

Table 1. Proposed COVID-19 Immunization Indicator

Numerator	Any of the following: • Received at least one dose of an updated COVID-19 vaccine (Adult COVID19 Immunization Value Set; Adult COVID19 Vaccine Procedure Value Set) on or between July 1 of the year prior to the measurement period through June 30 of the measurement period. • Members with anaphylaxis due to the COVID-19 vaccine (SNOMED CT code 914587451000119107) any time before or during the measurement period.
Denominator	The initial population minus denominator exclusions.
Exclusions	Hospice or death during the measurement period.

[1] HEDIS® is a registered trademark of the National Committee for Quality Assurance (NCQA).
[2] https://www.cdc.gov/mmwr/volumes/73/wr/mm7316a4.htm?s_cid=mm7316a4_w
[3] https://www.cdc.gov/covidvaxview/weekly-dashboard/adult-vaccination-coverage.html
[4] https://www.cdc.gov/mmwr/volumes/73/wr/mm7339a2.htm
[5] https://www.cdc.gov/media/releases/2024/s1023-covid-19-vaccine.html

NCQA field-tested the proposed indicator with four health plans of varying sizes and geographic locations, to evaluate its feasibility and performance and gather information to inform implementation at the health plan level. The plans provided de-identified patient-level electronic data to NCQA using data from January 1, 2023–April 30, 2024. After ACIP recommendations were released in 2023, NCQA altered the testing specification slightly: Rather than the July 1–June 30 time frame referenced in Table 1, the numerator was members who received a dose of any recommended 2023–2024 COVID-19 vaccine any time between September 1, 2023, and April 30, 2024.

Performance rates for all four health plans ranged from around 2% to 41% across product lines. When compared to national CDC estimates, only one plan performed close to those estimates. The lower performance scores for the other plans could suggest that the plans might not be receiving all available data for the indicator. NCQA asked plans if they thought the scores were an accurate reflection of their performance, or if they reflected data accessibility issues. Two plans stated that results were an accurate reflection of performance; two plans stated that results were likely affected by complications with access to state immunization registries, given regulations on data access and use.

Note: *COVID-19 vaccines are no longer free through the federal government. Gaps in immunization registry data should be able to be supplemented through data sources such as claims, though this will not cover every scenario in which someone may receive a vaccine.*

Although panels have concerns about data accessibility regarding immunization registries, they support moving the indicator forward to public comment.

NCQA seeks general feedback on the proposed new indicator.

Supporting documents include the current measure specification, evidence workup and performance data.

NCQA acknowledges the contributions of the Immunization, Geriatric and Technical Measurement Advisory Panels.

Measure title	Adult Immunization Status*	**Measure ID**	AIS-E
Description	The percentage of persons 19 years of age and older who are up to date on recommended routine vaccines for influenza, tetanus and diphtheria (Td) or tetanus, diphtheria and acellular pertussis (Tdap), zoster, pneumococcal, ~~and~~ hepatitis B and coronavirus disease 2019 (COVID-19).		
Measurement period	January 1–December 31.		
Copyright and disclaimer notice	*Developed with support from the Department of Health and Human Services (DHHS), Office of the Assistant Secretary for Health (OASH), National Vaccine Program Office (NVPO) and The Hepatitis Education Project. Refer to the complete copyright and disclaimer information at the front of this publication. NCQA website: www.ncqa.org. Submit policy clarification support questions via My NCQA (https://my.ncqa.org).		
Clinical recommendation statement/ rationale	The Advisory Committee on Immunization Practices recommends annual influenza vaccination; and tetanus, diphtheria and acellular pertussis (Tdap) and/or tetanus and diphtheria (Td) vaccine; herpes zoster, pneumococcal, ~~and~~ hepatitis B and COVID-19 vaccination for adults at various ages.		
Citations	Murthy, N. A.P. Wodi, A.P., V.V. McNally, M.F. Daley, S. Cineas. 2024. "Advisory Committee on Immunization Practices Recommended Immunization Schedule for Adults Aged 19 Years or Older—United States, 2024." MMWR Morb Mortal Wkly Rep 73:11–15. DOI: http://dx.doi.org/10.15585/mmwr.mm7301a3		
Characteristics			
Scoring	Proportion.		
Type	Process.		
Product lines	• Commercial. • Medicaid. • Medicare.		
Stratifications	• *Influenza, ~~and~~ Td/Tdap and COVID-19:* Age as of the start of the measurement period. – 19–64 years. – 65 years and older. • *Zoster:* Age as of the start of the measurement period. – 50–64 years. – 65 years and older.		

	• *Pneumococcal:* Age as of the start of the measurement period. – 65 years and older. • *Hepatitis B:* Age as of the start of the measurement period. – 19–30 years. – 31–59 years. • Race for each numerator. (Refer to the *General Guideline: Race and Ethnicity Stratification*). – American Indian or Alaska Native. – Asian. – Black or African American. – Native Hawaiian or Other Pacific Islander. – White. – Some Other Race. – Two or More Races. – Asked But No Answer. – Unknown. • Ethnicity for each numerator. (Refer to the *General Guideline: Race and Ethnicity Stratification*). – Hispanic or Latino. – Not Hispanic or Latino. – Asked But No Answer. – Unknown.
Risk adjustment	None.
Improvement notation	Increased score indicates improvement.
Guidance	**Data collection methodology**: ECDS. Refer to the General Guideline: Data Collection Methods for additional information. **Date specificity:** Dates must be specific enough to determine the event occurred in the period being measured. **Which services count?** When using claims, include all paid, suspended, pending and denied claims. ~~**SNOMED-CT codes:** When using SNOMED-CT codes to identify a history of a procedure, the date of the procedure must be available.~~ **Other guidance:** Measure rates are specific to clinical guideline recommendations for the age group included in the rates.
Initial population	*Measure item count:* Person. *Attribution:* Enrollment. • *Benefit:* Medical. • *Continuous enrollment:* The measurement period.

	• *Allowable gap:* No more than one gap of ≤45 days during the measurement period. The person must be enrolled on the last day of the measurement period. *Ages:* • *Initial populations 1, ~~and~~ 2 and 6:* 19 years and older at the start of the measurement period. • *Initial population 3:* 50 years and older at the start of the measurement period. • *Initial population 4:* 65 years and older at the start of the measurement period. • *Initial population 5:* 19–59 years at the start of the measurement period. *Event:* None.
Denominator exclusions	• **Persons with a date of death.** Death in the measurement period, identified using data sources determined by the organization. Method and data sources are subject to review during the HEDIS audit. • **Persons in hospice or using hospice services.** Persons who use hospice services (Hospice Encounter Value Set; Hospice Intervention Value Set) or elect to use a hospice benefit any time during the measurement period. Organizations that use the Monthly Membership Detail Data File to identify these persons must use only the run date of the file.
Denominator	**Denominators 1, ~~and Denominator~~ 2, ~~and Denominator 6~~: Immunization Status: Influenza, ~~and~~ Td/Tdap and COVID-19:** The initial population 1, ~~and~~ 2 and 6 minus denominator exclusions. **Denominator 3: Immunization Status: Zoster:** The initial population 3 minus denominator exclusions. **Denominator 4: Immunization Status: Pneumococcal:** The initial population 4 minus denominator exclusions. **Denominator 5: Immunization Status: Hepatitis B:** The initial population 5 minus denominator exclusions.
Numerator	**Numerator 1: Immunization~~s~~ Status: Influenza.** Persons who meet either of the following criteria: • Received the influenza vaccine (Adult Influenza Immunization Value Set; Adult Influenza Vaccine Procedure Value Set; Influenza Virus LAIV Immunization Value Set; Influenza Virus LAIV Vaccine Procedure Value Set) on or between July 1 of the year prior to the measurement period and June 30 of the measurement period. • Had anaphylaxis due to the influenza vaccine (SNOMEDCT code 471361000124100) any time before or during the measurement period. **Numerator 2: Immunization Status: Td/Tdap.** Persons who meet any of the following criteria:

- Received at least one Td or Tdap vaccine (Td Immunization Value Set; Td Vaccine Procedure Value Set, CVX code 115; Tdap Vaccine Procedure Value Set) between 9 years prior to the start of the measurement period and the end of the measurement period.
- Had anaphylaxis due to the diphtheria, tetanus or pertussis vaccine (Anaphylaxis Due to Diphtheria, Tetanus or Pertussis Vaccine Value Set).
- Had encephalitis due to the diphtheria, tetanus or pertussis vaccine (Encephalitis Due to Diphtheria, Tetanus or Pertussis Vaccine Value Set).

Numerator 3: Immunization Status: Zoster

Persons who meet either of the following criteria:

- Received two doses of the herpes zoster recombinant vaccine (CVX code 187; Herpes Zoster Recombinant Vaccine Procedure Value Set) at least 28 days apart, on October ~~1~~20, 2017, through the end of the measurement period.
- Had anaphylaxis due to the herpes zoster vaccine (Anaphylaxis Due to Herpes Zoster Vaccine Value Set) any time before or during the measurement period.

Numerator 4: Immunization Status: Pneumococcal

Persons who meet either of the following criteria:

- Received at least one dose of adult pneumococcal vaccine (Adult Pneumococcal Immunization Value Set; Adult Pneumococcal Vaccine Procedure Value Set) on or after their 19th birthday***,*** any time before or during the measurement period.
- Had anaphylaxis due to the pneumococcal vaccine (SNOMEDCT code 471141000124102) any time before or during the measurement period.

Numerator 5: Immunization Status: Hepatitis B~~.~~

Persons who meet any of the following criteria:

- Received at least three doses of the childhood Hepatitis B vaccine (Hepatitis B Immunization Value Set; Hepatitis B Vaccine Procedure Value Set) with different dates of service on or before their 19th birthday.
  - One of the three vaccinations can be a newborn hepatitis B vaccination (ICD-10-PCS code 3E0234Z) during the 8-day period that begins on the date of birth and ends 7 days after the date of birth.
- Received Hepatitis B vaccine series on or after their 19th birthday, before or during the measurement period, including either of the following:
  - At least two doses of the recommended two-dose adult Hepatitis B vaccine (CVX code 189; Adult Hepatitis B Vaccine Procedure (2 dose) Value Set) administered at least 28 days apart; ***or***
  - At least three doses of any other recommended adult Hepatitis B vaccine (Adult Hepatitis B Immunization (3 dose) Value Set; Adult Hepatitis B Vaccine Procedure (3 dose) Value Set) administered on different days of service.
- Had a hepatitis B surface antigen, hepatitis B surface antibody or total antibody to hepatitis B core antigen test with a finding of immunity any

time before or during the measurement period, including either of the following:

- A test (Hepatitis B Tests With Threshold of 10 Value Set) with a result greater than 10 mIU/mL.
- A test (Hepatitis B Prevaccination Tests Value Set) with a finding of immunity (Hepatitis B Immunity Finding Value Set).

- History of hepatitis B illness (Hepatitis B Value Set*) any time before or during the measurement period.
- Had anaphylaxis due to the hepatitis B vaccine (SNOMED CT code 428321000124101) any time before or during the measurement period.

Numerator 6: Immunization Status: COVID-19

Persons who meet either of the following criteria:

- Received at least one dose of a COVID-19 vaccine (Adult COVID19 Immunization Value Set; Adult COVID19 Procedure Value Set) on or between July 1 of the year prior to the measurement period through June 30 of the measurement period.
- Had anaphylaxis due to the COVID-19 vaccine (SNOMED CT code 914587451000119107) any time before or during the measurement period.

Coding Guidance

*Do not include laboratory claims (claims with POS code 81).

Summary of changes

~~Removed the definitions of participation and participation period. These definitions have been integrated into the measure where applicable.~~

- Added the COVID-19 indicator. This indicator is in first year status for measurement year 2026.
- Removed the SSoR data elements from the data elements tables.
- Added instructions on allowable adjustments to the race and ethnicity stratifications.

Data element tables

Organizations that submit data to NCQA must provide the following data elements in a specified file.

~~***Table AIS-E-A:-1/2/3 Data Elements for Adult Immunization Status***~~

~~Metric~~	~~Age~~	~~Data Element~~	~~Reporting Instructions~~
~~Influenza~~	~~19-64~~	~~InitialPopulation~~	~~For each Metric and Stratificatio~~
~~TdTdap~~	~~65+~~	~~ExclusionsByEHR~~	~~For each Metric and Stratificatio~~
~~COVID-19~~	~~Total~~	~~ExclusionsByCaseManagement~~	~~For each Metric and Stratificatio~~
		~~ExclusionsByHIERegistry~~	~~For each Metric and Stratificatio~~
~~Zoster~~	~~50-64~~	~~ExclusionsByAdmin~~	~~For each Metric and Stratificatio~~
	~~65+~~	~~Exclusions~~	~~(Sum over SSoRs)~~

	~~Total~~	~~Denominator~~	~~For each Metric and Stratification~~
		~~NumeratorByEHR~~	~~For each Metric and Stratification~~
~~Pneumococcal~~	~~65+~~	~~NumeratorByCaseManagement~~	~~For each Metric and Stratification~~
		~~NumeratorByHIERegistry~~	~~For each Metric and Stratification~~
~~HepatitisB~~	~~19-30~~	~~NumeratorByAdmin~~	~~For each Metric and Stratification~~
	~~31-59~~	~~Numerator~~	~~(Sum over SSoRs)~~
	~~Total~~	~~Rate~~	~~(Percent)~~

Table AIS-E-A:-1/2/3 Data Elements for Adult Immunization Status

Metric	Age	Data Element	Reporting Instructions
Influenza	19-64	InitialPopulation	For each Metric and Stratification
TdTdap	65+	Exclusions	For each Metric and Stratification
COVID-19	Total	Denominator	For each Metric and Stratification
		Numerator	For each Metric and Stratification
Zoster	50-64	~~RateNumerator~~	(Percent)~~For each Metric and Stratification~~
	65+	~~Rate~~	~~(Percent)~~
	Total		
Pneumococcal	65+		
HepatitisB	19-30		

Metric	Age	Data Element	Reporting Instructions
	31-59		
	Total		

Table AIS-E-B-1/2/3: Data Elements for Adult Immunization Status: Stratifications by Race

Metric	Race	Data Element	Reporting Instructions
Influenza	AmericanIndianOrAlaskaNative	InitialPopulation	For each Metric and Stratification
TdTdap	Asian	Exclusions	For each Metric and Stratification
Zoster	BlackOrAfricanAmerican	Denominator	For each Metric and Stratification
Pneumococcal	NativeHawaiianOrOtherPacificIslander	Numerator	For each Metric and Stratification
HepatitisB	White	Rate	(Percent)
COVID-19	SomeOtherRace		

TwoOrMoreRaces
AskedButNoAnswer
Unknown

Table AIS-E-C-1/2/3: Data Elements for Adult Immunization Status: Stratifications by Ethnicity

Metric	Ethnicity	Data Element	Reporting Instructions
Influenza	HispanicOrLatino	InitialPopulation	For each Metric and Stratification
TdTdap	NotHispanicOrLatino	Exclusions	For each Metric and Stratification
Zoster	AskedButNoAnswer*	Denominator	For each Metric and Stratification
Pneumococcal	Unknown	Numerator	For each Metric and Stratification
HepatitisB		Rate	(Percent)
COVID-19			

Adult Immunization Status
Measure Workup

Topic Overview

Importance

Routine vaccination against influenza, tetanus, diphtheria and pertussis, hepatitis B, herpes zoster, pneumococcal and COVID-19 disease are recommended for adults to prevent serious disease. The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) publishes vaccination recommendations for adults, including ages for receiving vaccines, number of doses, timing between doses and contraindications.

Health Importance and Prevalence

Influenza vaccine

The influenza vaccine protects against influenza, a serious disease that can lead to hospitalization and death (CDC, 2024a). Although anyone can get the flu, people 65 and older, pregnant people, young children and those with chronic conditions are at higher risk of developing serious complications (CDC, 2024a).

The impact of influenza is variable because influenza seasons can vary in severity. The CDC estimates that since 2010, yearly influenza cases have ranged from 9.3–41 million; influenza-related hospitalizations, from 100,000–710,000; and influenza-related deaths, from 4,900–51,000 (CDC, 2024b). Estimates from October 2022–April 2023 ranged from 26–50 million influenza cases, 290,000–670,000 influenza-related hospitalizations; and 17,000–98,000 influenza-related deaths (CDC, 2023c).

Deaths associated with influenza are typically higher in older adults. In an analysis based on the 2022–2023 flu seasons, 72% of deaths from influenza were among adults 65 and older (CDC, 2023a).

Td/Tdap vaccine

Twelve combination vaccines licensed in the U.S. protect against tetanus and diphtheria; 9 also protect against pertussis (CDC, 2024c). Tetanus results in painful muscle spasms that can cause fractures, difficulty breathing, arrhythmia and death (CDC, 2024d).

Diphtheria can present as a respiratory or cutaneous disease (CDC, 2024e). Complications include myocarditis, which can lead to heart failure, and neuritis, which may temporarily paralyze motor nerves. Death occurs in 5%–10% of cases (CDC, 2024e).

Pertussis, also known as whooping cough, is a respiratory infection characterized by a prolonged cough; it is highly communicable, transmitted via respiratory droplets from coughing or sneezing (CDC, 2024f).

There were 264 tetanus cases and 19 deaths reported from 2009–2017; only 18 of cases were among adults who had been fully vaccinated (CDC, 2024g). Adults 20 or older make up 87% of reported cases (CDC, 2024g).

Disease is more prevalent in other countries: From 2019–2020, over 33,123 cases of diphtheria were reported to the World Health Organization. In 2022,

5,856 cases were reported. Though the number of cases has decreased, there are likely many more unreported cases (WHO, n.d.).

Pertussis is much more prevalent today than tetanus and diphtheria, even though vaccines offer protection against the disease. Before the vaccine was introduced in the 1940s, there were about 200,000 cases of pertussis annually (CDC, 2024h). Since widespread use of the vaccine, pertussis cases decreased by 75% (CDC, 2024h), but have been increasing since the 1980s, with 307 deaths between 2000 and 2017 (CDC, 2024h). Pertussis is usually milder in children, adolescents and adults than in infants and young children who may not be fully immunized. Older adults are often the source of infection for infants and children (CDC, 2024h).

Herpes zoster vaccine

The herpes zoster vaccine protects against herpes zoster, commonly known as shingles, a painful skin rash caused by reactivation of the varicella zoster virus (CDC, 2024i). After a person recovers from primary infection of varicella (chickenpox), the virus stays inactive in the body and can reactivate years later. Most people typically only have one episode of herpes zoster, but second or third episodes are possible. People with compromised immune systems are at higher risk of developing herpes zoster (CDC, 2024i).

The most common complication of herpes zoster is post-herpetic neuralgia (PHN) (CDC, 2023d), severe, debilitating pain at the site of the rash that has no treatment or cure. Herpes zoster can also lead to serious complications of the eye, pneumonia, hearing problems, encephalitis or death (CDC, 2024j). In the U.S., there are 1 million new cases of herpes zoster each year; 1 of every 3 people will be diagnosed with herpes zoster in their lifetime (CDC, 2024i).

A person’s risk for developing herpes zoster increases sharply after age 50 (CDC, 2024i). As people age, they are more likely to develop PHN; it rarely occurs in people under 40. (CDC, 2024i).

Between 1% and 4% of adults with herpes zoster are hospitalized for complications, and an estimated 96 deaths each year are directly caused by the virus (CDC, 2024i). The vaccine can reduce the risk of developing herpes zoster and PHN.

Pneumococcal vaccine

Vaccines protect against pneumococcal disease, which is a common cause of illness and death in older adults and in persons with certain underlying conditions. The major clinical syndromes of pneumococcal disease include pneumonia, bacteremia and meningitis, with pneumonia being the most common (CDC, 2024k). Pneumonia symptoms generally include fever, chills, pleuritic chest pain, cough with sputum, dyspnea, tachypnea, hypoxia tachycardia, malaise and weakness (CDC, 2024k).

There are an estimated 150,000 pneumonia-related hospitalizations in the U.S. each year, and a 5%–7% mortality rate, although it may be higher among older adults (CDC, 2024k). Bacteremia, a blood infection, is another complication of pneumococcal disease (CDC, 2024k). Bacteremia has a 20% mortality rate among all adults, and up to a 60% mortality rate among older adults (CDC, 2024k).

Pneumococcal disease causes about 2,000 cases of meningitis each year (CDC, 2024l). Meningitis symptoms may include headache, lethargy, vomiting, irritability, fever, nuchal rigidity, cranial nerve signs, seizures and coma. Meningitis has a 22% mortality rate among adults (CDC, 2024k).

Hepatitis B vaccine

The hepatitis B vaccine protects against hepatitis B, a liver disease that causes illness in varying degrees of severity (CDC, 2023b). Acute hepatitis B is characterized by fever, fatigue, loss of appetite, jaundice and diffuse body pains (CDC, 2023b). Those with chronic hepatitis B are often asymptomatic, with threats of cirrhosis, liver cancer and death (CDC, 2023b).

In 2020, there were 2,157 reported cases of acute hepatitis B, but since many people may be asymptomatic, this number was estimated to be about 20,000 acute cases and 880,000 chronic cases (CDC, 2023c). Also in 2020, 1,753 hepatitis-B related deaths were reported, but this number is believed to be underestimated due to underreporting (CDC, 2023c). There were about 13,300 acute cases in 2021. There has been a decrease in reported cases, which is thought to be due to the decrease in patients seeking health care post-COVID-19 pandemic (CDC, 2023d). Adults 30–59 years made up 73% of acute cases, and adults 30 and older made up 89% of chronic cases in 2021 (CDC, 2023d).

COVID-19

COVID-19 infection left untreated can lead to severe illness and death (CDC, 2024m). Infection with the disease is characterized by symptoms related to the nose, throat, lungs, and muscles (CDC, 2024n). COVID-19 is spread person-to-person by droplets made when those infected with COVID-19 come into close contact with others (CDC, 2024o). Adults over age 65 and people with underlying medical conditions or comorbidities are at highest risk (CDC, 2024p). For the 2024-2025 COVID-19 season thus far (October-December), people 65 years of age and older had a cumulative hospitalization rate of 93.7 per 100,000 people while those 50-64 years of age had a cumulative hospitalization rate of 17.7 per 100,000 people and those 18-49 had a cumulative rate of 5.6 per 100,000 people (CDC, 2024q). Further, trends show people 75 years and older have higher rates of death compared to those younger than 75 years of age (CDC, 2024q).

The CDC estimates there have been about 6.7 million COVID-19-related hospitalizations and 1.1 million COVID-19-related deaths since the onset of the pandemic (Panagiotakopoulos et al., 2024). At the end of 2022, it was estimated that COVID-19 vaccines prevented 18.5 million hospitalizations and 3.2 million deaths in the United States (Regan et al., 2023).

Financial Importance and Cost-Effectiveness

Administration of the influenza, Tdap/Td, herpes zoster, pneumococcal and hepatitis B vaccines can decrease overall health care costs by preventing severe disease and hospitalization.

Influenza vaccine

Influenza is an important cause of outpatient medical visits and worker absenteeism among adults. The average annual burden of seasonal influenza is estimated to include approximately 9.4–41 million illnesses, 100,000–710,000 hospitalizations and 4,900–51,000 deaths (CDC, 2024b). A 2023 study estimated that the incremental cost-effectiveness ratio of the influenza vaccine was less than $95,000 per quality-adjusted life year (QALY) for all age and risk groups except for non-high-risk adults 18–49 (Kim DeLuca, 2023).

Tdap/Td vaccine

Administering the Tdap vaccine to adults helps prevent the spread of pertussis to infants and hospitalizations. Because of a rise in pertussis over decades in the U.S., studies have evaluated the cost-effectiveness of providing Tdap immunizations to adults.

One study found that that incremental cost-effectiveness ratio of vaccinating adults 19–85 with one Tdap dose ranged from $248,000–$900,000 per QALY (Cho et al., 2020). A systematic review found that of 11 studies evaluating cost-effectiveness of adult Tdap vaccination programs across several countries, 6 were considered cost-effective and 2 were considered cost-saving (Fernandes et al., 2019).

Herpes zoster vaccine

In 2015, a systematic literature review estimated that total medical costs in the U.S. from zoster were $2.4B (Harvey et al., 2020). A CDC study estimated that vaccination with the recombinant zoster vaccine, compared with no vaccination, cost $31,000 per QALY, on average, for immunocompetent adults 50 and older. The number of people who need to be vaccinated with the recombinant zoster vaccine to prevent one case of zoster ranged from 11–17, and to prevent one case of PHN, ranged from 70–187 (Dooling et al., 2018). A study of the cost-effectiveness of the live herpes zoster vaccine among people 50 and older found that vaccination at age 60 would prevent the most cases (103,603 cases per 1 million people) (Curran et al., 2018).

Pneumococcal vaccine

Pneumococcal infections result in significant health care costs each year. Adult patients with pneumonia require hospitalization in nearly 10% of cases. (Isturiz et al., 2021). The annual aggregate burden for the fee-for-service Medicare population is approximately $13B (Brown et al., 2018).

Pneumococcal vaccines have been shown to be highly effective in preventing invasive pneumococcal disease. When comparing costs, outcomes and QALY, immunization with recommended pneumococcal vaccines was found to be economically efficient. In one study comparing all adults 65 and older, cost-effectiveness estimates ranged from $209,000–$544,000 per QALY gained for use of PCV20 alone, and from $531,000–$676,000 per QALY gained for use of PCV15 in series with PPSV23 (Smith et al., 2021).

Hepatitis B vaccine

With over 800,000 cases of chronic hepatitis B, vaccination against this disease will reduce burden and preserve medical resources. A National Center for HIV, Hepatitis, STD and TB Prevention Epidemiologic and Economic Modeling Agreements study showed that universal vaccination against hepatitis B with the 3-dose series in adults reduces acute cases by about 25% and about 23% of hepatitis-B related deaths. This is approximately $152,722 per QALY gained (CDC, 2024r). Results were similar with the 2-dose strategy. The study also showed cost-effectiveness of $262,857 and 135 QALYs per 100,000 adults screened with a 1-dose strategy (CDC, 2024r).

COVID-19

Administration of the COVID-19 vaccine can decrease overall health care costs by preventing severe disease and hospitalization. For the 2023–2024 formulation of the updated COVID-19 vaccine, vaccination was shown to be cost-effective. For adults 18–49 years of age, the incremental cost-effectiveness ratio for the updated COVID-19 vaccine was estimated to be $115,599 per QALY. For adults 50–64 years of age, the incremental cost-effectiveness ratio of the updated vaccine was estimated to be $25,787 per QALY. For adults 65 years and older, a dose of the vaccine was found to be cost saving (Regan et al., 2023). For the 2024–2025 formulation, preliminary estimated of incremental cost-effectiveness ratios provide a societal perspective of $212,225 per QALY for 18–49 years of age, $113,248 per QALY for 50–64 years of age and $23,308 per QALY for people 65 and older (University of Michigan, 2024).

Supporting Evidence

Influenza vaccine

ACIP recommends routine annual influenza vaccination for all people 6 months of age and older (Grohskopf et al., 2023). For people 19 years and older, any age-appropriate inactivated influenza vaccine (IIV) formulation or recombinant influenza vaccine (RIV) formulation are acceptable options. Vaccination should occur before the onset of influenza activity in the community, ideally by the end of October, although vaccination efforts should continue throughout flu season, into February and March (Grohskopf et al., 2023). People who have a history of severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine should not receive the influenza vaccine (CDC, 2024a).

Tdap/Td vaccine

ACIP recommends that, regardless of the interval since the last tetanus or diphtheria toxoid–containing vaccine, adults 19 and older who have never received a dose of Tdap should receive one dose. To ensure continued protection against tetanus and diphtheria, booster doses of either Td or Tdap should be administered every 10 years throughout life (Havers et al., 2020).

Pregnant women should receive a dose of Tdap during each pregnancy, irrespective of a history of receiving Tdap. Tdap should be administered at 27–36 weeks gestation, preferably during the earlier part of this period, although it may be administered at any time during pregnancy.

For women not previously vaccinated with Tdap, if not administered during pregnancy, it should be administered immediately postpartum (Havers et al., 2020). People who have a history of severe allergic reaction (e.g., anaphylaxis) to any component of the Tdap or Td vaccine should not receive it. Tdap is contraindicated for adults with a history of encephalopathy (e.g., coma or prolonged seizures) not attributable to an identifiable cause within 7 days of administration of a vaccine with pertussis components (CDC, 2024s).

Herpes zoster vaccine

One type of zoster vaccine is currently recommended for older adults: the recombinant zoster vaccine (RZV). In October 2017, the FDA approved the RZV for adults 50 and older. In January 2018, ACIP published a guideline recommending RZV for immunocompetent adults 50 and older, irrespective of prior receipt of varicella vaccine or ZVL (Dooling et al., 2018). In July 2021, the FDA expanded the indication to include immunodeficient or immunosuppressed adults. In October 2021, ACIP published a guideline recommending two RZV doses for prevention of herpes zoster and related complications in immunodeficient or immunosuppressed adults ≥19 years (Anderson et al., 2022).

Pneumococcal vaccine

In 2021, two new pneumococcal vaccines were licensed for use in the U.S.: the 15-valent pneumococcal conjugate vaccine (PCV15) and the 20-valent pneumococcal conjugate vaccine (PCV20). Both include additional serotypes and therefore provide better coverage against pneumococcal disease than the 13-valent pneumococcal conjugate vaccine (PCV13) or 23-valent pneumococcal polysaccharide vaccine (PPSV23). In October 2021, ACIP approved new recommendations for pneumococcal disease, stating that a dose of the newer pneumococcal conjugate vaccine (either PCV20 or PCV15) is beneficial for immunocompetent adults 65 and older, and for adults 19–64 with certain underlying medical conditions or risk factors, given that both populations account for over 90% of invasive pneumococcal disease cases in

the U.S.[1] (Kobayashi et al., 2022).[2] The rationale for this change is the increasing burden of pneumococcal disease in U.S. adults.

Hepatitis B vaccine

ACIP recommends universal HepB vaccination for adults 19–59 years and adults 60 years and older with risk factors for HepB. Adults 60 years and older without known risk factors for HepB may also receive HepB vaccines (Weng et al. 2022). ACIP also states that persons who have completed a HepB vaccination series at any point, or who have a history of HBV infection, should not receive additional HepB vaccination, although there is no evidence that receiving additional vaccine doses is harmful (Weng et al., 2022).

In settings where the patient population has a high rate of previous HBV infection, prevaccination testing, which may be performed concomitantly with administration of the first dose of vaccine, might reduce costs by avoiding complete vaccination of persons who are already immune.

There are five approved HepB vaccines for adults 19–59; the recommended dosage and schedule varies (Murthy et al., 2024):

- Two-dose series applies when 2 doses of Heplisav-B are used at least 4 weeks apart.
- Three-dose series of Engerix-B, PreHevbrio or RecombivaxHB at 0, 1 and 6 months (minimum intervals: dose 1 to dose 2, 4 weeks; dose 2 to dose 3, 8 weeks; dose 1 to dose 3, 16 weeks).
- Three-dose series of HepA–HepB (Twinrix) standard schedule at 0, 1 and 6 months (minimum intervals: dose 1 to dose 2, 4 weeks; dose 2 to dose 3, 5 months).
- Four-dose series HepA–HepB (Twinrix) accelerated schedule of 3 doses at 0, 7 and 21–30 days, followed by a booster dose at 12 months.

Special situations: Patients on dialysis should complete a 3- or 4-dose series:

- Three-dose series of RecombivaxHB at 0, 1 and 6 months.
- Four-dose series of Engerix-B at 0, 1, 2 and 6 months.

COVID-19

In 2023, ACIP began recommending annual COVID-19 vaccination for all people 6 months of age and older. In October 2023, ACIP recommended vaccination with the updated 2023–2024 formulation of the COVID-19 vaccine for all persons 6 months and older (Regan et al., 2023). In April 2024, ACIP recommended that all people 65 years and older receive additional dose of the updated 2023–2024 COVID-19 vaccine (Panagiotakopoulos et al., 2024a). In June 2024, ACIP recommended the updated 2024–2025 COVID-19 vaccine for all people 6 months of age or older, whether or not they had previously been vaccinated with a COVID-19 vaccine (Panagiotakopoulos et al., 2024b). In October 2024, ACIP recommended that all persons 65 and older, and immunocompromised persons 6 months–64 years receive a second dose of the COVID-19 vaccine (Roper et al., 2024).

[1] Includes alcoholism, chronic heart/liver/lung disease, cigarette smoking, diabetes mellitus, chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease or other hemoglobinopathies, CSF leak or cochlear implant.

[2] ACIP includes additional guidance on dosing and timing based on receipt of previous vaccinations at: https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html#note-pneumo

Gaps in Care

Healthy People 2030, which provides science-based, 10-year national objectives for improving the health of all Americans, has established goals for routinely recommended adult vaccinations (U.S. Department of Health and Human Services 2022):

- Reduce the rate of deaths with hepatitis B as a cause.
- Reduce the rate of acute hepatitis B.
- Reduce the rate of hepatitis A.
- Increase the proportion of adults aged 19 years or older who get recommended vaccines.
- Increase the proportion of people who get the flu vaccine every year.

Estimates of national vaccination coverage are available through the National Health Interview Survey (NHIS), in which a sample of adults self-report receipt of vaccines. Data from 2021 indicate that:

- 50.3% of adults 19 and older reported receiving the influenza vaccine during the 2020–2021 flu season.
- 34% of adults 19 and older reported receiving the hepatitis B vaccination (Hung et al., 2023).
- 41.1% of adults 60 and older and 32.6% of adults 50 and older reported receiving the herpes zoster vaccine.
- 65.8% of adults 65 and older reported receiving one or more doses of any type of pneumococcal vaccine (Hung et al., 2023).

NHIS data from 2019 found that 62.9% of adults reported receiving any tetanus toxoid-containing vaccination during the past 10 years, and 30.1% reported receiving the Tdap vaccine in the past 10 years (Jatlaoui et al., 2022).

As of May 2023, 81% of the U.S. population received at least one dose of any COVID-19 vaccine (USA Facts, 2023). More recent estimates of national vaccination coverage, available through the National Center for Immunization and Respiratory Diseases, show that as of December 14, 2024, 20.9% of adults had received an updated 2024–2025 COVID-19 vaccine (CDC, 2024u).

Barriers to adult vaccination in general include provider and patient lack of knowledge and awareness of the importance of vaccines, missed opportunities for vaccination and operational and systemic barriers (e.g., cost, lack of access to immunization records) (Chadi et al., 2023; Eiden et al., 2022; Kilich et al., 2020; Kolobova et al., 2022; Wang et al., 2023). Having health insurance coverage is also associated with higher vaccination coverage (Chadi et al., 2023; Kolobova et al., 2022). There are some unique barriers to COVID-19 vaccination. For example, one study found that one of the most quoted reasons for hesitancy toward COVID-19 vaccination is due to how fast the vaccines were developed and subsequently brought to market (Nawas et al., 2023). The same article also found that hesitancy is also related to a lack of understanding regarding the ingredients of the COVID-19 vaccines and how the vaccine works (Nawas et al., 2023). Some articles cited politically motived skepticism toward the COVID-19 vaccine as a barrier to vaccine uptake (Kuehn et al., 2022; Nawas et al., 2023).

There are evidence-based practices for improving adult vaccination coverage. Health care providers should routinely assess patients' vaccination history, offer needed vaccines to adults or refer patients to a provider who can administer the vaccine and document vaccinations received by their patients in an immunization information system (Lu et al., 2021). In addition, providing easy access and convenience for adult vaccination in and outside the health care setting is important for increasing equitable adult vaccine uptake (Kaiser Family Foundation 2020). Influenza vaccines are commonly offered at retail pharmacies; offering other types of adult vaccines at retail pharmacies could potentially increase uptake (Murray et al., 2021).

For COVID-19 vaccination specifically, a major strategy was educating patients on vaccine safety and efficacy (Nawas et al., 2023). Sharing immunization information between providers, health systems, public health agencies and patients is required to increase vaccination coverage and ensure high-quality data to inform clinical and public health interventions (Scharf et al., 2021). Leveraging health information technology, such as immunization information systems, is important for targeting and monitoring immunization program activities and providing clinical decision support at the point of care (Scharf et al., 2021).

Health Care Disparities

There are racial and ethnic disparities in adult vaccination coverage. The 2021 NHIS survey found that White adults 65 and older had higher pneumococcal vaccination coverage rates (70.1%) than Black (54.8%), Hispanic (46.2%) and Asian (55.8%) adults 65 and older (Hung et al., 2023). Further, White adults 50 and older reported higher herpes zoster vaccination coverage rates (36.6%) than Black (18.9%), Hispanic (20.7%) and Asian (33%) adults 50 and over. Similar trends were seen for adults 60 and older who reported receiving a herpes zoster vaccine (Hung et al., 2023). The 2021 NHIS survey also found that White 19–49-year-olds were more likely to have received the HepB vaccine (48%) than Black (34%) and Hispanic (38%) adults, but less likely than Asian adults (54%) (Hung et al., 2023). White 30–59-year-olds were more likely to have received the HepB vaccine (38%) than Black (31%) and Hispanic (32%) adults, but less likely than Asian adults (47%) (Hung et al., 2023). The 2018 NHIS survey found that White adults for both any tetanus vaccination and Tdap-specific vaccination reported higher rates of coverage (67.3% and 33.5%, respectively) compared to Black (51.2% and 21.3%), Hispanic (55.9% and 23.1%) and Asian (55.5% and 29.1%) adults (Jatlaoui et al., 2022).

Vaccination coverage also varies by age for influenza. In the 2023–2024 influenza season the overall vaccination rate among adults was 45%; 33% of adults 18–49 reported receiving the flu vaccine, compared with 46% of adults 50–64 and 70% of adults 65 and older (CDC, 2024t); however, compared to the 2021–2022 influenza season, adult influenza vaccination coverage was lower for adults 65 and older than for adults 19–64 in the 2022–2023 season (CDC, 2024t).

There are also geographical and racial-ethnic disparities in adult HepB infection rates. In 2021, states in the Appalachian region had higher rates of acute hepatitis B than the nationwide average (CDC, 2023d). Non-Hispanic Black adults had the highest rates of acute hepatitis B in 2021. The rate of newly reported chronic hepatitis B cases was 14 times higher among non-Hispanic Asian/Pacific Islanders in 2021 (CDC, 2023d).

CDC's National Immunization Survey found that White adults had higher vaccination coverage (25.6%) than all other race and ethnicity groups for the updated 2023–2024 COVID-19 vaccine, with the lowest coverage being among American Indian/Alaska Native (15.6%) and Hispanic (16.2%) adults (CDC, 2024u). The National Immunization Survey also found disparities in receipt of the 2023–2024 COVID-19 vaccination by geography and insurance coverage. Adult vaccination coverage was lower in rural areas, at 17.9%, and highest in urban areas, at 24.0% (CDC, 2024u). Other studies support this; one states that living in a rural area is associated with higher COVID-19 incidence and mortality because rural residents tend to be 65 and older, uninsured, have underlying conditions and live further from health care facilities (Ullrich & Mueller, 2023).

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Guidelines and Recommendations

Table 1: Routine Adult Immunizations: Recommendations from the CDC ACIP*

Vaccine Recommendation Date & Title	ACIP Recommendation	Contraindications (CDC 2024)
Influenza (Grohskopf et al. 2023)	ACIP recommends routine annual influenza vaccination for all people 6 months and older. Vaccination should occur before the onset of influenza activity in the community, ideally by the end of October; however, vaccination efforts should continue throughout flu season into February and March.	Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component
Td/Tdap (Havers et al. 2020)	ACIP recommends that regardless of the interval since the last tetanus or diphtheria toxoid–containing vaccine, persons 19 and older who have never received a dose of Tdap should receive one dose. To ensure continued protection against tetanus and diphtheria, booster doses of either Td or Tdap should be administered every 10 years throughout life. Pregnant women should receive a dose of Tdap during each pregnancy, irrespective of a history of receiving Tdap. Tdap should be administered at 27–36 weeks gestation, preferably during the earlier part of this period, although it may be administered any time during pregnancy.	Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component Tdap: Encephalopathy (e.g., coma, decreased level of consciousness, or prolonged seizures) not attributable to another identifiable cause within seven days of administration of a previous dose of a vaccine with pertussis components
Zoster (Dooling et al., 2018; Anderson et al. 2022)	ACIP recommends the two-dose recombinant zoster vaccine (RZV) for use in immunocompetent adults 50 and older, irrespective of prior receipt of varicella vaccine or zoster vaccine live (ZVL). This recommendation was expanded in 2022 to include adults 19 and older who are, or will be, immunodeficient or immunosuppressed for prevention of herpes zoster.	Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component
Pneumococcal (Kobayashi et al. 2023)	ACIP recommends that adults 19-64 with certain chronic or immunocompromising conditions,[2] and adults 65 and older who have not previously received a pneumococcal conjugate vaccine, or whose previous vaccination history is unknown, receive a pneumococcal conjugate vaccine (either PCV20 or PCV15). If PCV15 is used, this should be followed by a dose of pneumococcal polysaccharide vaccine (PPSV23) at least 1 year later. A minimum interval of 8 weeks can be considered for adults with underlying conditions. ACIP includes additional guidance on dosing and timing based on receipt of previous vaccinations at: https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html#note-pneumo	PCV13, PCV15, PCV20: Severe allergic reaction (e.g., anaphylaxis) after a previous dose to any vaccine containing diphtheria toxoid or to any component of these vaccines. PPSV23: Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component
Hepatitis B (Weng et al. 2022)	ACIP recommends that adults 19-59 and 60 years and older with risk factors for hepatitis B should receive HepB vaccines, and that adults 60 years and older without known risk factors for hepatitis B may receive HepB vaccines.	Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component. Hypersensitivity to yeast

Vaccine Recommendation Date & Title	ACIP Recommendation	Contraindications (CDC 2024)
COVID-19 (Panagiotakopoulos, et al. 2024)	ACIP recommends that all persons 6 months of age and older receive the 2024-2025 COVID-19 vaccine.	Severe allergic reaction (e.g., anaphylaxis) after a previous dose to a component of an mRNA COVID-19 vaccine.

**ACIP is chartered as a federal advisory committee to provide expert external advice and guidance to the director of CDC on use of vaccines and related agents for the control of vaccine-preventable diseases in the civilian population of the United States. Recommendations for routine use of vaccines in children and adolescents are harmonized, to the greatest extent possible, with recommendations made by the American Academy of Pediatrics, the American Academy of Family Physicians (AAFP) and the American College of Obstetricians and Gynecologists. Recommendations for routine use of vaccines in adults are reviewed and approved by the American College of Physicians, AAFP, the American College of Obstetricians and Gynecologists and the American College of Nurse-Midwives. ACIP recommendations adopted by the CDC director become agency guidelines on the date published in the Morbidity and Mortality Weekly Report (MMWR).*

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HEDIS Health Plan Performance Rates: Adult Immunization Status (AIS-E)

The data included below for MY 2021–2022 are based on rates reported by the following product lines and age ranges.

Indicator	Commercial, Medicaid	Medicare
Influenza	19-65	66 and older
Td/Tdap	19-65	66 and older
Zoster	50-64	66 and older
Pneumonia	NA	66 and older

For MY 2023 in the data below, all product lines reported each indicator and stratified by age.

Indicator	Commercial, Medicaid, Medicare		
Influenza	19-65	66 and older	Total
Td/Tdap	19-65	66 and older	Total
Zoster	50-64	66 and older	Total
Pneumonia	66 and older		

Influenza Immunization Indicator

Table 1. HEDIS AIS-E Influenza Indicator Performance—Commercial Plans, Ages 19–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	414 (98.6)	23.5	9.8	10.9	16.4	22.5	30.1	35.8
2022	417	388 (93.1)	22.7	9.3	11.5	15.8	21.6	28.9	34.6
2021	419	312 (74.5)	23.1	9.6	12.4	15.8	21.5	28.9	36.4

*For 2023 the average denominator across plans was 166,232 individuals, with a standard deviation of 295,594.

Table 2. HEDIS AIS-E Influenza Indicator Performance—Commercial Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	401 (95.5)	41.6	14.7	21.5	31.5	41.9	52.9	60.3

*For 2023 the average denominator across plans was 6,146 individuals, with a standard deviation of 10,548.

Table 3. HEDIS AIS-E Influenza Indicator Performance—Commercial Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	414 (98.6)	24.2	9.9	11.6	17.4	23.3	31.0	37.2

*For 2023 the average denominator across plans was 172,185 individuals, with a standard deviation of 304,742.

Table 4. HEDIS AIS-E Influenza Indicator Performance—Medicaid Plans, Ages 19–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	238 (85.6)	15.4	7.1	7.4	10.8	14.8	18.3	24.6
2022	272	162 (59.6)	14.2	6.5	6.5	9.5	13.6	17.8	21.1
2021	270	122 (45.2)	16.4	7.1	8.0	11.5	15.8	21.2	24.4

*For 2023 the average denominator across plans was 97,632 individuals, with a standard deviation of 137,791.

Table 5. HEDIS AIS-E Influenza Indicator Performance—Medicaid Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	182 (65.5)	33.9	12.7	16.7	25.5	35.2	43.2	50.1

*For 2023 the average denominator across plans was 5,515 individuals, with a standard deviation of 8,987.

Table 6. HEDIS AIS-E Influenza Indicator Performance—Medicaid Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	239 (86.0)	16.2	7.9	7.4	11.0	15.5	19.8	26.4

*For 2023 the average denominator across plans was 101,424 individuals, with a standard deviation of 143,210.

Table 7. HEDIS AIS-E Influenza Indicator Performance—Medicare Plans, Ages 19–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	691 (90.9)	30.6	16.4	10.7	18.8	28.8	41.4	52.6

*For 2023 the average denominator across plans was 7,499 individuals, with a standard deviation of 22,019.

Table 8. HEDIS AIS-E Influenza Indicator Performance—Medicare Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	713 (93.8)	37.0	20.4	10.4	22.5	35.3	53.1	65.6
2022	750	477 (63.6)	34.4	19.7	8.7	19.7	31.0	51.0	62.1
2021	714	317 (44.4)	33.0	20.1	6.1	19.7	30.4	43.7	64.7

*For 2023 the average denominator across plans was 32,977 individuals, with a standard deviation of 127,969.

Table 9. HEDIS AIS-E Influenza Indicator Performance—Medicare Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	723 (95.1)	35.4	19.8	9.4	21.5	33.1	49.7	63.7

*For 2023 the average denominator across plans was 39,689 individuals, with a standard deviation of 145,356.

Td/Tdap Immunization Indicator

Table 10. HEDIS AIS-E Td/Tdap Indicator Performance—Commercial Plans, Ages 19–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	414 (98.6)	39.9	14.1	23.1	29.5	38.4	50.1	58.2
2022	417	388 (93.1)	36.3	13.8	19.9	26.4	34.2	45.9	54.7
2021	419	312 (74.5)	32.5	13.7	18.0	23.2	29.2	39.3	52.9

*For 2023 the average denominator across plans was 166,232 individuals, with a standard deviation of 295,594.

Table 11. HEDIS AIS-E Td/Tdap Indicator Performance—Commercial Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	401 (95.5)	41.3	14.2	24.0	31.9	39.8	50.3	60.0

*For 2023 the average denominator across plans was 6,146 individuals, with a standard deviation of 10,548.

Table 12. HEDIS AIS-E Td/Tdap Indicator Performance—Commercial Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	414 (98.6)	40.0	14.1	23.4	29.8	38.3	50.2	58.3

*For 2023 the average denominator across plans was 172,185 individuals, with a standard deviation of 304,742.

Table 13. HEDIS AIS-E Td/Tdap Indicator Performance—Medicaid Plans, Ages 19–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	238 (85.6)	40.4	14.5	22.1	30.6	38.4	50.7	60.0
2022	272	162 (59.6)	36.7	14.3	18.7	27.6	34.4	47.1	56.5
2021	270	122 (45.2)	34.6	15.0	17.8	22.4	32.4	41.7	54.8

*For 2023 the average denominator across plans was 97,632 individuals, with a standard deviation of 136,791.

Table 14. HEDIS AIS-E Td/Tdap Indicator Performance—Medicaid Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	182 (65.5)	30.2	13.6	14.7	20.3	27.9	39.5	49.8

*For 2023 the average denominator across plans was 5,515 individuals, with a standard deviation of 8,987.

Table 15. HEDIS AIS-E Td/Tdap Indicator Performance—Medicaid Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	239 (86.0)	40.0	14.5	21.3	30.4	38.1	50.3	57.7

*For 2023 the average denominator across plans was 101,424 individuals, with a standard deviation of 143,210.

Table 16. HEDIS AIS-E Td/Tdap Indicator Performance—Medicare Plans, Ages 19–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	691 (90.9)	28.5	19.2	5.1	13.2	25.9	40.1	55.3

*For 2023 the average denominator across plans was 7,499 individuals, with a standard deviation of 22,019.

Table 17. HEDIS AIS-E Td/Tdap Indicator Performance—Medicare Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	713 (93.8)	25.5	17.5	4.4	12.1	23.0	35.4	50.6
2022	750	477 (63.6)	23.2	17.1	4.3	9.8	19.8	32.4	48.9
2021	714	317 (44.4)	21.4	17.5	3.3	8.3	16.6	28.4	46.8

*For 2023 the average denominator across plans was 32,977 individuals, with a standard deviation of 127,969.

Table 18. HEDIS AIS-E Td/Tdap Indicator Performance—Medicare Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	723 (95.1)	26.3	18.0	4.4	12.0	23.7	37.0	51.5

*For 2023 the average denominator across plans was 39,689 individuals, with a standard deviation of 145,356.

Herpes Zoster Immunization Indicator

Table 19. HEDIS AIS-E Zoster Indicator Performance—Commercial Plans, Ages 50–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	414 (98.6)	19.5	9.5	8.1	12.5	18.5	25.9	32.4
2022	417	388 (93.1)	16.0	8.2	6.3	10.1	14.7	21.1	26.9
2021	419	312 (74.5)	11.3	6.9	4.0	6.5	9.7	14.5	21.1

*For 2023 the average denominator across plans was 56,031 individuals, with a standard deviation of 98,799.

Table 20. HEDIS AIS-E Zoster Indicator Performance—Commercial Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	401 (95.5)	29.4	16.1	10.5	16.2	28.0	41.6	52.2

*For 2023 the average denominator across plans was 6,146 individuals, with a standard deviation of 10,548.

Table 21. HEDIS AIS-E Zoster Indicator Performance—Commercial Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	414 (98.6)	20.6	10.1	8.4	13.1	19.3	27.2	34.8

*For 2023 the average denominator across plans was 61,984 individuals, with a standard deviation of 108,039.

Table 22. HEDIS AIS-E Zoster Indicator Performance—Medicaid Plans, Ages 50–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	234 (84.2)	10.5	7.0	2.2	4.7	9.8	14.2	19.4
2022	272	159 (58.5)	7.8	5.1	1.7	3.4	7.1	11.2	14.5
2021	270	121 (44.8)	6.0	4.4	1.0	2.3	5.7	8.9	11.4

*For 2023 the average denominator across plans was 23,606 individuals, with a standard deviation of 36,732.

Table 23. HEDIS AIS-E Zoster Indicator Performance—Medicaid Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	182 (65.5)	16.2	10.6	3.9	8.5	14.7	21.7	31.3

*For 2023 the average denominator across plans was 5,515 individuals, with a standard deviation of 8,987.

Table 24. HEDIS AIS-E Zoster Indicator Performance—Medicaid Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	235 (84.5)	11.3	7.6	2.2	5.3	10.7	15.8	20.6

*For 2023 the average denominator across plans was 27,777 individuals, with a standard deviation of 43,727.

Table 25. HEDIS AIS-E Zoster Indicator Performance—Medicare Plans, Ages 50–65

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	687 (90.4)	12.9	13.9	0.1	1.4	7.6	20.9	33.5

*For 2023 the average denominator across plans was 6,261 individuals, with a standard deviation of 18,916.

Table 26. HEDIS AIS-E Zoster Indicator Performance—Medicare Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	713 (93.8)	16.9	18.3	0.2	1.7	9.8	27.1	44.2
2022	750	477 (63.6)	14.6	17.9	0.1	0.9	5.6	24.7	42.6
2021	714	317 (44.4)	12.9	16.2	0.0	0.9	4.1	19.9	37.9

*For 2023 the average denominator across plans was 32,977 individuals, with a standard deviation of 127,969.

Table 27. HEDIS AIS-E Zoster Indicator Performance—Medicare Plans, Total

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	723 (95.1)	16.1	17.6	0.2	1.6	9.7	25.5	42.3

*For 2023 the average denominator across plans was 38,471 individuals, with a standard deviation of 143,071.

Pneumococcal Immunization Indicator

Table 28. HEDIS AIS-E Pneumococcal Indicator Performance—Commercial Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	420	401 (95.5)	50.8	16.2	28.9	37.6	51.8	64.1	71.4

*For 2023 the average denominator across plans was 5,957 individuals, with a standard deviation of 10,310.

Table 29. HEDIS AIS-E Pneumococcal Indicator Performance—Medicaid Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	278	182 (65.5)	45.7	17.1	21.0	35.1	44.4	58.2	68.1

*For 2023 the average denominator across plans was 5,515 individuals, with a standard deviation of 8,987.

Table 30. HEDIS AIS-E Pneumococcal Indicator Performance—Medicare Plans, Ages 66+

Measurement Year	Total Number of Plans (N)	Number of Plans Reporting (N (%))	Performance Rates (%)						
			Mean	Standard Deviation	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
2023*	760	713 (93.8)	44.0	23.2	11.8	26.4	43.9	62.2	75.5
2022	750	477 (63.6)	30.2	20.7	5.4	13.1	26.4	43.9	60.7
2021	714	317 (44.4)	29.7	20.2	5.8	13.0	26.5	42.1	58.3

*For 2023 the average denominator across plans was 32,771 individuals, with a standard deviation of 126,266.