

April 2, 2024

Honorable Katie Hobbs
Governor of Arizona
1700 W Washington
Phoenix, Arizona 85007

The Honorable Warren Petersen
President of the Arizona State Senate
1700 W Washington
Phoenix, Arizona 85007

The Honorable Ben Toma
Speaker of the Arizona House of Representatives
1700 W Washington
Phoenix, Arizona 85007

Dear Governor Hobbs, President Petersen, and Speaker Toma:

Pursuant to A.R.S. § 36-2904(N), the Arizona Health Care Cost Containment System (AHCCCS) is required to prepare a biennial report indicating the number of children, who by age two and by Contractor, received immunizations recommended by the National Centers for Disease Control and Prevention while enrolled as members. Do not hesitate to contact me at (602) 417-4458 if you have any questions or would like additional information.

Sincerely,



Carmen Heredia
AHCCCS Cabinet Executive Officer
and Executive Deputy Director

cc: Sarah Brown, Director, Governor's Office of Strategic Planning and Budgeting
Richard Stavneak, Director, Joint Legislative Budget Committee
Zaida Dedolph Piccoro, Governor's Office Health Policy Advisor



CHILDHOOD IMMUNIZATION COMPLETION RATES

April 1, 2024



Childhood Immunization Completion Rates

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Childhood Immunization Completion Rates

Executive Summary

Since 1993, AHCCCS has regularly measured the immunization status of children two years of age. AHCCCS has established performance standards, based on national benchmarks, which are used to evaluate AHCCCS-contracted health plan (Contractor) performance. Contractors must meet the performance standard for each vaccine and vaccine series; if a Contractor performs lower than the associated benchmark, it may be required to implement a Corrective Action Plan (CAP) and may be subject to regulatory action [inclusive of sanction(s), if the Contractor fails to improve its rate(s)].

This report is presented in accordance with state law (ARS §36-2904), which requires a biennial status of 24-month immunization completion rates for children two years of age served by AHCCCS. This report evaluates the performance of Contractors, individually and overall. Based on the methodology utilized to calculate these measures (including administrative calculations, hybrid data collection, and associated performance measure validation activities), included rates are reflective of the most current data available at the time of publishing this report.

Methodology

A systematic sample of child members who turned 24 months of age on or between January 1, 2022, and December 31, 2022, and who were continuously enrolled twelve months prior to the child's second birthday were included in this study.

AHCCCS utilized the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS)[®] technical specifications. AHCCCS contracted with its External Quality Review Organization (EQRO) as part of its Performance Measure Validation (PMV) activities to determine the extent to which the Contractor performance measure rates were calculated following the applicable technical specifications.

Overall Results and Analysis

The CY 2022 AHCCCS statewide aggregate rates for individual and combination immunizations are displayed in Table 1, along with CY 2021 and CY 2020 rates for comparison. This table includes measurement results for ten individual vaccines and one combination rate that protect against fourteen different diseases and viruses: diphtheria, tetanus and acellular pertussis (DTaP), inactivated poliovirus (IPV), measles, mumps and rubella (MMR), haemophilus influenzae type b (HiB), hepatitis B (Hep B), varicella zoster (VZV), pneumococcal conjugate (PCV), hepatitis A (Hep A), rotavirus (RV), and influenza.

NCQA produces a State of Health Care Quality Report annually which focuses on quality issues the country faces and assists in driving improvement in the delivery of evidence-based medicine and care. The report trends performance over time, tracks variations in care, and recommends quality improvement.

Childhood Immunization Completion Rates

Table 1: Aggregate Individual/Combination Immunization Completion Rates by 24 Months of Age

AHCCCS Rate ^{1,2}	DTaP	IPV	MMR	HiB	Hep B	VZV	PCV	Hep A	RV	Flu	Combo 3 ³
	(4 doses)	(3 doses)	(1 dose)	(3 doses)	(3 doses)	(1 dose)	(4 doses)	(1 dose)	(2-3 doses)	(2 doses)	
CY 2022	65.6%	82.9%	80.0%	81.6%	82.8%	79.4%	67.1%	78.5%	67.5%	34.5%	59.6%
CY 2021	66.6%	82.6%	80.6%	81.5%	83.2%	80.2%	67.6%	78.8%	67.2%	41.2%	61.3%
CY 2020	72.2%	86.3%	85.7%	85.2%	85.9%	85.0%	73.7%	84.2%	69.7%	41.8%	67.1%

Rates in **bold** met or exceeded the NCQA Medicaid Mean for the associated year.

¹ Rates reflective of measures calculated at the Contractor level utilizing administrative or hybrid methodologies.

² Rates reflective of AHCCCS Complete Care (ACC); Arizona Department of Child Safety Comprehensive Health Plan (DCS CHP); Arizona Department of Economic Security, Division of Developmental Disabilities (DES/DDD); and Arizona Long Term Care System, Elderly and Physical Disabilities (ALTCES-EPD) Contractor performance.

³ The Combo 3 rate is inclusive of the following individual vaccines: DTaP, IPV, MMR, HiB, Hep B, VZV, and PCV.

AHCCCS rates were compared with the most recent national means for Medicaid health plans as reported within the NCQA State of Health Care Quality Report. When compared to the national mean for Medicaid health plans, Arizona did not meet or exceed the benchmark for any childhood immunizations. Refer to the *Discussion and Conclusions* section of this report for additional information.

Conclusion

AHCCCS and its Contractors continue to promote completion and timely immunizations for all populations served, with a specific focus on childhood and adolescent immunizations. Contractors continue comprehensive outreach efforts to encourage parents to complete immunizations for their children and to providers to schedule appointments necessary to administer vaccines. AHCCCS, its Contractors, and relevant stakeholders work collaboratively to develop interventions and education initiatives between measurement periods, which include monitoring local, state, and national trends that could potentially impact immunization rates, such as the COVID-19 Public Health Emergency (PHE).

AHCCCS Contractors are expected to conduct additional analysis of their data so they may identify barriers and develop interventions to improve performance. AHCCCS Contractors that did not meet the Medicaid Mean for the individual/combination immunization completion rates for CY 2021 have recently implemented a CAP in an effort to improve performance. AHCCCS will continue to work with and monitor the Contractors' performance, focusing on those with lower performance measure rates, to assist them in making progress toward reaching state and national goals.

Childhood Immunization Completion Rates

Overview

According to the Centers for Disease Control and Prevention (CDC), babies are born with immune systems that are capable of defending the body against germs, but not strong enough to handle some deadly diseases. Vaccination is proven to be one of the most effective ways for the immune system to recognize and learn to fight against these diseases. As HealthyChildren.org reports on its web page, vaccines are one of the greatest successes of the public health field and most childhood vaccines are 90% to 99% effective in preventing disease.

Vaccination is important not only to the individual, but also to those living in their communities. According to Lee et al., “When a sufficiently high proportion of a population is vaccinated against communicable diseases, the entire population can obtain protection.” A study by Briss et al., reports that within the United States, childhood diseases have decreased by 95% due to immunizations since the end of the 20th century. However, recent reports document that there has been a national decline in vaccination rates amongst kindergarteners for the 2021-22 and 2022-23 school year, compared to 2020-2021 school year.

According to CDC’s *Morbidity and Mortality Weekly Report (MMWR)*, for the past two school years (2021-22 and 2022-23), the vaccination coverage was at 93% for routine vaccines, lower than the 94% coverage in the 2020-21 school year, and lower than the 95% reported during the 2019-20 school year. In addition, the report indicates that the exemption rate for one or more required vaccinations during the 2022-23 school year was at 3% for kindergarteners, which is 0.3% higher compared to the previous school year. This is a notable increase as the CDC reported that exemptions greater than 5% increases the risk for vaccine-preventable disease outbreaks (VPD). In addition, within the CDC’s *MMWR*, it was noted that since COVID-19 PHE, the routine childhood immunization rates do not appear to have recovered compared to the pre-pandemic vaccination rates. Monitoring of immunization completion rates is critical in identifying under-vaccinated populations, increasing coverage levels in order to prevent disease outbreaks, and reducing health care costs.

Background

Since 1993, AHCCCS has regularly measured the immunization rates of children 24 months of age. Arizona Revised Statute §36-2904 requires that AHCCCS submit a report to the Governor and Legislature that represents a statistically valid sample evaluating the number of AHCCCS enrolled children who received immunizations recommended by the CDC by age two.

This biennial report evaluates childhood immunization compliance for each of the AHCCCS Complete Care (ACC) health plans (Contractors); the Arizona Department of Child Safety, Comprehensive Health Plan (DCS CHP); and the Department of Economic Security, Division of Developmental Disabilities (DES/DDD). This report includes measurement results for ten individual vaccines and one combination rate that protect against fourteen different diseases and viruses: DTaP, IPV, MMR, HiB, Hep B, VZV, PCV, Hep A, RV, and influenza. The recommended vaccination schedule can be found in Appendix A.

Performance Goals

AHCCCS has established performance measure performance standards, based on national benchmarks, which are used to evaluate Contractor performance. AHCCCS aggregate, ACC Contractors’, DCS CHP, and DES/DDD rates were compared to the most recent national means for Medicaid health plans as reported within the NCQA State of Health Care Quality Report.

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Contractors must meet the performance standard for each vaccine and vaccine series. If a Contractor performs lower than the associated benchmark, it may be required to implement a Corrective Action Plan (CAP) and may be subject to regulatory action [inclusive of sanction(s) if the Contractor fails to improve its rate(s)]. It is important to note that a Contractor may not meet the performance standard for an individual immunization but may meet the performance standard for a particular combination, as the performance standard set for combinations is lower than those set for individual immunizations.

Purpose of Measurement

This study was conducted to determine the immunization rates of AHCCCS members who turned age two by December 30, 2022, as required by state law (ARS §36-2904) and to evaluate Contractor performance. Aggregate rates are reported to determine the statewide compliance rates of children enrolled in AHCCCS. Individual Contractor rates are reported separately to evaluate the performance of each Contractor.

Quality Indicators

In alignment with the Centers for Medicaid and CHIP Services, Centers for Medicare and Medicaid Services (CMS), Technical Specifications and Resource Manual for Federal Fiscal Year 2023 Reporting, the study indicators include the percent of children in the denominator who met the following, on or before the child's second birthday (unless otherwise noted):

Table 2: Childhood Immunization Criteria

Immunization	Description ¹
DTaP	At least four DTaP (diphtheria, tetanus and acellular pertussis) vaccinations with different dates of service
IPV	At least three IPV (inactivated poliovirus) vaccinations with different dates of service
MMR	At least one MMR (measles, mumps and rubella) vaccination, or a history of all of the following: measles illness, mumps illness, and rubella illness on the same or different dates of service
Hib	At least three Hib (haemophilus influenzae type b) vaccinations with different dates of service
Hep B	At least three hepatitis B vaccinations with different dates of service, or a history of hepatitis B illness
VZV	At least one VZV (varicella) vaccination on or between the child's first and second birthday, or a history of varicella zoster illness
PCV	At least four PCV (pneumococcal conjugate) vaccinations with different dates of service
Hep A	At least one hepatitis A vaccination with a date of service on or between the child's first and second birthday, or a history of hepatitis A illness
RV	At least two doses of the two-dose rotavirus vaccine on different dates of service, or at least three doses of the three-dose rotavirus vaccine on different dates of service, or at least one dose of the two-dose rotavirus vaccine and at least two doses of the three-dose rotavirus vaccine, all on different dates of service
Influenza	At least two influenza vaccinations with different dates of service
Combination #3	Four DTaP vaccinations, three IPV vaccinations, one MMR vaccination, three Hib vaccinations, three Hep B vaccinations, one VZV vaccination, and four PCV vaccinations.

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¹ *Anaphylaxis due to the vaccine will meet childhood immunization criteria.*

For further information related to the associated criteria, please refer to the *CMS Core Set of Children’s Health Care Quality Measures for Medicaid and CHIP (Child Core Set) Technical Specifications and Resource Manual*.

Methodology

This study included children who turned two years of age during CY 2022, who were eligible under Medicaid (Title XIX and Title XXI of the Social Security Act) and who were continuously enrolled with one of the ACC, DCS CHP, or DES/DDD Contractors during CY 2022.

Eligible Population

The study’s eligible population included children who:

- Turned two years old during the measurement year,
- Were continuously enrolled 12 months prior to the child’s second birthday,
- Had no more than one gap in enrollment of up to 45 days during the 12 months prior to the child’s second birthday, and
- Were enrolled on their second birthday.

Study Sample

The Contractor rates are reflective of hybrid calculation methodologies (inclusive of administrative and medical record data), except where indicated. For those measures calculated utilizing hybrid methodology, the Contractors’ methods for pulling a sample of eligible members aligned with the associated measure steward’s technical specification criteria and guidelines.

The AHCCCS aggregate rates are reflective of measures calculated at the Contractor-level utilizing administrative or hybrid methodologies, as indicated below. The aggregate rates were calculated in alignment with CMS’ methodology for calculating weighted aggregates as reported by AHCCCS’ EQRO.

Data Collection

Data collection was conducted by the Contractors and in alignment with the associated measure steward’s technical specification criteria and guidelines.

Data Validation

The Contractor-calculated rates underwent EQRO validation to assess the accuracy of rates reported, including review of the Contractors’ sampling and data collection methods.

Data Analysis

Upon completion of the EQRO validation activities, the Childhood Immunization Status aggregate rates were calculated in alignment with CMS’ methodology for calculating weighted averages as reported by the AHCCCS EQRO. The primary analysis provided results on the percentage of members who were appropriately immunized by two years of age for each quality indicator overall and by individual Contractor.

Data Limitations

At the time of this report’s publication, there were no known data limitations.

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Results

AHCCCS Aggregate Results

The CY 2022 AHCCCS statewide aggregate rates for individual and combination immunizations are displayed in Table 3, along with CY 2021 and CY 2020 rates for comparison.

Table 3: Aggregate Individual and Combination Immunization Completion Rates by 24 Months of Age

AHCCCS Rate ^{1,2}	DTaP	IPV	MMR	HiB	Hep B	VZV	PCV	Hep A	RV	Flu	Combo 3 ³
	(4 doses)	(3 doses)	(1 dose)	(3 doses)	(3 doses)	(1 dose)	(4 doses)	(1 dose)	(2-3 doses)	(2 doses)	
CY 2022	65.6%	82.9%	80.0%	81.6%	82.8%	79.4%	67.1%	78.5%	67.5%	34.5%	59.6%
CY 2021	66.6%	82.6%	80.6%	81.5%	83.2%	80.2%	67.6%	78.8%	67.2%	41.2%	61.3%
CY 2020	72.2%	86.3%	85.7%	85.2%	85.9%	85.0%	73.7%	84.2%	69.7%	41.8%	67.1%

Rates in **bold** met or exceeded the NCQA Medicaid Mean for the associated year.

¹ Rates reflective of measures calculated at the Contractor level utilizing administrative or hybrid methodologies.

² Rates reflective of AHCCCS Complete Care (ACC); Arizona Department of Child Safety Comprehensive Health Plan (DCS CHP); Arizona Department of Economic Security, Division of Developmental Disabilities (DES/DDD); and Arizona Long Term Care System, Elderly and Physical Disabilities (ALTCS-EPD) Contractor performance.

³ The Combo 3 rate is inclusive of the following individual vaccines: DTaP, IPV, MMR, HiB, Hep B, VZV, and PCV.

AHCCCS rates were compared with the most recent national means for Medicaid health plans as reported within the NCQA State of Health Care Quality Report. When compared to the national mean for Medicaid health plans, Arizona did not meet or exceed the benchmark for any childhood immunizations; however, improvement is anticipated with the CY 2023 childhood immunization indicator rates (aggregate and Contractor-specific) based on preliminary data and Contractor feedback.

As part of this analysis, AHCCCS reviewed both the trends in national performance and the state-specific performance between CY 2020 and CY 2022. Vaccination completion rates declined nationally between CY 2020 and CY 2021 which may be attributed to the impacts of the COVID-19 PHE; however, the national trends demonstrated improvement in the rates between CY 2021 and CY 2022. While it was noted that Arizona did not meet or exceed any of the CY 2022 benchmarks, the Arizona vaccination rates followed a similar trend in performance when reviewed in conjunction with national trends.

AHCCCS Contractor Results

The CY 2022 ACC, DCS CHP, and DES/DDD Contractors' rates for individual and combination immunizations are displayed in Appendix B, along with CY 2021 and CY 2020 rates for comparison.

Discussion and Conclusions

The following section outlines identified barriers for children receiving vaccinations as well as AHCCCS initiatives aimed to improve vaccination rates.

Barriers

One ongoing barrier to receiving childhood immunizations since the previous measurement period is the concern and hesitancy by parents regarding complications and risks associated with vaccinating children. Many of these parents are choosing to refuse or delay vaccinating their children, which may increase the risk of vaccine preventable disease (VPD) outbreaks for their children and others within their

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communities. This is especially relevant to those who cannot be vaccinated due to illness or other medical reasons such as those who experience vaccine failure and children too young to be vaccinated. A national survey conducted in 2019 demonstrated that approximately one in 15 parents demonstrated vaccine hesitancy towards routine childhood vaccines, and approximately one in four parents demonstrated hesitancy towards the influenza vaccine (Kemp et al., “Parental Hesitancy”).

Another barrier to vaccinating children is the gradual increase of nonmedical exemptions to school vaccination requirements for children entering kindergarten (United States, Dept. of Health and Human Services 8). According to the Arizona Department of Health Services (ADHS), there has been a decrease in vaccination coverage rates, followed by an increase in the use of immunization exemptions for children entering school.

Arizona law requires children to receive certain vaccines to attend school with exceptions only for medical, religious, or personal belief reasons. The ADHS evaluated personal exemption rates for vaccination coverage and reported a greater exemption for kindergarten and 6th grade children. The exemption rate increased from 6.6% to 7.3% for kindergarten and from 7.4% to 8.1% for sixth grade during the 2022–2023 school year as compared to 2021-2022 school year. This rate contributed to the overall decrease in immunization coverage for the 2022-2023 school year, leaving more children unprotected from VPD. In addition, according to the CDC, Arizona had one of the highest exemption rates for school required vaccines among children in kindergarten during the 2022-2023 school year.

Initiatives

To promote improvement with children and adolescents receiving well-child/well-care visits, AHCCCS implemented the Back to Basics PIP with a baseline measurement year of CYE 2019. Additionally, AHCCCS facilitated the implementation of a statewide Back-to-School campaign in collaboration with the AHCCCS Contractors. The Back-to-School campaign launched in June 2023 and aimed to increase the number of AHCCCS members ages 3-19 years old who completed a well-care visit; eligible members who completed a well-care visit during the campaign period earned a \$25 gift card. While both initiatives focused on increasing the number of completed well-child and/or well-care visits, immunizations are typically addressed during well-child/well-care visits and could therefore also be impacted.

Recommendations

The following recommendations to improve immunization completion rates among two-year-old members enrolled in AHCCCS were compiled from evidence-based research and identified best practices. Many AHCCCS Contractors have implemented several of these strategies. When compared to the national mean for Medicaid health plans, Arizona did not meet or exceed the benchmark for any childhood immunization; however, improvement is anticipated with the CY 2023 childhood immunization indicator rates (aggregate and Contractor-specific) based on preliminary data and Contractor feedback. As such, the previous report’s recommendations remain in place.

Contractors should continue using a variety of means to reach parents/guardians and encourage them to complete their children’s immunizations. According to the CDC, mail and telephone reminders to parents and providers have been found to be effective in improving immunization-completion rates. In addition, increasing the use of technology within member communication efforts, including the use of social media platforms and text messaging campaigns, should also be considered. Recent studies show that text messages used for vaccination reminders have been successful (Cataldi, et al. 151). Contractors may also consider offering incentives to parents of children who complete all immunizations by 24 months.

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Since all childhood vaccines can be completed at approximately 15 months of age, Contractors should begin checking the immunization status of members at 12 months of age. If members are lacking doses, this could give parents time to get immunizations completed by the time their children turn two years of age. Contractors should utilize the CDC's "catch up" immunization schedule, to help parents plan for completion of their children's vaccinations. When children are overdue for vaccinations, Contractors should consider the additional step of assisting parents/guardians with making appointments with their Primary Care Physicians (PCPs) and making arrangements for transportation assistance, if needed.

In addition to ongoing monitoring of completion of all childhood vaccinations, Contractors should focus on rates of DTaP and PCV completion, particularly those children who have received only three doses. Given the effect that missing the fourth dose has on completion rates for the full series of immunizations, Contractors and providers should focus on ensuring that children receive all the necessary doses of these vaccines.

Contractors should target outreach for specific racial/ethnic groups, as needed. Contractors should conduct internal analyses of results and work to increase rates for populations with an identified disparity by conducting a needs analysis and developing culturally competent interventions.

Contractors should target outreach activities in specific geographic areas, as needed. Contractors should conduct internal analyses of results and work to increase rates in areas where there is an identified disparity, including working with providers and possibly county health departments to identify barriers to immunizations and resources to address those barriers. Provider education in vaccine management and delivery serving different areas of the state may be helpful.

Contractors should continue to analyze and research any obstacles to childhood vaccination, including but not limited to physical and psychological, and implement interventions to address identified obstacles. An example of physical barriers can include inconvenient clinic hours. Psychological barriers can include fear and unpleasant experiences related to vaccinations.

Physical

Contractors should continue to ensure that vaccination services are readily available to accommodate parents' working hours, whether working hours are traditional or non-traditional.

Transportation issues have been identified as one of the barriers to receiving recommended vaccinations. The CDC encourages providers to take appropriate actions for this issue, such as holding community-based childhood vaccination events which may be more readily accessible for members.

Psychological

Contractors should encourage providers to utilize patient-focused strategies to increase childhood vaccinations. According to the CDC, presumptive vaccine recommendation continues to be the number one reason for parents to get their children vaccinated. One study showed parents are more likely to get their children vaccinated when using a presumptive approach versus participatory approach. "When providers use a presumptive approach (one that assumes parents will choose to vaccinate), parents are more likely to accept vaccines than when a participatory approach (one that presents parents with a decision to make) is used" (Bjork and Morelli 33).

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Contractors should continue or enhance member education to overcome parental fears regarding vaccination. This includes direct communication with members and their families and working with providers to ensure that parents and guardians understand the potential consequences of not having children fully immunized. Contractors should use and encourage their network providers to utilize resources from the CDC's National Immunization Program (NIP) such as Vaccine Information Statements (VIS), which provide easy-to-understand information on the benefits and risks of specific vaccines. A VIS must be provided to the recipient of any vaccine covered by the National Childhood Vaccine Injury Act (NCVIA) of 1986, which includes most immunizations given in childhood. These statements are available for all vaccines licensed in the U.S. and copies of VIS statements are available from state health authorities responsible for immunization; they can also be obtained from the CDC's website (www.cdc.gov) or from the Immunization Action Coalition (www.immunize.org). Translations of VIS statements into languages other than English also are available through the Immunization Action Coalition website and may be available from state immunization programs.

One approach to overcoming unwarranted parental vaccination refusal is educating providers on continuing conversations with parents about vaccines during the next visit, assisting them to understand that initial refusal may not mean that unnecessary fears and objections cannot be overcome in the future. Providers should continue attempts to educate parents that have previously refused vaccines, focusing on those that are the subject of the least amount of misinformation. Parental education is a strong factor that positively reinforces the notion of childhood vaccinations. An article by Marotta and McNally shows that educational intervention methods can change a third of parents' minds who initially refused vaccines for their children.

Contractors should encourage providers to identify families with missed vaccinations and contact them to schedule appointments. The CDC has shared a call to action for health care providers, schools, and state and local governments to assist children to catch up on their required vaccinations. Due to the COVID-19 PHE there has been a decline in the number of children receiving recommended vaccines. According to the CDC's public sector, there has been a 14 percent decline in vaccine ordering in 2020-2021 compared to orders in 2019, with orders for the measles vaccine in decline by more than 20 percent during the same time. The CDC's call to action recommends contacting families to schedule appointments, sending reminders to families, and encouraging vaccination scheduling to families who are not in compliance.

Contractors should continue to ensure that health care professionals who provide immunizations report all vaccinations to the Arizona State Immunization Information System (ASIIS). With complete reporting, an automated registry is a valuable tool in helping providers determine the immunization status of children they are seeing at each visit, so that opportunities to vaccinate are not missed. This is especially important when children receive immunizations at multiple sites and parents do not have current immunization records.

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Appendix A

The recommended immunizations for children schedule can be accessed at the CDC Recommended Vaccinations for Infants and Children web page.

2023 Recommended Immunizations for Children from Birth Through 6 Years Old

VACCINE	Birth	1 MONTH	2 MONTHS	4 MONTHS	6 MONTHS	12 MONTHS	15 MONTHS	18 MONTHS	19-23 MONTHS	2-3 YEARS	4-6 YEARS
HepB Hepatitis B	HepB	HepB			HepB						
RV* Rotavirus			RV	RV	RV*						
DTaP Diphtheria, Pertussis, & Tetanus			DTaP	DTaP	DTaP		DTaP				DTaP
Hib* Haemophilus influenzae type b			Hib	Hib	Hib*		Hib				
PCV13, PCV15 Pneumococcal disease			PCV	PCV	PCV		PCV				
IPV Polio			IPV	IPV		IPV					IPV
COVID-19** Coronavirus disease 2019								COVID-19**			
Flu* Influenza						Flu (One or Two Doses Yearly)*					
MMR Measles, Mumps, & Rubella						MMR					MMR
Varicella Chickenpox						Varicella					Varicella
HepA* Hepatitis A						HepA*		HepA*			

FOOTNOTES

RV* **Hib***
Administering a third dose at age 6 months depends on the brand of Hib or rotavirus vaccine used for previous dose.

COVID-19** Number of doses recommended depends on your child's age and type of COVID-19 vaccine used.

Flu* Two doses given at least 4 weeks apart are recommended for children age 6 months through 8 years of age who are getting an influenza (flu) vaccine for the first time and for some other children in this age group.

HepA* Two doses of Hep A vaccine are needed for lasting protection. The 2 doses should be given between age 12 and 23 months. Both doses should be separated by at least 6 months. Children 2 years and older who have not received 2 doses of Hep A should complete the series.

ADDITIONAL INFORMATION

1. If your child misses a shot recommended for their age, talk to your child's doctor as soon as possible to see when the missed shot can be given.
 2. If your child has any medical conditions that put them at risk for infection (e.g., sickle cell, HIV infection, cochlear implants) or is traveling outside the United States, talk to your child's doctor about additional vaccines that they may need.
- Talk with your child's doctor if you have questions about any shot recommended for your child.



FOR MORE INFORMATION
Call toll-free: 1-800-CDC-INFO (1-800-232-4636)
Or visit: [cdc.gov/vaccines/parents](https://www.cdc.gov/vaccines/parents)



American Academy of Pediatrics
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Childhood Immunization Completion Rates

Appendix B

Contractor Individual and Combination Immunization Completion Rates by 24 Months of Age¹

Contractor	CY	DTaP	IPV	MMR	HiB	Hep B	VZV	PCV	Hep A	RV	Flu	Combo 3 ⁵
		(4 doses)	(3 doses)	(1 dose)	(3 doses)	(3 doses)	(1 dose)	(4 doses)	(1 dose)	(2-3 doses)	(2 doses)	
AzCH	2022	69.1%	84.7%	81.8%	82.7%	84.9%	80.8%	70.1%	79.8%	68.9%	36.5%	64.0%
	2021	71.0%	85.6%	84.4%	83.9%	87.1%	83.7%	72.3%	82.7%	72.5%	45.3%	65.7%
	2020	75.4%	88.8%	89.1%	89.1%	90.5%	88.1%	76.2%	88.8%	74.2%	47.7%	71.3%
BUFC	2022	67.9%	83.0%	82.0%	82.5%	84.7%	81.0%	68.9%	80.5%	68.9%	38.0%	61.8%
	2021 ²	67.2%	82.7%	80.3%	81.2%	79.8%	79.9%	68.0%	79.1%	68.7%	45.3%	59.1%
	2020 ²	66.4%	80.3%	82.1%	79.2%	78.6%	81.3%	66.6%	81.2%	64.6%	43.5%	58.7%
Care 1 st	2022	53.5%	73.2%	68.9%	69.3%	75.7%	68.6%	53.5%	65.9%	58.2%	29.0%	47.2%
	2021	61.3%	82.7%	77.9%	82.0%	82.7%	77.1%	63.3%	73.5%	66.2%	35.3%	56.4%
	2020 ²	72.5%	85.5%	85.5%	84.4%	82.5%	84.6%	72.7%	83.8%	68.4%	39.3%	64.5%
HCA	2022	56.9%	79.3%	76.6%	76.9%	83.5%	75.7%	60.8%	74.7%	61.8%	26.8%	52.8%
	2021	56.7%	75.4%	74.5%	71.8%	76.4%	74.0%	58.6%	72.7%	59.1%	33.8%	51.6%
	2020	66.9%	82.2%	82.2%	80.3%	82.7%	80.5%	67.2%	77.9%	64.0%	32.6%	61.1%
Mercy Care	2022	64.7%	83.5%	78.8%	83.0%	80.0%	78.8%	66.2%	78.1%	69.8%	31.4%	56.9%
	2021	65.9%	82.0%	81.0%	82.0%	83.2%	81.0%	68.9%	78.8%	68.6%	37.7%	62.3%
	2020	71.5%	86.4%	84.4%	85.6%	87.1%	84.2%	74.7%	84.2%	70.8%	37.2%	68.4%
MCC	2022	66.2%	82.2%	78.8%	83.0%	80.3%	78.6%	68.9%	78.3%	66.9%	31.9%	61.1%
	2021	62.3%	75.2%	73.5%	75.2%	74.2%	73.0%	62.5%	72.7%	60.3%	33.8%	56.2%
	2020	61.1%	74.3%	79.6%	72.1%	73.5%	79.2%	62.4%	78.3%	58.0%	31.4%	55.3%
UHCCP	2022	67.4%	83.7%	81.0%	82.2%	83.5%	80.8%	68.9%	79.3%	67.9%	37.2%	62.0%
	2021	70.6%	84.9%	81.5%	84.2%	86.9%	81.3%	69.3%	80.5%	67.9%	44.8%	65.7%
	2020	77.9%	91.5%	89.8%	90.0%	90.8%	89.3%	80.3%	87.6%	74.2%	47.7%	73.7%
DCS CHP	2022	78.2%	94.1%	94.1%	91.8%	93.6%	93.1%	78.7%	92.6%	69.1%	56.1%	71.8%
	2021	79.8%	91.2%	93.9%	92.1%	90.4%	94.3%	73.7%	93.4%	54.4%	54.8%	65.4%
	2020	84.1%	97.2%	93.5%	97.2%	97.2%	93.5%	85.8%	90.7%	81.7%	52.8%	79.7%
DES/DDD	2022	73.0%	84.0%	81.0%	83.0%	80.0%	82.0%	68.0%	80.0%	34.0%	55.0%	62.0%
	2021	84.5%	90.8%	89.4%	91.5%	87.3%	89.4%	81.7%	88.7%	43.0%	70.4%	77.5%
	2020	80.6%	88.1%	88.1%	91.3%	84.4%	87.5%	74.4%	87.5%	48.1%	70.0%	70.6%
AHCCCS Rate ^{3,4}	2022	65.6%	82.9%	80.0%	81.6%	82.8%	79.4%	67.1%	78.5%	67.5%	34.5%	59.6%
	2021	66.6%	82.6%	80.6%	81.5%	83.2%	80.2%	67.6%	78.8%	67.2%	41.2%	61.3%
	2020	72.2%	86.3%	85.7%	85.2%	85.9%	85.0%	73.7%	84.2%	69.7%	41.8%	67.1%

Rates in **bold** met or exceeded the NCQA Medicaid Mean for the associated year.

¹ Rates reflective of hybrid (administrative and medical record) methodology unless otherwise indicated.

² Rates reflective of administrative methodology only.

³ Rates reflective of mixed methodology (e.g., administrative only and hybrid methodologies).

⁴ Rates reflective of ACC, DCS CHP, DES/DDD, and ALTCS-EPD Contractor performance.

⁵ The Combo 3 rate is inclusive of the following individual vaccines: DTaP, IPV, MMR, HiB, Hep B, VZV, and PCV.