

Performance Improvement Project:  
Reporting Vaccinations to the  
Arizona State Immunization  
Information System (ASIIS)



Division of  
Health Care Management



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Arizona Health Care Cost Containment System

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## Performance Improvement Project (PIP) Summary

**Implemented:** 2005

**Rationale:** The Arizona State Immunization Information System (ASIIS) is an electronic registry designed to capture vaccination data, in order to monitor immunization status at the individual and larger population levels. AHCCCS conducts regular assessments of the immunization completion status of members at 24 months of age. The results are primarily derived from ASIIS records and medical charts. When records are not in ASIIS, health plans must collect data from medical records, which can be labor intensive).

More complete reporting to the state immunization registry should assist AHCCCS, contracted health plans (Contractors) and providers in better monitoring patients' immunization status – especially those who have received vaccinations from multiple providers or community clinics – and ultimately result in more children being fully immunized.

**Purpose:** To increase the number of primary care practitioners (PCPs) contracted with AHCCCS Acute plans who report vaccination data to ASIIS in a timely manner; thus increase the total number of shots administered to AHCCCS members that are reported to the registry.

**Long-range Goal:** The U.S. Department of Health and Human Services has established a “Healthy People” objective that, by the year 2010, 95 percent of children younger than 6 years will have records in fully operational population-based immunization registries.

The AHCCCS goal for this PIP was that each Contractor demonstrate a statistically significant increase in the rate of contracted PCP sites reporting vaccinations within 30 days and sustain the increased level of performance for at least one successive measurement.

**Methodology:** Data were obtained from ASIIS to identify providers reporting within a 30-day timeframe and those reporting after 30 days. AHCCCS administrative data were matched to ASIIS data to assign providers to the appropriate Contractors for monitoring.

**Results:** All Contractors achieved significant and sustained improvement. Median rate of reporting in the second remeasurement was 88.2 percent (baseline = 74.2 percent)

The improvement was achieved through a collaborative, targeted approach. AHCCCS led a root-cause analysis of barriers to timely reporting by PCPs, in which Contractors developed interventions to address barriers. Each health plan utilized common materials and messages to educate providers and their staff. In addition to general provider outreach, each Contractor was assigned a list of provider sites, proportionate to its overall membership size and PCP network, to target for more intensive education. Contractors agreed to a progressive plan of interventions, depending on the level of noncompliance by the PCP office.

AHCCCS provided a detailed report of provider sites' reporting status to Contractors on a monthly basis to assist health plans in tracking the success of interventions.

**Provider Reporting to ASIIS, by Contractor;  
Final Remeasurement Period (CYE 2008) compared with Baseline Measurement**

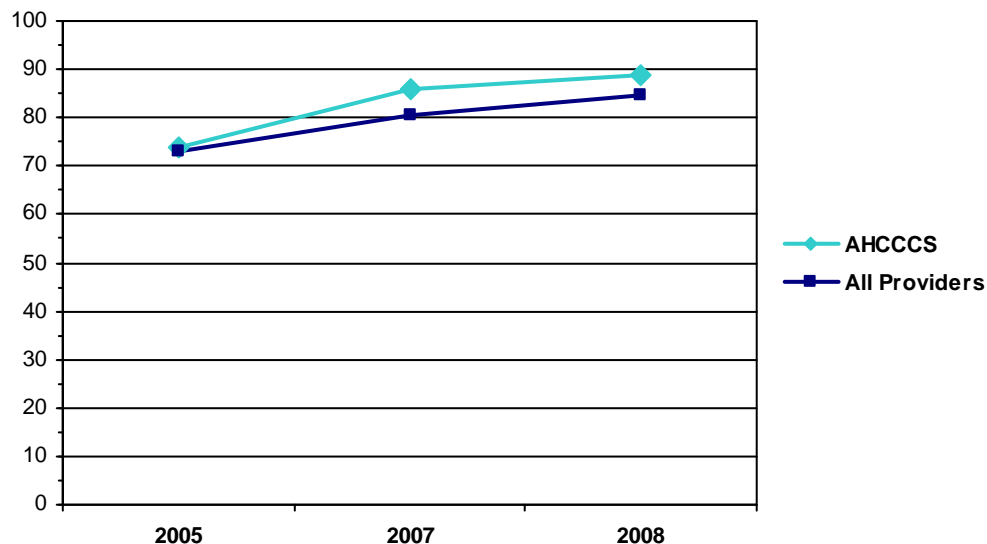
Contractor	N	Number Reporting Within 30 Days	% Reporting Within 30 Days	Relative Percent Change from Baseline
Maricopa Health Plan	2,316	2,146	92.7%	20.4%
	2,612	2,012	77.0%	
Pima Health Plan	2,640	2,457	93.1%	45.7%
	2,468	1,576	63.9%	
Arizona Physicians IPA	10,720	9,571	89.3%	19.5%
	10,864	8,117	74.7%	
DES/CMDP	10,834	9,431	87.1%	18.8%
	10,901	7,994	73.3%	
Care1st Health Plan	2,570	2,252	87.6%	14.2%
	2,688	2,062	76.7%	
Phoenix Health Plan	4,230	3,704	87.6%	18.4%
	4,131	3,059	74.0%	
Mercy Care Plan	8,958	7,839	87.5%	17.9%
	9,018	6,693	74.2%	
Health Choice AZ	6,865	6,054	88.2%	17.3%
	7,145	5,376	75.2%	
University Family Care	1,081	1,015	93.9%	37.7%
	1,357	925	68.2%	

Shaded rows are results of the baseline measurement (Oct. 1, 2004, through Sept. 30, 2005)

**Conclusion:** The PIP has resulted in more complete and timely reporting to the registry. In the AHCCCS assessment of immunization status of children at 2 years of age, conducted in late 2007, the percent of children in ASIIS whose records showed they were fully immunized was 48.8 percent, compared with 22.1 percent in 2005.

According to ADHS, the percent of all providers in the state who reported within 30 days had risen to 84.8 percent in 2008, compared with 72.9 percent in 2005. Most providers contract with AHCCCS health plans.

**Percent of Providers Reporting to ASIIS within 30 Days: AHCCCS Primary Care Providers  
Compared with All ASIIS Providers**



## **Arizona Health Care Cost Containment System (AHCCCS)**

### **2005 ACUTE-CARE PERFORMANCE IMPROVEMENT PROJECT (PIP): Improving the Completeness of Provider Reporting to ASIIS**

Final Measurement Period: October 1, 2007, through September 30, 2008

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#### **Background**

Each year, approximately 100,000 babies are born in Arizona. These babies must be fully immunized against childhood diseases to protect their health and future. According to the Centers for Disease Control and Prevention (CDC), at least 90 percent of children must be fully vaccinated against certain infectious diseases to protect all children in the community from those diseases and prevent unnecessary illness, hospitalizations and deaths.

Thus, state and national goals are to have at least 90 percent of all children immunized with a series of vaccinations against diphtheria, tetanus, pertussis, polio, measles, mumps, rubella, Haemophilus influenza type b, and hepatitis B by 2 years of age. Children also should be vaccinated against varicella (chicken pox) and pneumococcal disease by age 2. State immunization registries are an important tool in ensuring that vaccinations are completed and children are protected, both at the individual and community levels.

The Arizona State Immunization Information System (ASIIS) is an electronic registry designed to capture vaccination data on individuals within the state, in order to monitor immunization status at the individual and larger population levels. Providers are mandated under Arizona Revised Statutes (A.R.S. §36-135) to report all vaccinations administered to children from birth through 18 years of age to the state's health department. The registry serves as a receptacle for these reported data. In this capacity, the registry then provides a valuable tool for the management and reporting of immunization information to public health professionals, private and public health care providers, parents, guardians and child care personnel.

The U.S. Department of Health and Human Services has established a "Healthy People" objective that, by the year 2010, 95 percent of children younger than 6 years will have records in fully operational population-based immunization registries.

AHCCCS conducts regular assessments of the immunization completion status of members at 24 months of age. The results are primarily derived from ASIIS records and medical charts. For those records not contained in ASIIS, AHCCCS-contracted health plans (Contractors) must collect data on their members who are included in the immunization study sample from medical records.

The AHCCCS immunization assessment completed just prior to implementation of this Performance Improvement Project (PIP) found that approximately 46 percent of sample members had complete immunization records in ASIIS. However, this is far short of the national immunization-registry goal, as well as the percentage of those same children who were shown to be fully immunized when medical record data were combined with ASIIS data. Moreover, AHCCCS Contractors spent an estimated 5,200 hours collecting and entering vaccination data into an electronic file for the immunization assessment. Much of these resources could have been better utilized by Contractors if immunization data in ASIIS was more complete.

### **Purpose**

The purpose of this project was to increase the number of primary care practitioners (PCPs) contracted with AHCCCS acute-care Contractors who report vaccination data to ASIIS in a timely manner, and thus increase the total number of vaccinations administered to AHCCCS members that are reported to the registry.

More complete reporting to the state immunization registry should assist providers in better monitoring of patients' immunization status – especially those children who have received vaccinations from multiple providers, including community clinics – and ultimately result in more children being fully immunized. More complete and timely data also will assist contracted health plans, other payers and policy makers to better assess immunization coverage levels and develop strategies to ensure that Arizona children are fully protected from infectious diseases.

### **AHCCCS Goal**

The AHCCCS goal for this PIP was that each Contractor demonstrate a statistically significant increase in the rate of contracted PCP sites reporting vaccinations within 30 days and sustain the increased level of performance for at least one successive measurement.

### **Methodology**

Measurements for this PIP were based on the following periods:

Baseline measurement	October 1, 2004, through September 30, 2005
First remeasurement	October 1, 2006, through September 30, 2007
Second remeasurement	October 1, 2007, through September 30, 2008

The population included all AHCCCS primary care practitioners (PCPs) licensed in Arizona who administered vaccinations to members 18 years of age or younger and who contracted with an acute-care health plan at the time the PIP was implemented. Providers were counted by site rather than individual provider, and sites could be counted more than once, as they were included in the denominator for each health plan with which they contracted.

AHCCCS measured the percentage of providers, by Contractor, who reported vaccination data to ASIIS within 30 days of administration

Data were obtained from the Arizona State Immunization Information System (ASIIS) to identify providers reporting within the 30-day timeframe and those reporting after 30 days. AHCCCS administrative data were matched to ASIIS data to assign providers to the appropriate Contractor(s).

The full methodology for these measurements can be found in Appendix A.

## Results and Analysis

### First Remeasurement

By health plan, the number of contracted providers ranged from 1,088 provider sites contracted with University Family Care to 11,602 provider sites with the Comprehensive Medical and Dental Program (Table 1). This compares to a range of 1,357 provider sites to 10,901 provider sites in the baseline measurement.

Rates of provider sites reporting vaccinations within 30 days increased among all Contractors, with rates in the first remeasurement ranging from 83.7 percent for the Comprehensive Medical and Dental Program (CMDP) to 91.2 percent for Maricopa Health Plan. The median was of 86.4 percent in the first remeasurement, compared with 74.2 percent in the baseline measurement. Relative increases by Contractors ranged from 14.1 percent (CMDP) to 34.2 percent (Pima Health System).

**Table 1. Provider Reporting to ASIIS, by Contractor; Remeasurement Period: Oct. 1, 2006, to Sept. 30, 2007**

Contractor	N	Number Reporting Within 30 Days	% Reporting Within 30 Days	Relative Percent Change	Significance Level
<b>Maricopa Health Plan</b>	<b>2,467</b>	<b>2,251</b>	<b>91.2%</b>	<b>18.5%</b>	<b>p&lt;.001</b>
	2,612	2,012	77.0%		
<b>Pima Health system</b>	<b>2,704</b>	<b>2,317</b>	<b>85.7%</b>	<b>34.2%</b>	<b>p&lt;.001</b>
	2,468	1,576	63.9%		
<b>APIPA</b>	<b>11,533</b>	<b>9,967</b>	<b>86.4%</b>	<b>15.7%</b>	<b>p&lt;.001</b>
	10,864	8,117	74.7%		
<b>CMDP</b>	<b>11,602</b>	<b>9,709</b>	<b>83.7%</b>	<b>14.1%</b>	<b>p&lt;.001</b>
	10,901	7,994	73.3%		
<b>Care 1st</b>	<b>2,794</b>	<b>2,470</b>	<b>88.4%</b>	<b>15.2%</b>	<b>p&lt;.001</b>
	2,688	2,062	76.7%		
<b>Phoenix Health Plan</b>	<b>4,416</b>	<b>3,812</b>	<b>86.3%</b>	<b>16.6%</b>	<b>p&lt;.001</b>
	4,131	3,059	74.0%		
<b>Mercy Care Plan</b>	<b>9,542</b>	<b>8,141</b>	<b>85.3%</b>	<b>15.0%</b>	<b>p&lt;.001</b>
	9,018	6,693	74.2%		
<b>Health Choice</b>	<b>7,305</b>	<b>6,320</b>	<b>86.5%</b>	<b>15.0%</b>	<b>p&lt;.001</b>
	7,145	5,376	75.2%		
<b>University Family Care</b>	<b>1,088</b>	<b>951</b>	<b>87.4%</b>	<b>28.2%</b>	<b>p&lt;.001</b>
	1,357	925	68.2%		

Shaded rows are results of the baseline measurement (October 1, 2004, through September 30, 2005)

## **Discussion**

In December 2005, AHCCCS Clinical Quality Management (CQM) staff began working with Contractors to develop interventions that would be conducted through a collaborative approach. In early 2006, CQM facilitated a root-cause analysis of barriers to timely reporting of vaccinations by PCPs (see Figure 1. Cause and Effect Diagram). This analysis enabled Contractors to identify areas for improved education of providers. For example, some PCP offices thought they were fulfilling ASIIS reporting requirements when they reported vaccine usage to the state office that administers the federal Vaccines for Children (VFC) program. These providers were educated about the separate reporting requirements for ASIIS. Another issue identified was that some providers registered with ASIIS that did not have large numbers of young children as patients may not have given a vaccine dose within the previous month and did not make a report to ASIIS, thus they were showing as “noncompliant”. These offices were advised to report to the registry that no doses were given. In some cases, providers and/or their office staff did not understand that reporting of vaccine doses administered to patients under 18 is required by state law.

To maximize each Contractor’s efforts in improving provider reporting, AHCCCS and the participating health plans developed a collaborative approach in May 2006 in which each plan had a list of provider sites, proportionate to its overall membership size and PCP network, that it would target for education. After ensuring that any specialists that were on the list of targeted providers were excluded, each health plan utilized common materials and messages from the Arizona Immunization Program Office, which operates the registry, to educate providers and staff. Health plans utilized regular provider meetings and materials, as well as contact from health plan staff to reinforce this education.

Contractors agreed to the following intervention steps, depending on the level of noncompliance by the PCP office:

### **Step 1**

- Raise awareness of the PIP among all PCPs, including the fact that provider reporting was being monitored and the benefits of ASIIS, through provider newsletters, meetings or general mailings. Utilize information from the ASIIS website for education of PCPs and office staff, available at: <http://www.azdhs.gov/phs/asiis>.
- Encourage more frequent reporting by offices (e.g., once a week, rather than once a month), especially for high-volume pediatric practices. This would help ensure that the office was credited for reporting within 30 days.
- As necessary, utilize/refer to training resources of the Arizona Department of Health Services (ADHS) or The Arizona Partnership for Immunization (TAPI) “Learn at Lunch” series.

### **Step 2**

- Identify sites/offices that have not reported within 60 days and are assigned to the health plan (i.e. on its target list), and contact them. Identify the primary staff person at the site/office responsible for entering data into ASIIS and, if possible, a back up; provide information/solicit feedback on why they are not reporting.
- Provide information to physicians within the practice; e.g., letter from the Medical Director advising physicians that health plan staff has contacted the PCP office staff about the need to report and provided education.

### **Step 3**

- If sites still are not reporting within 90 days, take a more aggressive approach; i.e., an in-person visit by health plan staff, requiring training in ASIIS, a phone call from the Medical Director to physicians, etc.

AHCCCS provided a detailed report of provider sites' reporting status to Contractors on a monthly basis during the project to assist health plans in tracking the success of interventions, particularly with those offices on their target list. The reports included:

- A listing of sites that had not reported vaccinations administered within the past 30 days
- A listing of sites that had not reported vaccinations administered within the past 60 days
- A listing of sites that had not reported vaccinations administered within the past 90 days

Some health plans also developed internal reports to help them target the highest-volume providers that likely impacted the health plan's overall rate of reporting to ASIIS. The reports identified offices by number of patients younger than 18 years or other age breakouts (e.g., 24 months, 6 years) to identify provider sites where behavior change could have the greatest impact.

### **Second Remeasurement**

In the second remeasurement, the number of contracted providers by health plan ranged from 1,015 provider sites with University Family Care) to 9,571 sites with Arizona Physicians IPA (Table 2).

All Contractors' rates of provider reporting within 30 days remained at the same level or increased in the second remeasurement. Six of the nine Contractors demonstrated further increases from the first remeasurement. Rates of reporting ranged from 87.1 percent for CMDP to 93.9 percent for University Family Care. The median was 88.2 percent, compared with 86.4 percent in the first remeasurement and 74.2 percent in the baseline measurement.

**Table 2. Provider Reporting to ASIIS, by Contractor; Remeasurement Period: Oct. 1, 2007, to Sept. 30, 2008**

<b>Contractor</b>	<b>N</b>	<b>Number Reporting Within 30 Days</b>	<b>% Reporting Within 30 Days</b>	<b>Relative Percent Change</b>	<b>Significance Level</b>
<b>Maricopa Health Plan</b>	<b>2,316</b>	<b>2,146</b>	<b>92.7%</b>	<b>1.6%</b>	<b>p=.073</b>
	2,467	2,251	91.2%		
<b>Pima Health Plan</b>	<b>2,640</b>	<b>2,457</b>	<b>93.1%</b>	<b>8.6%</b>	<b>p&lt;.001</b>
	2,704	2,317	85.7%		
<b>APIPA</b>	<b>10,720</b>	<b>9,571</b>	<b>89.3%</b>	<b>3.3%</b>	<b>p&lt;.001</b>
	11,533	9,967	86.4%		
<b>CMDP</b>	<b>10,834</b>	<b>9,431</b>	<b>87.1%</b>	<b>4.0%</b>	<b>p&lt;.001</b>
	11,602	9,709	83.7%		
<b>Care 1st</b>	<b>2,570</b>	<b>2,252</b>	<b>87.6%</b>	<b>-0.9%</b>	<b>p=.381</b>
	2,794	2,470	88.4%		
<b>PHP</b>	<b>4,230</b>	<b>3,704</b>	<b>87.6%</b>	<b>1.4%</b>	<b>p=.087</b>
	4,416	3,812	86.3%		
<b>Mercy Care</b>	<b>8,958</b>	<b>7,839</b>	<b>87.5%</b>	<b>2.6%</b>	<b>p&lt;.001</b>
	9,542	8,141	85.3%		
<b>Health Choice</b>	<b>6,865</b>	<b>6,054</b>	<b>88.2%</b>	<b>1.9%</b>	<b>p=.003</b>
	7,305	6,320	86.5%		
<b>University Family Care</b>	<b>1,081</b>	<b>1,015</b>	<b>93.9%</b>	<b>7.4%</b>	<b>p&lt;.001</b>
	1,088	951	87.4%		

Note: Shaded rows show results of the first remeasurement period (October 1, 2007, through September 30, 2008)

## **Discussion**

Contracted health plans sustained the improved performance by interventions such as:

- Adding reporting to ASIIS as part of routine outreach to and monitoring of PCPs who treat members younger than 18. This was accomplished through site visits by health plan staff to discuss overall requirements of the federal Early and Periodic Screening, Diagnostic and Treatment (EPSDT) program for children and adolescents enrolled in Medicaid and medical record audits of providers' compliance with EPSDT requirements.
- Contacting by mail or phone PCP offices that did not report vaccinations to ASIIS, based on the monthly reports provided by AHCCCS, to educate them about the PIP and reporting requirements.
- Making personal visits to provider offices that continued to be noncompliant with reporting. In some cases, health plan Medical Directors contacted physicians whose offices were not reporting and/or met with physicians or office managers.
- Referring providers and their office staffs to technical assistance and educational programs presented by the Arizona Department of Health Services and The Arizona Partnership for Immunization to improve their understanding of reporting requirements and processes.
- Including information about reporting to ASIIS through avenues such as the health plan's provider manual, provider newsletters and on its website.

- Identifying provider offices that did not report vaccinations to ASIIS by checking information on well-child visit tracking forms submitted by the provider against registry data, in addition to reviewing monthly reports received from AHCCCS.

Since the PIP was completed, several Contractors have reported that provider outreach regarding the use of ASIIS and requirements for reporting to the registry is an important, ongoing activity.

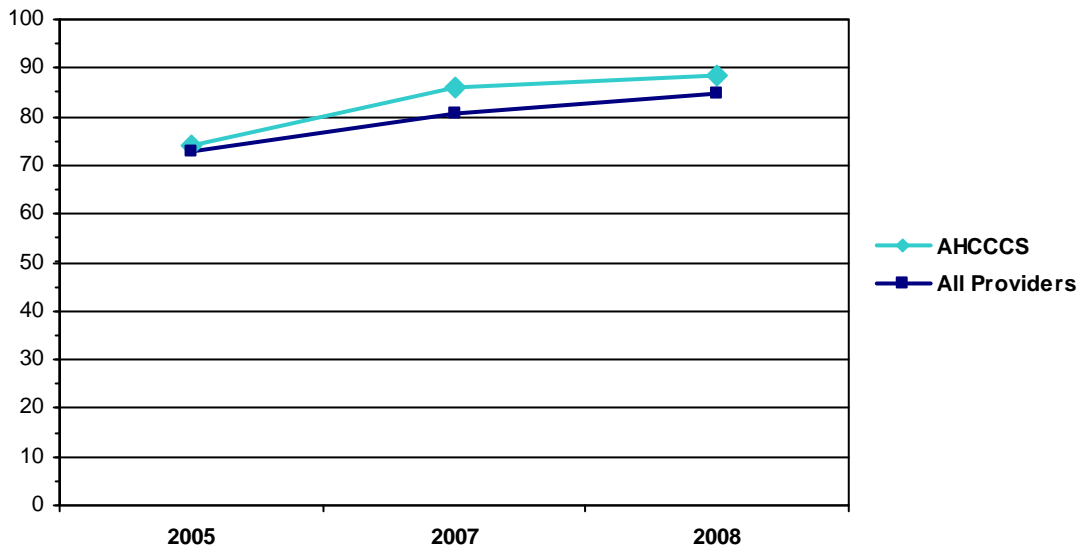
**Conclusion**

All health plans participating in this PIP demonstrated significant and sustained improvement, and this project is now complete.

Efforts by AHCCCS and its Contractors to improve the timeliness and completeness of vaccination data reported to ASIIS over the past few years have been successful. In addition to the measurements conducted under this PIP, other data reflect improved reporting. In the assessment of immunization status of children at 2 years of age that was conducted in late 2007, AHCCCS found that the percent of children in ASIIS whose records showed they were fully immunized was 48.8 percent, compared with 22.1 percent in 2005. The increase in completed records in ASIIS reduces the burden of collecting medical record data from PCPs for the children included in the immunization study sample and allows health plan staff to focus more efforts on ensuring that children without complete immunizations in ASIIS receive the necessary doses of vaccines to fully protect them.

In addition, ADHS has reported an overall improvement in timely reporting to ASIIS by providers. In 2005, prior to the start of interventions under this project, 72.9 percent of the 1,100 providers registered with ASIIS reported vaccinations every 30 days. In 2008, the percent of all providers in the state who reported within 30 days had risen to 84.8 percent, slightly less than the median of 88.2 percent for AHCCCS providers.

**Figure 2. Percent of Providers Reporting to ASIIS within 30 Days: AHCCCS Primary Care Providers Compared with All ASIIS Providers**



Note: AHCCCS data are for contract years ending Sept. 30, and coincide with PIP measurements; ADHS data are for calendar years

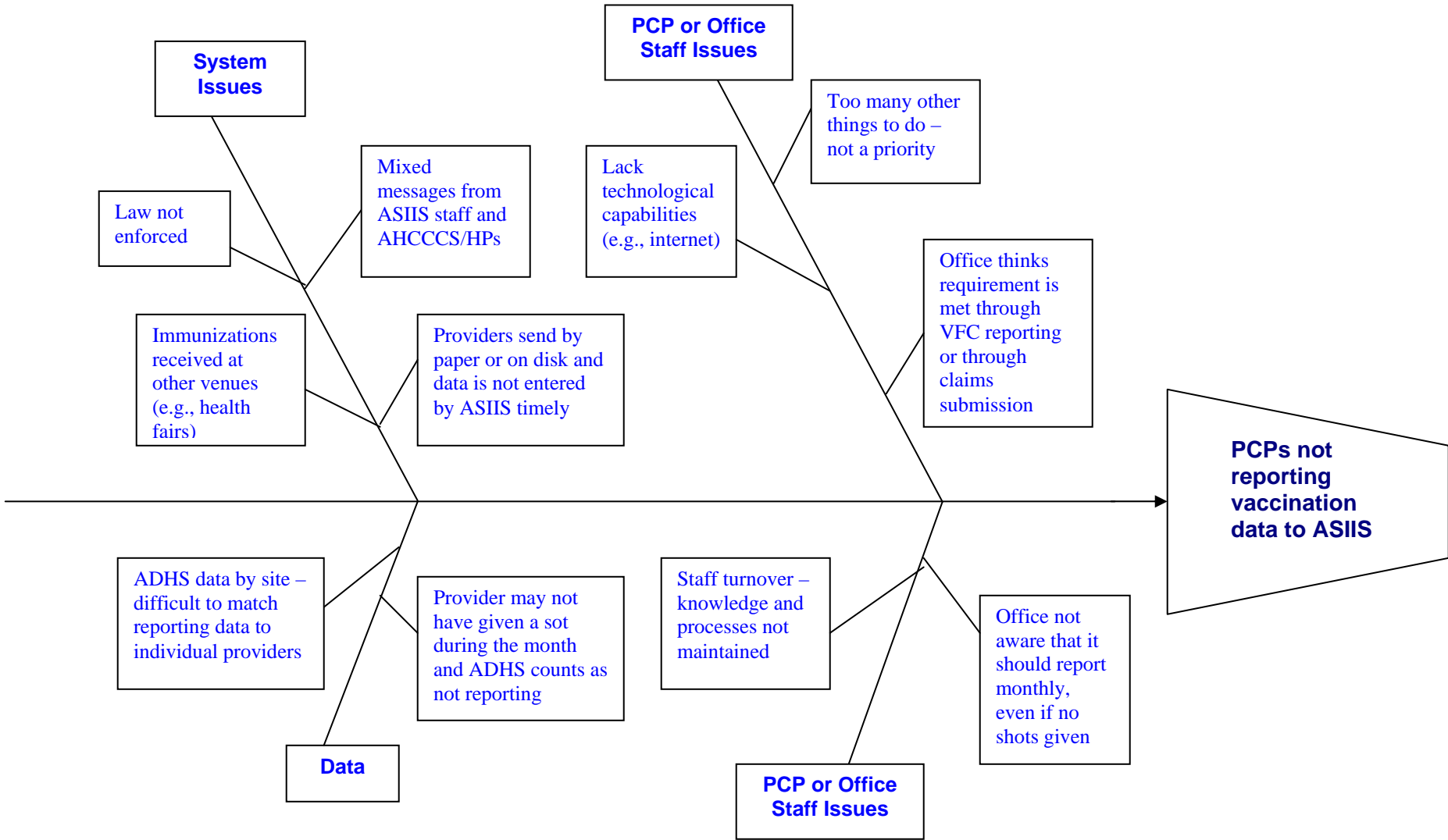
It also should be noted that, in 2008, ADHS reported that 96 percent of Arizona children younger than 6 years of age had at least two vaccinations in its immunization registry, exceeding the Healthy People 2010 objective of 95 percent. The national average for children less than 6 years of age with two or more records in their state immunization registries was 71 percent in 2007.<sup>1</sup>

Since most primary care practitioners in Arizona contract with AHCCCS health plans, the improvements in timely reporting of vaccinations under this project should help sustain high levels of reporting of vaccinations given to all children in the state, regardless of whether they are covered by Medicaid.

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<sup>1</sup> Centers for Disease Control and Prevention. Percentage of U.S. Children >4 months and <6 years with 2+ Immunizations in Immunization Information Systems (IIS), 2007. Available at: <http://www.cdc.gov/vaccines/programs/iis/rates/2007-child-map.htm>. Accessed Dec. 26, 2008.

**Figure 1.** Cause-and-Effect Diagram  
Provider Reporting to ASIIS



## **APPENDIX A: Methodology**

### **2005 ACUTE-CARE PERFORMANCE IMPROVEMENT PROJECT (PIP): Improving the Completeness of Provider Reporting to ASIIS**

#### **Measurement Periods**

Baseline measurement: October 1, 2004, through September 30, 2005

First remeasurement: October 1, 2006, through September 30, 2007

Second remeasurement: October 1, 2007, through September 30, 2008

#### **Study Question**

What is the number and percentage of providers, by Contractor, reporting vaccinations within 30 days of administration to ASIIS?

#### **Population**

All AHCCCS providers in Arizona who administer vaccinations to members 18 years of age or younger

#### **Inclusion Criteria**

All AHCCCS primary care practitioners (PCPs) licensed in Arizona who administer vaccinations to members 18 years of age or younger and who contracted with an acute-care health plan at the time the PIP was implemented

#### **Population Exclusions**

- AHCCCS providers who were not contracted with at least one acute-care health plan (i.e., fee-for-service providers) at the time the PIP was implemented
- AHCCCS providers who were not primary care practitioners (PCPs)

#### **Population Stratifications**

The population was stratified by Contractor (providers who contracted with more than one health plan were included in the data for each health plan with whom they contract).

#### **Sample Selection**

No sample was selected; the entire population was used

#### **Indicator**

The percentage of providers, by Contractor, who reported vaccination data to ASIIS within 30 days of administration

#### **Numerator**

The number of providers, by Contractor, who reported vaccinations within 30 days of administration to ASIIS

#### **Denominator**

The number of providers licensed in Arizona to administer vaccinations to members 18 years of age or younger who contracted with an acute-care health plan at the time the PIP was implemented

*Note: Providers were counted by site rather than individual provider, and sites could be counted more than once, as they were included in the denominator for each health plan with which they contracted.*

### **Confidentiality Plan**

AHCCCS works in collaboration with Contractors to maintain compliance with Health Insurance Portability and Accountability Act (HIPAA) and Medicaid requirements for members' privacy and security. This PIP did not include any member-specific data.

The AHCCCS Division of Health Care Management generally utilizes the following protocols to maintain member confidentiality:

- To prevent unauthorized access, the sample member file is maintained on a secure, password-protected computer, by the Data Analysis and Research (DAR) project lead.
- Only DAR employees who analyze data have access to study data.
- All employees and Contractors are required to sign a confidentiality agreement.
- Requested data are used only for the purpose of performing health care operations, oversight of the health care system, or research.
- Only the minimum amount of necessary information to complete the project is sent to and returned from Contractors.
- Sample files given to Contractors are tracked to ensure that all records are returned.
- Member names are never identified or used in reporting.
- Upon completion, all study information is removed from the computer and placed on a compact disk, and stored in a secure location.

### **Data Sources**

- Arizona State Immunization Information System (ASIIS) administrative data were used to identify compliant and noncompliant providers.
- AHCCCS administrative data were matched to ASIIS data to determine compliant and noncompliant providers assigned to the appropriate Contractor(s).

### **Data Collection Process**

- The following reports were sent electronically to AHCCCS every 30 days from the Arizona Department of Health Services (ADHS), which maintains the ASIIS registry.
  - A listing of all sites registered with ASIIS.
  - A listing of sites that had not reported vaccinations administered within the past 30 days
  - A listing of sites that had not reported vaccinations administered within the past 60 days
  - A listing of sites that had not reported vaccinations administered within the past 90 days
- AHCCCS then merged ADHS data with its own PMIIS database and matched provider sites with individual providers in each Contractor's network.

### **Data Quality and Validation**

- Data validation was performed to ensure that provider data received from the AHCCCS Information Services Division (ISD) met the study criteria, based on AHCCCS provider registration data.
- Provider data also were checked against databases maintained by state licensing boards (such as the Arizona Medical Board and the Arizona Board of Osteopathic Examiners) to ensure that providers were primary care practitioners, rather than specialists. Those who were listed as specialists by their licensing boards were excluded from the denominator.

- Provider data were further reviewed by Contractors to ensure that provider-health plan assignment data were current as of the baseline measurement. Providers for whom Contractors could show documentation that they no longer contracted with them or did not provide vaccinations to members younger than 18 years of age were removed from the Contractor's baseline denominator.

### **Limitations**

- Other unidentified factors besides Contractor interventions may falsely influence results.
- ADHS maintains information by provider site, which may be an individual provider or may include multiple providers that practice at one location under the same group or clinic name. AHCCCS is unable to completely match ADHS data with AHCCCS individual provider registration data. This may increase the probability of type I error (false positive). This effect may occur because some providers may not be reporting to ASIIS but others that practice at the same location are compliant.
- Providers may contract with several health plans and in turn will affect the rates of compliance with each of the health plans for which they are contracted.
- ADHS does not currently track the level of compliance for each site. It may appear that a site is fully compliant, but is only submitting a small percentage of the vaccinations that it has administrated.
- Provider staffing and technical difficulties may falsely influence results.
- ASIIS excludes seasonal sites from its reports.
- Mode of transmission of data. Some sites transmit data via the web others transmit data in a more primitive form that may be delayed by mailing and data entry.

### **Analysis Plan:**

- AHCCCS calculated the number of providers, by Contractor, who were reporting to ASIIS within 30 days. The mean count of providers over the measurement period, by Contractor, was used to determine the indicator rate. These data were analyzed and reported to Contractors monthly to assist them in monitoring performance for the PIP indicator.
- In order to assist Contractors in monitoring the effectiveness of interventions to improve provider reporting, AHCCCS also calculated and reported to each Contractor the number of provider sites that:
  - Were not reporting any vaccinations to ASIIS within 30 days but less than 61 days.
  - Were not reporting any vaccinations to ASIIS within 60 days but less than 91 days.
  - Were not reporting any vaccinations to ASIIS within 90 days.
- Variability of distribution was calculated, utilizing the Kolmogorov-Smirnov test, to determine appropriate methods of statistical analysis. A statistical software package was utilized to calculate mean values.
- Differences between overall baseline study results and overall remeasurement results were analyzed for statistical significance and relative change.