



SNAPSHOTS

IMMUNIZATION REGISTRY NEWS *from* AMERICAN IMMUNIZATION REGISTRY ASSOCIATION (AIRA)

PRESIDENT'S REPORT

Dear Colleagues,

Data—it's at the core of the immunization information system community. Ensuring the accuracy, completeness, and timeliness of that data is among the most important things we can, and should, do. The reason is simple: IIS data is powerful and can be used to demonstrate need, success, movement, and value. IIS data can play a vital role in health care, but to do so it must be leveraged, sometimes in new and innovative ways. My guess is that most of those reading *SnapShots* are very aware of this; IIS data is used to conduct daily operations, such as providing clinical decision support, reminder/recall, and coverage assessments. The success of those efforts, however, depends entirely on the quality of the data captured and stored in the IIS. Thankfully, our community is engaged and attuned to these needs, and, while they have always been an important part of what we do, data quality and data use are rising to the top of our priority lists. Demonstrating the value of IIS is one of the best ways to lay a foundation of sustainability, and we can achieve that through data quality vigilance and creative and thoughtful use of IIS data.

In this issue, you will see examples of dedication to this foundational area: data quality assessment, added value, successful implementation of improved functionality, learning from past experiences to direct the future, enhancement and alignment of the approach to coverage estimates, improvement of health outcomes, accountability, and measurement of standards alignment. It's sure to be a great read and a perfect primer for the fast-approaching AIRA 2019 National Meeting!

Please join us in Indianapolis, Indiana, August 13–15, 2019, for AIRA's 20th anniversary and annual gathering to learn, share, reconnect with old friends, and make some new ones!

Help us continue to show the world just how much good can be achieved when amazing people dedicate themselves to collaboration. See you there!

Regards,
Mandy Harris
 AIRA Board President
 NV WebIZ Manager
 Nevada Department of Health & Human Services

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Welcome to *SnapShots*, the American Immunization Registry Association's newsletter about the progress, best practices, and accomplishments of Immunization Information Systems (IIS) across the country. We invite you to share news about your IIS. Email us at info@immregistries.org with information about a successful programmatic or technical innovation, major accomplishment, or milestone that your IIS has reached.



IISB STRATEGY REFRESH

Over the past few months, I have had many conversations with staff in the Immunization Information Systems Support Branch (IISB), CDC leaders, and the broader IIS community about our future direction and what we hope to achieve together.

Through these conversations, I have learned about the expansive set of available resources and engaged in discussions on enhancing IIS for the future. The community has made tremendous progress toward our mission to maximize protection against vaccine-preventable diseases by leading the advancement of IIS. However, there is still work to do and opportunities for CDC to set the course and provide the needed support. I know that many of you are looking for more direction and guidance from CDC on where we are heading as a community and how we plan to get there. To that end, IISB is currently working to refresh our branch strategy. This refreshed strategy builds upon past IISB strategic exercises and considers broader CDC priorities, health IT trends, and needs within the IIS community.

Although our strategy development process is ongoing, we have already defined key areas of focus that will set the direction for the branch moving forward. Our new strategic focus areas include the following:

- Clearly articulate what CDC needs IIS to achieve nationwide
- Deploy a new performance model that outlines what IIS need to achieve and that supports individual awardees on their performance improvement journeys
- Encourage transparency around IIS costs, guide awardees to use CDC funds on prioritized enhancements, and promote greater use of shared services and cost saving strategies overall
- Communicate effectively with the IIS community and work boldly with partners to become a genuine leader in the health IT space

As we work to finalize our new strategic direction, we will be sure to communicate information and solicit feedback. I encourage you to reach out to me directly if you have any questions or ideas (lig1@cdc.gov), and I look forward to collaborating with the community as we build the future of IIS.

- Submitted by Lynn Gibbs-Scharf, MPH, IISB Chief, CDC



NEW REPORT BY PAHO AND PATH DETAILS STRATEGIES TO IMPROVE VACCINE PROGRAMS THROUGH EFFECTIVE DATA USE

The Pan American Health Organization (PAHO) and PATH have launched a new report: [Immunization Data: Evidence for Action \(IDEA\)](#), *A Realist Review of What Works to Improve Data Use for Immunization: Evidence from low- and middle-income countries*. It provides the immunization community with clear, proven strategies for improving the quality and use of immunization data.

While advances in information technology have led to continuous increases in the amount of health data available, data remains an underutilized resource in the design and implementation of immunization programs throughout the world. The IDEA review identifies five proven strategies to improve data use and outlines how funders, policymakers, and program implementers can incorporate these best practices to improve the efficacy of state, regional, and national immunization programs:

- **Interconnected strategies get better results.** Immunization data use improves when programs use a set of mutually reinforcing strategies including capacity-building and behavior change management.
- **Data use leads to better data.** When data starts to be used, health care workers can see its value to their daily work and become more motivated to collect better data.
- **Systemizing data use leads to long-term success.** Interventions are more likely to be successful over the long term if they institutionalize data use through practices such as dedicated staff positions for data management and routine data review meetings.
- **Health management information systems (HMIS) and logistics management information systems (LMIS) increase availability of higher-quality data.** These digital systems have made higher-quality data more available to decision makers in real time.
- **Digital systems show promise, but barriers still exist.** The transition from paper to digital systems has made higher-quality data more available but has not automatically translated into greater data use.

PAHO and PATH conducted a realist review of published and non-published literature to identify these findings. This approach allowed the use of multiple types of evidence, such as experimental and nonexperimental study designs, gray literature, project evaluations, and reports. A majority of the 549 pieces of evidence reviewed were non-peer-reviewed literature, which provided important information that more traditional systematic reviews would overlook.

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NEW REPORT BY PAHO AND PATH DETAILS STRATEGIES TO IMPROVE VACCINE PROGRAMS THROUGH EFFECTIVE DATA USE Continued from page 3

“All too often the rich lessons learned from implementation of immunization programs are hidden in reports and evaluations that do not get published, or it takes years for them to reach the hands of policymakers,” said Allison Osterman, PATH Program Officer and author of the IDEA review. “We synthesized lessons and found there is much to be learned from these experiences that can be put into practice now.”

IDEA is now actively disseminating the IDEA findings to help ensure they are considered as immunization programs are designed, funded, or implemented. IDEA partners launched the #FindYourFinding interactive campaign, inviting practitioners across the immunization and global health community to explore the IDEA review, identify what evidence is most relevant to their work, and share how they plan to act on those findings.

The IDEA review was supported by a steering committee, which includes global and regional senior leaders in the areas of immunization, data quality, and use from World Health Organization; US Centers for Disease Control and Prevention; United Nations Children’s Fund; Gavi, the Vaccine Alliance; as well as country representatives from both the BID Learning Network and the Improving Data Quality for Immunizations project.

For more information on IDEA, visit <https://findyourfinding.org>.

IDEA is now actively disseminating the IDEA findings to help ensure they are considered as immunization programs are designed, funded, or implemented.

- Submitted by Laurie Werner, PATH, and Martha Velandia, Pan American Health Organization



UNIQUE DATA QUALITY MEASURES FOR THE BIRTH TO SIX POPULATION IN WASHINGTON STATE

The Washington State Immunization Information System (IIS) includes a unique feature—a health promotion system. The Washington State Department of Health uses the system to send immunization and well-child visit reminders to all families in the state with kids aged birth to 6 years. It's also a data quality tool for the birth to 6-year-old population in the IIS.

Data quality is the core of a robust, healthy IIS

We all know that an IIS is only as good as the data in it and all users are responsible for the integrity of the data. Mistakes happen, and we constantly clean up data errors as we find them and implement data quality measures to catch errors before they become issues. Using our IIS's health promotion system, we mail reminders to families with young children every 6 to 12 months, and the data quality of the birth to six population in our IIS is top notch. Each week we send about 32,000 pieces of mail to 18 English and 18 Spanish distribution lists. We have many internal and external data quality measures in place to ensure our address and demographic data for these kids is of the highest quality.

Internal data sources

The IIS's health promotion system includes the following data quality reports that are run each week before our distribution lists are generated:

- **Restricted Addresses** – These addresses are flagged by the IIS and temporarily marked as invalid so mailings are not sent to them. Once the patient has a vaccine administered, the IIS is updated with a current address, the temporary invalid status is removed, and mailing eligibility is restored if the patient is under 6 years old.
- **Promote Reserve Address** – Sometimes addresses from a provider are more current or complete than addresses in the health promotion system. Addresses on this report are analyzed and may be promoted to the current mailing address.
- **Unusable Names** – We don't mail to names the IIS considers unusable, such as Jane Doe or Mickey Mouse. Names on this report are marked as invalid. If real, once the patient's birth data is received or a vaccine is administered, the IIS is updated with a correct name, the temporary invalid status is removed, and mailing eligibility is restored if the patient is under 6 years old.
- **Language Switch** – This report shows us when a parent requests a different language in which to receive the mailings.
- **Long Names** – Long names and addresses are shortened or abbreviated according to Post Office character limits.

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UNIQUE DATA QUALITY MEASURES FOR THE BIRTH TO SIX POPULATION IN WASHINGTON STATE *Continued from page 5*

- **Suspicious Date of Birth** – This report catches data entry errors and vaccine administration errors. For example, sometimes providers enter hepatitis A instead of hepatitis B for the birth dose vaccine. This is obviously incorrect and is usually a data entry error that can easily be corrected by the owning organization. If left unchanged, the provider's vaccine inventory will not decrement correctly. If the provider accidentally gave a baby the hepatitis A vaccine instead of hepatitis B, there are measures we take to notify the provider to make sure the vaccine administration error is resolved.
- **Voids** – Voids are temporary birth file numbers given to a patient before the birth certificate is filed. Once the birth certificate is filed, the previous number is voided. This list is compared to records in the IIS, and duplicates are merged. Data exchange happens so fast that we oftentimes get hepatitis B birth dose data more quickly than birth certificate data. The birth dose data creates an initial record in the IIS using the temporary birth file number. Once the parents file a birth certificate and that data is uploaded, the IIS will typically merge the two records. If not, the records show up on this report for manual resolution.
- **Duplicate Scrub** – Each week after our mailing lists are generated, we scrub the list for duplicate records. Duplicates are identified and removed from the mailing list and resolved in the IIS. This is not only a data quality measure but also a cost saving measure since we're removing duplicate addresses from our mailing list.

External sources

- **Vital Records Uploads** – We upload birth, death, adoption, and void data weekly from our state's Vital Records program. Once uploaded, the birth data triggers our health promotion system to begin sending mailings to these families. Death data is used to inactivate patients of all ages in our IIS as well as turn off mailings for deceased children. We use adoption data to update the IIS when there are changes to a child's name, parent or guardian name, and address due to an adoption. The child's birth file number and vaccination history stay the same.
- **Address Correction Service** – We get daily reports from the Post Office when someone in our state moves within or out of the state, when someone requests their mail held for a temporary period of time, and if someone moves but does not leave a forwarding address. We use these reports to update addresses in the health promotion system.

For more information on Washington's health promotion system or to learn about our unique data quality measures, contact Jeniffer Hansen at jeniffer.hansen@doh.wa.gov.

- Submitted by Jeniffer (Jeni) J. Hansen, Washington State Department of Health



AART CLINIC MOTIVATES IMPROVEMENTS IN OREGON

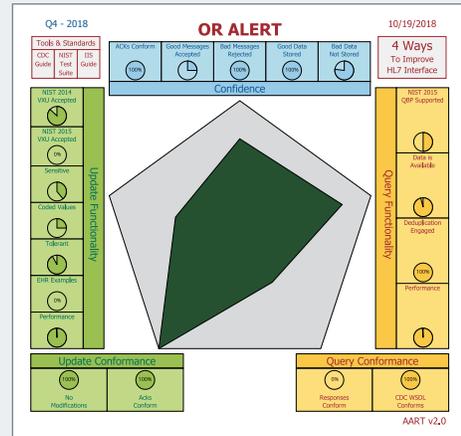
It has been almost a year since the first round of Aggregate Analysis Reporting Tool (AART) clinics were held at the AIRA National Meeting in August 2018. As we all look forward to the AIRA 2019 National Meeting and another round of AART clinics, we wanted to share the story of how one IIS's participation in measurement and improvement is paying off.

The AART clinics are a newer technical assistance opportunity available to participants in the Measurement and Improvement Initiative. Clinic attendees receive one-on-one technical assistance with AIRA technical staff to learn how best to use and leverage the results of the quarterly testing that is run through AART.

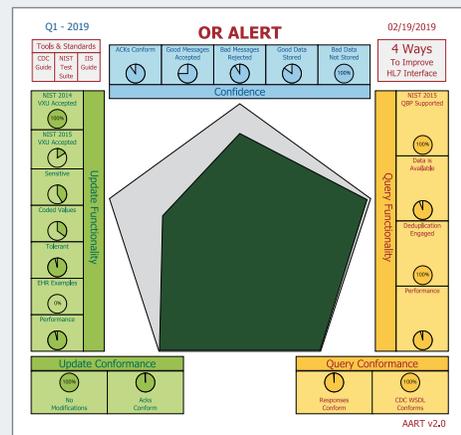
The Oregon ALERT IIS team, along with their IIS vendor, attended an AART clinic eager to learn how to better use the results of AART testing, discovery, and assessment. During the session, the Oregon team learned how to identify areas for improvement by viewing the assessment reports in AART and how to utilize the AART 4 Ways to Improve button for prioritizing work.

According to the Oregon team, the in-person AART clinic was key to identifying and prioritizing updates to their HL7 interface. Having the IIS director, data quality analyst, and IIS vendor all together to review test results was invaluable. When the Oregon team returned home after the National Meeting, they were able to prioritize and release a number of updates to their interface. As shown by the increased green area in the pentagon in the images, Oregon made impressive improvements from fourth quarter 2018 to first quarter 2019. Oregon chose to focus improvements on acknowledgement messages and query processing.

Q4 2018:



Q1 2019:



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AART CLINIC MOTIVATES IMPROVEMENTS IN OREGON *Continued from page 7*

The Oregon team is already signed up for an AART clinic at the 2019 National Meeting in August and looks forward to working with its IIS vendor to find new areas for improvement and ultimately to further the interoperability of its IIS with other data exchange partners. In the meantime, the Oregon team is digging into its recently released CDS Assessment report and looks forward to working with its vendor to optimize the clinical decision support presented back to clinical partners.

Whether you are an IIS director or immunization program manager making requests to decision makers to support enhancements and improvements to your IIS, remember to leverage the data in AART. The AIRA technical team is always available to provide insight into test results or to assist you in making the case for prioritizing IIS improvements.

“Oregon has found that participating in Measurement & Improvement has given us a way to help push forward enhancements to our IIS. Not only has the AART tool helped us identify exactly where we are off standard, but it provides us with a third-party perspective to show our leadership exactly where we should focus our limited funding.”

**– Jenne McKibben,
ALERT IIS Director**

Ready to sign up for your AART clinic?

Not attending the National Meeting but still want to review AART test results with AIRA technical staff? Contact Tracy Little, AIRA Technical Analyst, at tlittle@immregistries.org to set up a time for a virtual clinic.

- Submitted by Jenne McKibben, Oregon ALERT IIS, and Tracy Little, AIRA



EVOLVING APPROACHES FOR VACCINATION COVERAGE ASSESSMENT AMONG YOUNG CHILDREN

Assessing vaccination coverage provides critical information on the effectiveness of immunization programs. An increasing number of state, local, and territorial immunization programs use their immunization information systems (IIS) to identify populations or areas with lagging vaccination coverage (see AIRA's new guide, [Identifying Immunization Pockets of Need](#)).

To provide accountability for the investment of federal funds in these immunization programs, the Centers for Disease Control and Prevention (CDC) has produced estimates of vaccination coverage at awardee and national levels. One of CDC's goals is to provide estimates that are comparable across immunization awardees and over time. Another important CDC goal is to monitor disparities in vaccination coverage at the national level by race/ethnicity, poverty level, health insurance status, and rural versus urban status. For the past 24 years, the National Immunization Survey-Child (NIS-Child) has accomplished this objective for 2-year-old children and, more recently, for adolescents. However, as the public becomes less willing to participate in surveys and an increasing number of IIS reach high levels of data completeness, it's important to foster an evolution of these two systems' working together to provide a more complete picture of the nation's vaccination coverage. As these systems evolve, an ultimate goal is for every IIS to have high enough data quality to assess vaccination coverage at local, state, territorial, and national levels.

Reporting NIS-Child estimates by birth cohort—a change is gonna come

In 2019, CDC plans to transition from reporting NIS-Child estimates by survey year to reporting by birth cohort. This change was motivated by a desire to:

- Make the data more useful to CDC's immunization awardees
- Reduce bias in annual NIS-Child estimates caused by a decline in survey response rates
- Make annual NIS-Child estimates easier to interpret

(See [Evaluating Vaccination Coverage Trends with the National Immunization Survey \(NIS\)-Child, 2012–2016, United States](#), for details.)

CDC will report vaccination coverage estimates by one or two annual birth cohorts combined, with vaccination status assessed by a child's second birthday. Estimates will be simpler to communicate (e.g., "90% of children born in 2016 had received a dose of MMR by their second birthday"). It will also be easier to construct vaccination coverage estimates using IIS data that are more comparable to the NIS-Child estimates.

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EVOLVING APPROACHES FOR VACCINATION COVERAGE ASSESSMENT AMONG YOUNG CHILDREN

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Other advantages of the birth cohort approach include:

- Easier interpretation of trends in coverage
- More direct evaluation of immunization program performance using standard age at assessment (24 months)
- Larger sample size and precision for annual estimates by state
- Coherence with other vaccination measures, such as the Healthcare Effectiveness Data and Information Set (HEDIS)
- Making estimates less susceptible to possible year-to-year changes in survey accuracy

Look for more communication from CDC as we implement this change in reporting NIS-Child estimates. One of the first things we will do is provide awardee-level estimates by birth cohort using data through 2017. For more information, see the following presentation from the AIRA 2018 National Meeting, [Recent Developments with the NIS-Child](#).

Is your IIS ready for vaccination coverage assessment?

Comparisons of IIS to NIS-Child estimates have been used to provide a high-level check on IIS data completeness; 25 jurisdictions had IIS estimates of the seven-vaccine series that were within 10 percentage points of the 2016 NIS-Child estimates ([Progress in Childhood Vaccination Data in Immunization Information Systems — United States, 2013–2016](#)). IIS-NIS comparisons will be

simpler when done by birth cohort. More direct evaluation has been provided by matching child-level data from NIS samples to IIS. In 2018, CDC offered to provide states with matches of 2017 NIS-Child and NIS-Teen data to IIS with vaccination coverage estimates within 10 percentage points of NIS-Child estimates. Currently, 24 IIS are participating in this project. These matches may be useful for AIRA's [Measurement and Improvement Initiative](#).

While the NIS has been a “gold standard” for assessing IIS data quality, comparisons to IIS data from systems with higher data quality have also been reassuring. The convergence of estimates from these IIS with NIS estimates may indicate that both are closely approximating true vaccination coverage. We are considering how we can include high-quality IIS vaccination coverage estimates in our total survey error model that estimates how much bias there is in NIS-based estimates. We already incorporate data from IIS-NIS matches to determine the proportion of vaccinations missed by the NIS provider record check.

Integrating IIS and the NIS – baby steps

The evolution of IIS and the NIS may best be exemplified by CDC's plan for IIS-NIS integration. CDC's goal is to work with immunization program awardees in a four-phase approach to integrate IIS with the NIS sampling frame and provider record check. The result will be a more efficient system for assessing vaccination coverage at national, state, territorial, and selected local area levels that combines the strengths of IIS and the NIS.

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EVOLVING APPROACHES FOR VACCINATION COVERAGE ASSESSMENT AMONG YOUNG CHILDREN

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The four phases include:

1. Using data from an IIS to enhance the NIS telephone sampling frame
2. Using data from an IIS as the sole source of the NIS sampling frame (dropping the NIS telephone sampling frame)
3. Using data from an IIS as the sole source of the NIS sampling frame and integrating vaccination data from the IIS with vaccination data from the NIS provider record check
4. Using data from an IIS as the sole source of the NIS sampling frame and replacing the NIS provider record check with vaccination data from the IIS

We designed the four-phase approach to maintain comparability of vaccination coverage estimates over time and across awardees. Each awardee may progress through the phases at a different time. In the first phase, we will use telephone numbers and date of birth ranges from the IIS to reach households eligible for the NIS more efficiently. This will allow us to collect larger sample sizes for the same cost. In the second phase, we will gain even more efficiency by dropping the NIS random-digit-dial telephone sample and using only the IIS to select a random sample of age-eligible children. In the third phase, we will start to include vaccination data from the IIS in the NIS provider record check. In the fourth and final phase, a random sample of children from the IIS will be selected, and their parents/guardians will be interviewed to collect sociodemographic and other information not available across all IIS; all vaccination data will be from the IIS.

Currently, 13 jurisdictions are working with CDC on the first phase of IIS-NIS integration for the 2019 sample. We are seeking additional awardees to enter the first phase with the 2020 and later NIS samples. Long-term success of this effort will require overcoming data-sharing barriers for some awardees, improving prevalence of accurate telephone numbers in IIS, and continued viability of the NIS.

An uncertain future

We have reached a crossroads in NIS and IIS evolution but cannot afford to go in only one direction. We face a number of key questions and challenges:

- When is an IIS ready to identify pockets of need? The necessary level of data quality may depend on the purpose. For example, a lower standard of quality may be needed to identify counties with lower vaccination coverage than for comparisons with other jurisdictions or contribution to national estimates. Child-level matches to the NIS are useful but might not always be possible because of data-sharing barriers. Thus, we need other ways to measure IIS data completeness.
- How long will the NIS remain viable? Bridging cohort analysis and comparison to high-quality IIS data have provided some reassurance that NIS estimates are still tracking accurately. We will continue to expand efforts to assess accuracy.
- Are there better ways to conduct the NIS? For example, we could switch from sampling cell telephone numbers to sampling addresses and

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EVOLVING APPROACHES FOR VACCINATION COVERAGE ASSESSMENT AMONG YOUNG CHILDREN

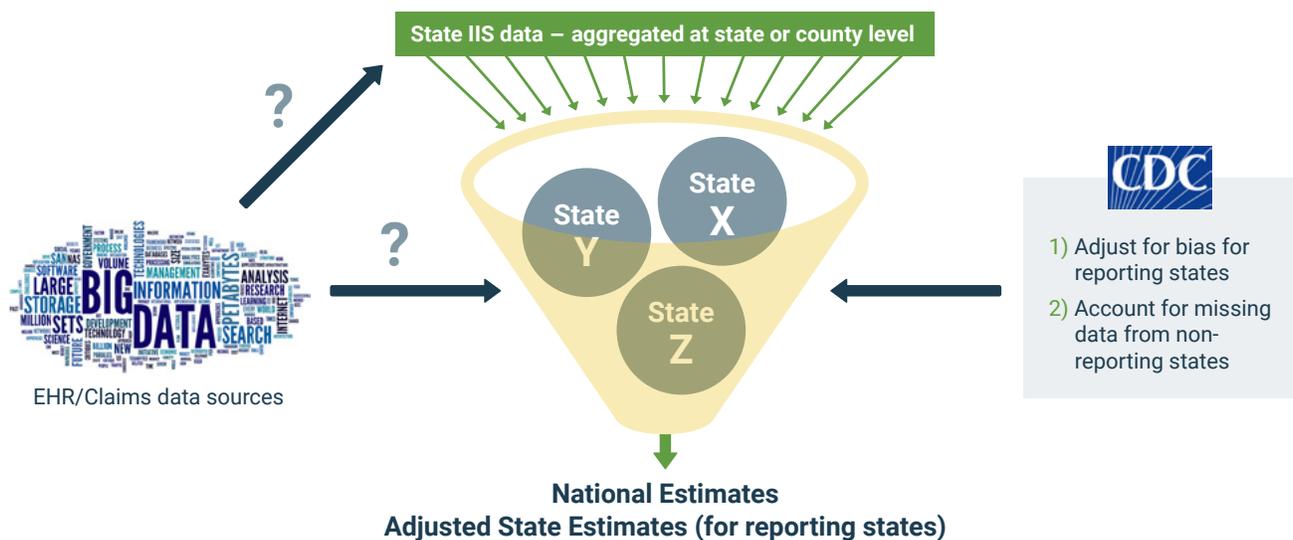
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try to engage parents through mail, internet, and telephone response modes. We can test this approach with selected IIS that are participating in IIS-NIS integration, using addresses in IIS to efficiently identify those households with children eligible for the NIS.

- How fast can we implement the four-phase IIS-NIS integration plan? This will depend on improvements in IIS data quality across the board and resolution of IIS data-sharing issues in some jurisdictions.
- What “Plan Bs” can we develop for a possible future without the NIS as we know it? CDC is working on ways to extrapolate data from selected IIS with higher data quality to create national estimates (e.g., using a county-based model). However, this would require rethinking CDC’s goal of having comparable estimates across states. We may need to reimagine the

four-phase IIS-NIS integration plan (see Figure). Future approaches could rely on sharing of child-level or aggregate data from all IIS, coupled with an assessment of data quality. These data quality assessments might still use the NIS approach of talking with the parent and following up with the child’s vaccination providers to verify receipt of vaccinations. There may also be a role for “big” data, such as data repositories from medical claims, electronic health records, and pharmacy records.

We must meet these uncertainties by leaning into the discomfort and creating opportunities to enter a new, improved age of vaccination coverage assessment. It will take a concerted effort by the immunization community. Success is critical for the improvement and sustainability of our nation’s immunization programs.



- Submitted by Jim Singleton, PhD, CDC



USING THE IIS TO IDENTIFY THE ROOT CAUSES OF MISSED OPPORTUNITIES

In order to provide high-quality, safe, and effective patient care, it is critical that health care organizations expand sustainable systems for immunization programs. In an effort to improve health outcomes, there is an expectation that health care providers administer the correct vaccines on the correct schedule, in an appropriate, safe, and effective manner.

Yakima Valley Farm Workers Clinic (YVFWC) is a large Federally Qualified Health Care (FQHC) organization with two dozen sites providing holistic health care services for approximately 155,000 unique patients annually. The organization administers vaccines to patients of all ages and is a recognized leader for vaccine coverage rates in both Washington and Oregon. Becoming a leader in vaccine management involved implementing standing orders and documenting immunization workflows, establishing a bidirectional feed with IIS in both Oregon and Washington, and implementing steps to ensure gaps were closed and vaccines administered. These steps included adding all missing historical immunizations into the IIS, assessing immunizations at every visit, and using the recall and reminder reports available in IIS.

Despite having all of these steps in place, in the middle of 2017, the organization found itself stagnant and even decreasing in immunization rates at some of its locations in the Healthcare Effectiveness Data and Information Set (HEDIS) combo 10 measure for children. The Quality Department wanted to optimize the use of the IIS to leverage the organization's immunization rates for this particular population and to identify strategies to improve processes.

Utilizing the IIS system to gather data for a root cause analysis, the Quality Department staff were able to identify previously overlooked practices leading to missed opportunities. The IIS system allows a level of drill-down in reporting that gives views of individual vaccines, age cohorts, and specific populations. These drill-downs helped the team to identify eight different causes for missed opportunities to vaccinate. The causes included parental declination and subsequently the lack of follow up; failure to follow the protocol and forecast at every visit; avoidance of simultaneous administration of multiple vaccines; following invalid contraindications; failure to follow up with staff after missed opportunities; and failure to treat all vaccines with equality. While there was not a singular site with all of these factors, they were widespread and had a moderate impact.

As the key stakeholders came together to review the root cause analysis results, it was agreed that we wanted to collaborate to both identify barriers to success and create resolutions, while also empowering front line staff to utilize the IIS to not only reconcile, but improve outcomes by identifying areas of focus specific to their own population. Champions were identified at each level, and discipline was undertaken to build partnerships, provide peer-to-peer interventions,

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USING THE IIS TO IDENTIFY THE ROOT CAUSES OF MISSED OPPORTUNITIES

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and follow up on IIS data variations. We also initiated a monthly publication with both the overall vaccination rates for the organization and the clinics, individually. Utilizing data from the IIS for both Oregon and Washington allowed the Quality Department to provide one central graphic displaying each clinic's progress toward the Healthy People 2020 goals for childhood immunizations. This information, in turn, sparks deeper collaboration between quality and the clinics as they not only strive to achieve the most optimal outcomes for their own population but also identify best practices across the organization.

Using the IIS to really aggregate and trend data at a deeper level not only helped our organization improve our vaccine rates but also helped to

identify and monitor identified barriers and implement best practices. Vaccination rates have improved for the entire organization by 11% in one year and by as much as 25% at several of the most affected sites. This root cause analysis and the final conclusions have demonstrated that, by using the IIS to help our staff identify reasons for decreased vaccination rates, we were able to find new and innovative methods to improve our workflows while keeping our focus on our patients and improved health outcomes.

Vaccination rates have improved for the entire organization by 11% in one year and by as much as 25% at several of the most affected sites.

- Submitted by Lori Kelley, MSN, RN, Senior Director of Quality, and Victoria Larios, RN, Infection Preventionist, Yakima Valley Farm Workers Clinic



OVERVIEW OF INDIANA'S IIS-VFC ACCOUNTABILITY REPORTS

An average of 750-800 providers participate in Vaccines for Children (VFC) in Indiana every year. Early in 2017, the Indiana State Department of Health's Immunization Division and the immunization information system (IIS) team rolled out the Vaccine Ordering and Management System (VOMS) that enabled VFC providers to conveniently place and receive their orders of publicly supplied vaccines online.

The VOMS module was included as an add-on to Indiana's IIS, called the Children and Hoosiers Immunization Registry Program, or CHIRP, so users could easily check, reconcile, and maintain their vaccine inventory. As part of the VOMS rollout, the Immunization Division also provided detailed documents and reference guides on vaccine accountability, inventory reconciliation, vaccine returns, and borrowing. Although this provided an excellent tool for providers to streamline their workflow by monitoring and tracking their VFC vaccine inventory, the VOMS team discovered that additional tools were needed to check and ensure provider compliance.

The IIS team worked with the Immunization Division to develop five reports that provided data on compliance and accurate reporting of VFC-supplied vaccines to the IIS.

The IIS team worked with the Immunization Division to develop five reports that provided data on compliance and accurate reporting of VFC-supplied vaccines to the IIS. The reports are run monthly (automated), emailed to the vaccine operation staff, and distributed to the appropriate field staff for follow-up with providers. Here is a description of the reports that are generated in PDF format and contain the provider's VFC PIN, name, and contact information, in addition to specific report details:

- 1. Orders not received:** This report lists the number of orders shipped in the last 30 days that were not flagged as received by the providers. Once the request for VFC vaccine order is made by the provider and is approved by the state, all relevant information is uploaded to VTrcKS. These orders are then processed and shipped to the providers. Immunization staff also download the shipping file from VTrcKS that contains detailed information on the vaccines included in these orders and upload this information to the IIS. Once the physical shipment is received, providers log into the VOMS module and verify and receive their orders in the system to complete the order. This will automatically load the lot, dose, NDC, and other information directly into the IIS inventory. Orders not received via VOMS would lead to decrementing issues since the lots would not be available in the inventory.

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OVERVIEW OF INDIANA'S IIS-VFC ACCOUNTABILITY REPORTS *Continued from page 15*

- 2. Lots manually entered:** This report lists public lots in the last 30 days that were manually entered instead of being received via the VOMS module. Except for the lots that were borrowed or transferred, all VFC lots are required to be received via VOMS. This eliminates manual data entry and any entry errors. Additionally, this information is used by the system to calculate recommended order quantity (based on previous order and uptake by the provider) when a new order request for vaccines is made.
- 3. Providers not reporting any administered doses:** This report lists VFC providers that haven't reported any administered doses in the last 30 days. Indiana law mandates that all VFC and non-VFC providers are required to report to CHIRP all administered vaccines (for patients aged birth to 18 years) within seven days of administration. This report helps identify any electronic medical record import, workflow, or other issues that might cause doses not to be reported to the state.
- 4. Inventory error adjustments:** This report lists providers who adjusted or reconciled their inventories in the last 30 days using the value "Inventory Error." When the VOMS module was initially rolled out, immunization staff discovered that a number of providers were using this entry for doses that they could not account for, bypassing accountability. "Inventory Error" entry is to be used only for specific cases when a date-entry error occurred.
- 5. Providers not reporting VFC eligibility:** This report lists providers who did not report VFC eligibility for doses administered at their facility in the last 30 days. This is one of the fields required to be reported and determines whether the patient is eligible to receive a VFC dose.

The Immunization Division has found these reports to be helpful with monitoring and tracking provider accountability of publicly supplied vaccines.

- Submitted by Vijay Pathangi, MSHI, Indiana State Department of Health

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