AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

JUNE 2026 | ISSUE NUMBER 110

SNAPSHOTS

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

PRESIDENT'S REPORT

Dear Colleagues,

It was wonderful to see so many of you in Pittsburgh at the AIRA 2026 National Meeting in April! The energy, the conversations, and the connections made were a genuine reminder of what the IIS community is capable of when we come together. We are already looking forward to doing it again. The AIRA 2027 National Meeting will bring us to Louisville, Kentucky, next May. We hope to see you there.

Before diving into this edition, we are pleased to share some exciting board news. Please join us in congratulating AIRA's newly elected officers:

- **President-Elect: Laura Barrett**, Kentucky Department for Public Health
- **Treasurer: Mary Woinarowicz**, North Dakota Department of Health and Human Services

Both bring immense IIS experience and a genuine dedication to this work. We are glad to have them stepping into these roles and look forward to the leadership they will bring.

This edition of *SnapShots* is a good one. We open with research from Louisiana examining sociodemographic predictors of adolescent vaccine completion across the HPV, MenACWY, and Tdap series. The findings surface meaningful patterns across race, geography, and socioeconomic factors at both the individual and census-tract level. Next, colleagues from Athenahealth, STChealth, and the Mississippi Department of Health share a practical solution to a persistent challenge: unstable patient identifiers in HL7 messaging. Their redesigned medical record (MR) number structure improves matching reliability without requiring changes to the standard itself.

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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.

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The third article highlights Tennessee's IIS team, and walks through their age-based approach to processing duplicate records identified through CDC's Privacy-Preserving Record Linkage (PPRL) process. With over 243,000 potential duplicates flagged from more than 10 million records, their tiered review strategy is both practical and replicable. Also featured in this edition is Docket, showcasing the many upgrades it introduced to Docket For Schools based on the company's direct work with school nurses to advance school immunization reporting across the country.

Finally, we close with the Education Exchange, highlighting updated IIS procurement webinars now available through the PHII IIS Learning Hub, along with a preview of new resources on the horizon, including a project management e-learning and the IIS Sustainability Toolkit.

Thank you to everyone who contributed to this edition. And, as always, thank you all for the dedication you bring to IIS and to the communities that depend on this work. Until we meet again in Louisville, take care of yourselves and each other. I hope you have a wonderful summer.

Thank you all for the dedication you bring to IIS and to the communities that depend on this work.

Regards,

Marie Hartel, MPH
Program Director for the Tennessee Department of Health
Vaccine-Preventable Disease and Immunization Program
AIRA Board President

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SOCIODEMOGRAPHIC PREDICTORS OF ADOLESCENT VACCINE COMPLETION IN LOUISIANA

Background

The U.S. Centers for Disease Control and Prevention (CDC) recommends that adolescents between the ages of 11 and 18 years complete the following vaccine series: human papillomavirus virus (HPV) vaccine; meningococcal vaccine (MenACWY); and tetanus, diphtheria and pertussis (Tdap) vaccine.

These vaccines are safe and effective and play a crucial role in preventing severe, life-threatening diseases, such as many cancers (including cervical and head and neck cancers) caused by HPV. Yet adolescent vaccine coverage rates often lag behind childhood immunizations in many places, including Louisiana.

Objective

Here we have evaluated sociodemographic predictors at the individual and census tract levels that predict completion of HPV, MenACWY and Tdap vaccines among adolescents 13 through 17 years of age in Louisiana.

Methods

We retrieved demographic information for adolescents aged 13–17 years old (2021–2023) from Louisiana's immunization information system (IIS) and geocoded home addresses to derived census tracts. At the individual level, we examined characteristics such as sex, race, and ethnicity; however, since socioeconomic data is typically not available in the IIS, we used census-tract level information for predictors such as median household income, educational attainment, poverty, and unemployment. Multivariable logistic regression analysis was conducted using R to examine predictors associated with adolescent vaccine completion.

Results

1. **HPV:** People living in urban areas, compared to rural, had 16% higher odds of completing the HPV series (aOR=1.159; 95% CI=1.129–1.189; *P*<0.0001). People assigned female at birth and black individuals also had about 10% higher odds of completing the HPV vaccine series compared to male and white respectively. At the census tract level, people living above the statewide median for percentage of unemployment and percentage of single-parent households also had 3%–5% higher odds of completing the series than people living in census tracts that were below the statewide median.

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SOCIODEMOGRAPHIC PREDICTORS OF ADOLESCENT VACCINE COMPLETION IN LOUISIANA *Continued from page 3*

2. **MenACWY:** Race and ethnicity were the strongest predictors of MenACWY vaccine completion. After adjusting for other predictors in the model, non-Hispanic and black individuals had significantly lower odds (by ~8%–10%) of completing the MenACWY vaccine series, compared to Hispanic and white individuals. Similar to the results for HPV vaccination, people assigned female at birth had slightly higher odds of completing the MenACWY series, compared to male. Among the socioeconomic factors at the census tract level, people living in census tracts with a low-income population above the statewide median had significantly lower odds of series completion compared to people living in areas where the percentage of low-income population is below the statewide median.
3. **Tdap:** Odds of receiving the Tdap vaccine were lower among black and Hispanic adolescents, compared to white and non-Hispanic adolescents, respectively. At the census tract level, people living in areas with a percentage of disabled population and a percentage of low-income population higher than the statewide median had slightly higher odds of receiving the vaccine than those living in areas below the median.

Conclusion

Social determinants of health, both at the individual and population levels, are significant predictors of adolescent vaccine completion. As such, they are essential to consider for adolescent vaccination strategies to be effective and equitable. This information can help providers understand the health implications of sociocultural factors and identify at-risk adolescents among their patients. It can then inform conversations between providers and patients/parents that break down barriers and ultimately improve routine adolescent vaccine coverage rates.

Social determinants of health, both at the individual and population levels, are significant predictors of adolescent vaccine completion.

– Submitted by Suryatapa Kar, MPH, *Epidemiologist, Louisiana Department of Health, Office of Public Health, Immunization Program;* ***Nancy Zhao, MPH,*** *Epidemiologist, Louisiana Department of Health, Office of Public Health, Immunization Program;* ***Annie Truong, MPH,*** *Epidemiologist, Louisiana Department of Health, Office of Public Health, Immunization Program;* ***Arundhati Bakshi, PhD,*** *Analytics and Reporting Program Manager, Louisiana Department of Health, Office of Public Health, Immunization Program*

ADVANCING HL7 PATIENT IDENTIFICATION

HL7 v2.5.1 messaging has served as the backbone of immunization data exchange in the United States for more than a decade. While significant progress has been made toward improving interoperability through efforts such as CDC's Data Quality Blueprint and enhancements at the transport layer, challenges related to patient identification persist.

One of the most impactful—and often overlooked—contributors to data quality issues in immunization information systems (IIS) is the reuse or mutability of patient identifiers within HL7 messages.

Historically, medical record (MR) numbers assigned by electronic health record (EHR) systems and system registry (SR) numbers generated by IIS have been relied upon to support patient matching. Although both identifiers provide value, they share a common limitation: they are not always permanent. MR numbers may be reassigned or reused by sending systems, and SR numbers can change as patient records are merged or reconciled within an IIS. When identifiers are not stable, IIS patient matching becomes more complex—particularly in jurisdictions that must rely on probabilistic or non-strict matching methods—introducing risk for duplication or incorrect record association.

In 2025, Athenahealth, STChealth, and the Mississippi Department of Health partnered on targeted data quality and cleanup initiatives aimed at improving patient matching outcomes. Through this collaboration, the partners identified an opportunity to strengthen identifier uniqueness without modifying the HL7 standard itself. The result was a revised MR number format designed to remain unique across facilities and over time.

Through this collaboration, the partners identified an opportunity to strengthen identifier uniqueness without modifying the HL7 standard itself.

The enhanced MR number structure combines a patient-specific identifier with a facility identifier into a single, composite value. For example, *28418A27095* links the patient identifier (*28418*) with the facility identifier (*27095*), using a delimiter to clearly separate the components. This approach ensures that, even if a patient identifier is reused within a sending system, the full MR value remains unique across organizations submitting immunization data.

While SR numbers remain essential to IIS operations, they are not intended for use by EHR vendors within query by parameter (QBP) workflows. Ingesting SR numbers into EHR systems can create downstream challenges when records are merged or identifiers change within the IIS. Recognizing this, STChealth continues to refine patient matching strategies from a product perspective, while Athenahealth has communicated the rollout of the updated MR number format to all impacted jurisdictions.

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ADVANCING HL7 PATIENT IDENTIFICATION *Continued from page 5*

This collaboration demonstrates that meaningful data quality improvements can be achieved through partnership and pragmatic innovation—even within long-established standards. By strengthening the stability of patient identifiers at the source, IIS and EHR partners can reduce matching complexity, improve data integrity, and support more reliable immunization decision-making.

– Submitted by Chloe Watts, *Senior Health IT Operations STChealth;* ***Theresa Case,*** *Senior Implementation Associate, Athenahealth;* ***Camille Dearing,*** *Project Engineer, Athenahealth;* ***Nathon Cupit,*** *Interoperability Manager, Mississippi Department of Health*

ENHANCING DATA QUALITY: TENNESSEE'S AGE BASED APPROACH TO PROCESSING DUPLICATE RECORDS THROUGH PPRL

Introduction

The Tennessee Department of Health Tennessee Immunization Information System (TennIIS) team strives to meet the Centers for Disease Control and Prevention (CDC) Immunization Information Systems (IIS) Data Quality Blueprint standards, including the enabling characteristics of data that are accurate, consistent, and unique.

The presence of duplicate patient records in the IIS can hinder data quality and lead to inaccuracies in vaccine forecasts and vaccination coverage rates. Duplicates can also lead to incomplete immunization certificates at the patient level, which can cause inaccurate epidemiological data. The TennIIS team used the CDC's Privacy-Preserving Record Linkage (PPRL) Data Quality Feedback Report to identify potential duplicates within TennIIS. In 2025, PPRL reviewed more than 10 million records and flagged 243,313 (2.3%) records as potential duplicates.

In 2025, PPRL reviewed more than 10 million records and flagged 243,313 (2.3%) records as potential duplicates.

Implementation and results

Records were prioritized for manual review based on patient age and the number of possible matches linked to each record. Patient age was prioritized due to the likelihood of inaccurate data affecting vaccine forecasting or school certificates.

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ENHANCING DATA QUALITY: TENNESSEE'S AGE BASED APPROACH TO PROCESSING DUPLICATE RECORDS THROUGH PPRL *Continued from page 6*

In total, 41,149 records were assigned to three tiers for manual review:

- **Tier 1** – Children younger than 6 years of age
  - 11,449 records across 5,590 clusters
  - Of the 5,590 clusters, 3,455 (61.8%) contained duplicate records
- **Tier 2** – Individuals between 6 and 18 years of age
  - 23,885 records across 11,822 clusters
  - Of the 11,822 clusters, 7,031 (59.5%) contained duplicate records
- **Tier 3** – Individuals 18 years and older with 3 or more IDs
  - 5,815 records across 1,222 clusters
  - Manual review in progress

Conclusion

Duplicate patient records remain a challenge for IIS. Tennessee's approach to use age-based prioritization to process PPRL-identified potential duplicates enabled efficient identification of true duplicates and improved the accuracy of individual immunization records. These findings highlight the ongoing need for targeted data quality strategies to strengthen immunization information systems and support public health decision-making.

Looking forward

The TennIIS team plans to repeat this process with each quarterly PPRL data set and track improvements over time. They plan to employ additional strategies to continue manually reviewing Tier 3 records. Lastly, the TennIIS team intends to use the Smarty command-line interface to standardize approximately 50,000 incomplete addresses identified through PPRL, enhancing record completeness and increasing the likelihood that duplicate records will be automatically identified and merged by the IIS.

– Submitted by Emily L. Gateley, MPH, *Epidemiologist II, Tennessee Department of Health;*
David Baron, BSN, RN, *Clinical Applications Coordinator II, Tennessee Department of Health*

THE QUEST FOR BETTER SCHOOL IMMUNIZATION REPORTING

For Team Docket, the AIRA National Meeting is more than just a conference; it's a time for us to celebrate our public health partners and share all our hard work with the rest of the IIS community.

We work all year to sort out what exactly we want to highlight at the AIRA National Meeting. This year, we showcased many of the upgrades we introduced to Docket For Schools based on our direct work with school nurses to advance school immunization reporting across the country.

What is Docket For Schools?

Docket For Schools is a school and child care module for IIS that streamlines the entire back-to-school immunization reporting process. The platform serves three core functions: (a) it automatically calculates each student's compliance with grade entry requirements, (b) it handles the reporting of paper records and exemptions, and (c) it automates required state and federal reporting.

For school nurses, the platform simplifies and standardizes state reporting while saving significant time by automating compliance calculations. For public health departments, it provides real-time statewide visibility into school-based immunization reporting, data completeness, at-risk student populations, and automated CDC reporting.

Iterative improvements driven by user feedback

Since its debut, Docket For Schools has evolved significantly through close collaboration with school nurses, IIS administrators, and public health partners. For those of you who might have missed breakout session 2D – Working with Schools to Increase IIS Data Reporting & Quality, here are some of the many examples of how user feedback shaped meaningful improvements to the platform.

1. Transparency in compliance calculations

- **The challenge:** School nurses frequently questioned why a student appeared compliant for a vaccine like DTaP in their old system but noncompliant in Docket For Schools.
- **The solution:** We built an immunization compliance IIS data visualizer complete with interactive predicate trees. Nurses can now see exactly which doses were evaluated, see which were deemed valid or invalid, and follow the logic tree that drove the compliance decision—turning a "black box" into a fully transparent process.

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THE QUEST FOR BETTER SCHOOL IMMUNIZATION REPORTING *Continued from page 8*

2. Verifying paper records

- **The challenge:** Nurses had limited guardrails for programmatically verifying paper records against compliance rules.
- **The solution:** We launched a public dose evaluation tool with a "Student Mode" overlay for checking school-entry requirements (Maine and Utah versions). Nurses can input immunization data from a paper record and immediately see how it would evaluate against grade-based requirements.

3. Automating exemption ingestion

- **The challenge:** Jurisdictions with high volumes of immunization exemptions experienced significant administrative burdens managing them manually.
- **The solution:** Docket For Schools now automatically ingests exemption data captured in IIS using custom Z99 and Z97 profiles. When a parent submits an exemption through a state's online survey and it's recorded in the IIS, the exemption appears automatically in the student's record—no manual entry required.

4. Forcing IIS record matches

- **The challenge:** Sometimes additional demographic information is needed to "force" a match on an IIS record beyond what was originally provided in the student roster.
- **The solution:** We added an IIS query override feature that captures additional information, such as mother's maiden name, to improve match rates—complementing the existing capability for nurses to break ties when multiple IIS records are returned.

5. Forcing IIS record matches

- **The challenge:** School nurses often start immunization reporting in the spring before the fall semester, but compliance rules differ by grade level.
- **The solution:** A toggle feature now allows nurses to render student immunization compliance based on next year's grade requirements, giving them a head start on identifying students who will need follow-up before the new school year begins.

6. Forcing IIS record matches

- **The challenge:** Public health officials needed a way to quickly identify students vulnerable to vaccine-preventable diseases (VPDs) using existing Docket data.
- **The solution:** We built a corresponding set of one-click Outbreak Risk Reports for both school nurses and IIS administrators. These reports calculate protection status against specific diseases (like measles), ignoring evidence like exemptions that don't actually provide outbreak protection.

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THE QUEST FOR BETTER SCHOOL IMMUNIZATION REPORTING *Continued from page 9*

7. AI-generated training materials

- **The challenge:** Creating, updating, and distributing training materials across multiple jurisdictions proved oppressively burdensome for our small team.
- **The solution:** We launched an online repository of brief, task-specific training videos generated using artificial intelligence. This dramatically reduces the time required to maintain up-to-date guides for each jurisdiction's unique workflows.

8. Real-time reporting dashboards

- **The challenge:** IIS administrators struggled to follow up with schools that were late in submitting student compliance data.
- **The solution:** A real-time dashboard now allows IIS admins to monitor school reporting completeness across the state, with one-click contact options for school administrators, nurses, and registrars who need follow-up.

9. Configurable reporting windows

- **The challenge:** School reporting requires both granularity and transparency, with different timing and rules across the year.
- **The solution:** Docket For Schools now supports multiple reporting engines backed by configurable submission windows, allowing IIS admins to define midyear and year-end reports with unique opening, closing, and eligibility criteria.

10. Configurable reporting windows

- **The challenge:** Public, private, charter, and other school types often have different reporting requirements.
- **The solution:** IIS administrators can now configure and apply unique "labels" to different types of schools—enabling tailored reporting workflows and eligibility criteria.

Looking ahead

New features on the horizon include expanded student transfer functionality (removing shared permissions limitations), event-based email reminders for upcoming reporting deadlines, and improved grade promotion with new bulk action capabilities. **By continuing to listen carefully to school nurses and public health partners, Docket For Schools will keep evolving to make immunization reporting faster, easier, and more transparent for everyone involved.**

From all of us at Docket, thank you once again for giving us a "shot"!

– Submitted by Michael Perretta, *Chief Executive Officer, Docket*

EDUCATION EXCHANGE

Welcome to the Education Exchange,

where we highlight valuable educational offerings and resources to support learning and professional development within the IIS community.

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PHII PROCUREMENT PLANNING SESSION

Missed the live procurement sessions? Catch up with the latest IIS procurement webinars from CDC and the Public Health Informatics Institute (PHII), now available on the PHII IIS Learning Hub. Dive into key topics such as procurement planning, navigating complex processes, accountability, performance requirements, and contract enforcement. Access slide decks and practical resources to support your work.

We've also revamped the IIS Learning Hub to make it easier than ever to find the training, tools, and resources you need to support IIS staff and partners.

And there's more coming soon! Stay tuned for new offerings, including an e-learning course on project management, the IIS Sustainability Toolkit, and an IIS module within the PHII Data Modernization Planning Toolkit.

Explore the updated IIS Learning Hub today, and watch for what's next!
Questions? Contact iis@phii.org or your CDC SME.