



SNAPSHOTS

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

PRESIDENT'S REPORT

Dear IIS Partners,

Welcome to the spring edition of *SnapShots!* I hope that everyone is doing well and is practicing self-care during this time of change within our programs and in the country overall. AIRA remains committed to its mission of promoting and supporting the use of immunization information to ensure healthy communities during this unprecedented time in American history.

In this edition of *SnapShots*, we learn about the Minnesota Immunization Information Connection (MIIC), Minnesota's IIS, and how it was used by child care centers to complete their annual immunization report. MIIC has streamlined the report creation process, and the data has been used to assist in vaccine-preventable disease outbreak response. The Rhode Island Child and Adult Immunization Registry (RICAIR) gives us an overview of how it used the Modeling of Immunization Registry Operations Workgroup (MIROW) "Vaccination Level Deduplication in Immunization Information Systems" guide to identify several success factors that have helped Rhode Island implement effective deduplication within its IIS.

In this issue, we also get the opportunity to learn more about the National Association for Public Health Statistics and Information Systems (NAPHSIS). NAPHSIS works closely with AIRA on data standards, FHIR implementation (Fast Healthcare Interoperability Resources), and sustainable funding and system modernization.

Finally, in our Tech Corner, Nathan Bunker gives us an overview of common artificial intelligence (AI) terms along with AI misconceptions. AIRA will continue to provide information about how AI can be used to improve IIS efficiencies.

Continued on page 2

TABLE OF CONTENTS

PRESIDENT'S REPORT	1
WHY IIS: ASSISTING CHILD CARE CENTERS WITH REQUIRED ANNUAL IMMUNIZATION REPORTING IN MINNESOTA	3
MAINTAINING DATA INTEGRITY: SUCCESS FACTORS FOR VACCINE DEDUPLICATION IN RHODE ISLAND	4
HOW INTEROPERABILITY ASSESSMENT SUPPORTS AND IMPROVES DATA QUALITY	7
NAPHSIS: A CLOSER LOOK	8
THE TECH CORNER	11

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.



SNAPSHOTS

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

PRESIDENT'S REPORT *Continued from page 1*

Thank you to everyone who contributed to the March 2025 issue of *SnapShots*. We greatly appreciate your engagement and willingness to share your knowledge with the IIS community.

As we grow closer to April, our anticipation and excitement for the AIRA 2025 National Meeting grows too. We are looking forward to welcoming you to Spokane, April 28–May 1. This year, we are kicking things off a day early on Monday with a dynamic opening plenary, educational workshops, and a lively networking reception to set the tone for the week.

AIRA will be taking the Evergreen State by storm! See you there!

Regards,

Melissa Mickle-Hope, MPH

Director, Citywide Immunization Registry (CIR), Bureau of Immunization
NYC Department of Health and Mental Hygiene
AIRA Board President

TABLE OF CONTENTS

PRESIDENT'S REPORT	1
WHY IIS: ASSISTING CHILD CARE CENTERS WITH REQUIRED ANNUAL IMMUNIZATION REPORTING IN MINNESOTA	3
MAINTAINING DATA INTEGRITY: SUCCESS FACTORS FOR VACCINE DEPLICATION IN RHODE ISLAND	4
HOW INTEROPERABILITY ASSESSMENT SUPPORTS AND IMPROVES DATA QUALITY	7
NAPHSIS: A CLOSER LOOK	8
THE TECH CORNER	11

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.



WHY IIS: ASSISTING CHILD CARE CENTERS WITH REQUIRED ANNUAL IMMUNIZATION REPORTING IN MINNESOTA

In Minnesota, participating child care centers can opt in to using the IIS to complete their annual immunization reporting.

Every year, licensed child care centers are required to report the immunization status of enrolled children to ensure compliance with Minnesota's Immunization Law. Reporting requires tallying enrolled children into specific age ranges, vaccine groups, and immunization statuses, which can be time-consuming and confusing.

In 2011, the Minnesota Department of Health (MDH) conducted a pilot project to determine if child care centers would be interested in using the Minnesota Immunization Information Connection (MIIC), Minnesota's IIS, to complete their annual report. That year, MDH helped 11 child care centers complete their annual report, and the positive feedback on the new process enabled us to expand the program statewide in 2013.

Today, any interested child care center can use MIIC to complete its annual report using a simple, four-step process:

1. Create and maintain list(s) of their enrollee children within MIIC
2. Submit a request to generate their annual immunization report using the list created in MIIC
3. Review and verify accuracy of the report generated using MIIC data
4. Complete the annual immunization report by entering the data into the reporting application

Participation in the program has grown steadily. In 2013, 57 child care centers completed their reporting using this process. In 2024, that number grew to 384 child care centers. We have developed a relatively streamlined internal process that allows us to generate the immunization report within a few minutes for each child care center, meaning there is capacity to expand this process. This allows one or two staff members to process multiple requests within a day. This streamlined process enables us to bring the main program benefits of improved report accuracy and time saved to more child care centers each year.

In 2024, MDH helped 384 child care centers complete their annual reporting.

The MDH has used the annual report data to assist in vaccine-preventable disease outbreak response. For example, data from the 2023 reporting year was used to identify child care centers with low MMR rates for prioritized outreach during our recent 2024 measles outbreak. For the child care centers that participate in the MDH process, we have increased confidence in their reporting data because it is generated based on the ACIP schedule, which is used to assign a child's vaccination status.

Continued on page 4



WHY IIS: ASSISTING CHILD CARE CENTERS WITH REQUIRED ANNUAL IMMUNIZATION REPORTING IN MINNESOTA

Continued from page 3

Additionally, child care centers that participate in the MIIC process maintain a close partnership with MDH and take advantage of our secondary process to send records for children who are either missing from MIIC or have incomplete records in MIIC. This data entry not only improves the accuracy of the center's report but also makes MIIC more accurate.

Given MDH's capacity to expand the program, there is opportunity to further engage the nearly 1,700 licensed child care centers in Minnesota to ensure accurate, timely reporting. Plans and resources to implement this outreach will be prioritized in the coming months, and MDH is committed to engaging with and supporting our partners.

- Submitted by Jenevera Wolfe, MIIC Operations Assistant, Minnesota Department of Health, and Sydney Kuramoto, MPH, MIIC Product Owner and Informatics Lead, Minnesota Department of Health

MAINTAINING DATA INTEGRITY: SUCCESS FACTORS FOR VACCINE DEDUPLICATION IN RHODE ISLAND

As immunization information systems (IIS) grow and modernize, maintaining accurate and reliable data remains a core part of their mission.

One of the major data quality challenges continues to be the duplication of vaccine records, which occurs when the same vaccination event is recorded multiple times in an IIS. This is typically caused by variations in vaccination information from different sources, which can arise from data entry errors, difficulty interpreting a patient's vaccination history, or variations in code sets and data entry practices across organizations.

Without effective deduplication, these inaccuracies can erode stakeholder trust in the IIS and potentially impact vaccination coverage rates, inventory management, and patient care. In Rhode Island, we have found that as the IIS integrates data from an increasing number of sources, including other IIS via the Immunization Gateway (IZ Gateway), the number of inbound duplicates has increased as well.

Continued on page 5



MAINTAINING DATA INTEGRITY: SUCCESS FACTORS FOR VACCINE DEDUPLICATION IN RHODE ISLAND *Continued from page 4*

Fortunately, there are many well known strategies for tackling duplicates through deduplication and several excellent resources documenting the IIS community's best practices for vaccine deduplication:

- **Full guide:** In 2006, the Modeling of Immunization Registry Operations Workgroup (MIROW) published recommendations in [Vaccination Level Deduplication in Immunization Information Systems](#). This extensive 102-page guide covers every aspect of vaccine deduplication and remains the “go to” reference for vaccine deduplication even after nearly 20 years.
- **Mini-guide:** In 2015, AIRA published an easy-to-read 12-page [mini-guide](#) that covers the key aspects of the full guide.
- **Web page:** The AIRA Repository maintains links to both guides and to related resources on its Vaccination Level Deduplication in Immunization Information Systems page. Find it by visiting the [AIRA Repository](#) and searching for “Vaccination Level Deduplication.”

The mini-guide is well worth a review, even for seasoned IIS professionals. The Rhode Island Child and Adult Immunization Registry (RICAIR) follows the three-phase process defined in the guide:

- **Phase 1 – Selection:** Identifying and grouping together potential pairs of duplicates
- **Phase 2 – Evaluation:** Determining whether a selected pair is a true duplicate (i.e., a match)
- **Phase 3 – Resolution:** For each matching pair, executing a process to resolve the duplicate

RICAIR has identified several success factors that have contributed to the effective implementation of deduplication following the steps outlined in the guide:

1. The best deduplication strategy is to prevent duplicates in the first place:

- Train stakeholders to follow best practices when data entering vaccination events, such as providing lot numbers and specific vaccine codes (as opposed to “Not otherwise specified” codes) when possible and, of course, providing accurate patient information and dates of administration.
- Encourage providers to keep their code sets and associated selections in their electronic health record (EHR) systems up to date.
- Employ drop-down menus, lot number lookups, and validation checks to reduce manual entry errors through RICAIR's data entry tool for those providers who enter data outside of HL7 data exchange.

2. Automate whenever possible:

- Recognize that resolving duplicates in the IIS is an ongoing and often repetitive process; a duplicate resolved today could be submitted to the IIS again tomorrow.
- Execute automated deduplication processes daily.
- Meet regularly with IIS staff to identify new patterns of duplicates that can be tackled with automation and aggressively add them to the automated processes.

The best deduplication strategy is to prevent duplicates in the first place.

Continued on page 6



MAINTAINING DATA INTEGRITY: SUCCESS FACTORS FOR VACCINE DEDUPLICATION IN RHODE ISLAND *Continued from page 5*

3. Leverage knowledge about lot numbers and vaccine availability:

- IIS—especially those in universal vaccine states such as Rhode Island—have considerably more complete data on lot numbers and vaccine availability today than they did in 2006, when the guide was developed.
- If the lot number of an immunization matches the reported CVX code, and if the product was available at the time that the dose was reported to have been administered, that knowledge should be applied during the resolution phase in addition to the other factors described in the guide such as specified versus unspecified, historical versus administered, combination versus single antigen, etc.

4. Regular audits and cleanups:

- Conduct periodic reviews of IIS data and algorithms/business rules to identify and merge duplicate entries.
- Engage stakeholders in reviewing and validating data.
- As new vaccines are introduced, evaluate the “fit” of the new vaccine against existing deduplication rules. For example, when Nirsevimab was introduced, it needed to be considered in the context of business rule 14 (“BR14”) of the guide: “Some immunizations are supposed to be given within 2 days of each other.”

Contact us. For additional resources or to discuss deduplication strategies further, please reach out to us at ridoh.ricaironboarding@health.ri.gov.

LET'S COLLABORATE!



As IIS peers, we have a shared responsibility to enhance the quality of vaccination data. Share your deduplication strategies and challenges with us. **Together, we can refine best practices and strengthen our systems.**

– Submitted by **Danielle Woods, MBA**, Immunization Interface Manager, Rhode Island Department of Health, and **Mike Berry**, Senior Project Manager, HLN Consulting, LLC



HOW INTEROPERABILITY ASSESSMENT SUPPORTS AND IMPROVES DATA QUALITY

In monitoring data quality and flows through the STC National Pharmacy Immunization Data Exchange Network, we have noted a lingering question: “How can the IIS supporting electronic exchange infrastructure be used to improve and hit jurisdictional data quality goals?”

We agree that it is a challenge. In the last two years, STC has found that developing a jurisdictional strategy that begins with an onsite interoperability assessment allows the public health onboarding professionals to view and better support the providers’ journey through their EHR integration testing and postproduction workflows. By the end of the assessment period, the report will highlight key engagement pillars, which include:

- **Jurisdictional background and rules of engagement:** Context to that specific jurisdiction’s processes, policies, and needs
- **Formal step-by-step onboarding process:** Including automation opportunities where possible and determining strengths and weaknesses
- **Communication plan for engaging stakeholders:** Done through formal communication introducing the relationship, expectations, and changes that may occur and affect stakeholders
- **Creation of informational guidance documents:** Updated HL7 guidance that can be shared, templated responses to save time for the jurisdiction, VFC documentation, etc.
- **Risks and challenges in identifying difficult to capture HL7 segments:** Identifies where the jurisdiction typically sees its biggest issues, how it can tackle them, what relevant data are available, other local needs, instruction on conducting kickoff and demo calls during the onboarding process to gauge each provider’s individual workflow at the charting level to ensure they are capturing all jurisdiction-required information
- **Enhancing clinical data quality standards:** Informs the jurisdiction of areas for improvements so we can work toward its data quality goals

Using this process, we have seen successes in jurisdictional data quality, reductions in the onboarding time, and faster implementation into production.

In Louisiana, the interoperability team followed this plan over the course of a month, and the data from one provider uncovered that 27.84% of the records reported to the IIS were either missing a patient phone number or a primary facility ID or contained invalid administered vaccination.

Continued on page 8



HOW INTEROPERABILITY ASSESSMENT SUPPORTS AND IMPROVES DATA QUALITY *Continued from page 7*

By the third week, the onboarding team reduced the error rate to 10.17%, with issues limited to the primary facility ID. By week four, the provider's EHR vendor had implemented changes, and 100% of all records being captured were error-free in these fields.

Indiana and Mississippi are currently working through this data quality improvement process and have expressed satisfaction in the improvement of providers' data quality.

Regardless of the onboarding approach a jurisdiction follows or the guides used with the provider community, we have been able to implement a plan with the jurisdictional teams to significantly improve data quality through electronic exchange.

- Submitted by Chloe Watts, Senior Health IT HL7 Analyst, STChealth

NAPHSIS: A CLOSER LOOK

The National Association for Public Health Statistics and Information Systems ([NAPHSIS](#)) plays a pivotal role in advancing vital records systems, driving technology and modernization initiatives, and promoting digital identity solutions.

ABOUT NAPHSIS

Founded in 1933, NAPHSIS is the national nonprofit organization representing state vital records and public health statistics offices across the United States, including all 50 states, five territories, New York City, and the District of Columbia. The organization is dedicated to serving the vital records community by providing national leadership to advance public health and protect individual identity. NAPHSIS's work encompasses a wide range of activities, from maintaining systems that support vital records management to supporting public health initiatives through vital records data.

TECHNOLOGY AND MODERNIZATION

At the forefront of modernizing vital records management and data sharing, NAPHSIS collaborates closely with key public health and governmental organizations to enhance data systems and improve vital statistics.

Continued on page 9



NAPHSIS: A CLOSER LOOK *Continued from page 8*

Two of the key vital records systems, STEVE and EVVE, both governed by an interjurisdictional exchange (IJE) agreement, demonstrate NAPHSIS's commitment to improving data quality, accuracy, and accessibility.

- **State and Territorial Exchange of Vital Events (STEVE):** STEVE facilitates the exchange of birth and death data across jurisdictions. Acting as a secure, electronic “post office,” STEVE eliminates paper-based processes, reduces errors, and speeds up data sharing, all while allowing jurisdictions to maintain control over their own data.
- **Electronic Verification of Vital Events (EVVE):** EVVE offers a single access point for verifying or certifying birth and death records across participating jurisdictions.

COLLABORATION WITH AIRA AND JPHIT

NAPHSIS works in close collaboration with the American Immunization Registry Association (AIRA), its sister organization within the public health informatics ecosystem. Together, they are integral members of the Joint Public Health Informatics Taskforce (JPHIT), a coalition of 14 national public health associations that advocate for the exchange of timely and accurate public health data.

- **Shared initiatives:** NAPHSIS and AIRA jointly advance data standards, including adopting [FHIR](#) (Fast Healthcare Interoperability Resources), to enhance the exchange and usability of vital records and immunization information with public health agencies, health care providers, and other stakeholders dependent on accurate and timely data.
- **Joint advocacy:** They advocate together for sustainable funding and [policies](#) that support the modernization and integration of public health systems.
- **Unified vision:** Both organizations work to support their members to create secure, efficient systems that serve as foundational tools for public health.

ADVANCING DIGITAL IDENTITY

In today's digital age, secure and accessible digital identity management is more important than ever. NAPHSIS's strategic plan prioritizes expanding access to vital records through [digital issuance](#), ensuring data security and privacy while fostering cross-sector partnerships to accelerate the adoption of standards and technologies. This focus aligns closely with IIS priorities, such as:

- **Enhanced privacy protections:** Digital identity solutions support the secure exchange of information, a shared goal of both vital records and IIS systems.
- **Streamlined processes:** The adoption of digital tools reduces administrative burdens, creating efficiencies that benefit both communities.
- **Collaboration across sectors:** Fostering partnerships between vital records and IIS enhances identity verification and record/patient matching efforts, driving innovation across the public health landscape.

Continued on page 10



NAPHSIS: A CLOSER LOOK *Continued from page 9*

CONCLUSION

NAPHSIS's work exemplifies the parallel paths of the vital records and IIS communities, both striving to modernize systems, enhance data quality, and drive public health improvements. Over the years, numerous [vital records presentations at AIRA's national meetings and Discovery Sessions](#) have highlighted the collaborative efforts and shared innovations of these two communities, further strengthening their interconnected missions.

NAPHSIS's work exemplifies the parallel paths of the vital records and IIS communities, both striving to modernize systems, enhance data quality, and drive public health improvements.

- Submitted by Alexandra Hayes, MA, LSSGB, Informatics Senior Project Manager



TECH CORNER

PROVIDING PUBLIC HEALTH EXPERTS WITH PRAGMATIC EXPLANATIONS OF TECHNICAL CONCEPTS

AI IN PUBLIC HEALTH: WHAT IS AI? BREAKING DOWN COMMON TERMS AND MISCONCEPTIONS

Artificial Intelligence (AI) often dazzles us with its knowledge and abilities, but it's crucial to understand what it can—and can't—do.

AI isn't a single, magical technology but a collection of tools designed to simulate aspects of human intelligence. In this article, we'll explore common AI terms to help you understand the technology better and clarify misconceptions to demystify how AI operates in the real world.

COMMON TERMS

- **Artificial intelligence (AI)**

AI refers to computer systems designed to perform tasks that typically require human intelligence, such as learning, reasoning, and decision-making. It's an umbrella term covering many different technologies, from chatbots to image recognition software.

- **Large language model (LLM)**

An LLM is a type of AI trained on massive amounts of text to predict the next word in a sequence. These models, like ChatGPT, excel at generating human-like text and answering complex questions but lack understanding of the truth or context behind their responses.

- **Diffusion model**

A type of AI used for creating images, diffusion models start with random noise and refine it to match a text prompt. They're behind many of the AI-generated visuals you see today, excelling at creating realistic imagery but often struggling with details like sensible text or the right number of fingers.

- **Machine learning (ML)**

ML is a subset of AI that enables systems to improve performance over time by learning patterns in data. Unlike traditional programming, where rules are explicitly written, ML systems infer patterns and make predictions based on examples.

- **Neural network**

Inspired by the human brain, neural networks are the backbone of many AI systems. These interconnected layers of algorithms process data to identify patterns, enabling technologies like LLMs and diffusion models to function.



Continued on page 12



AI IN PUBLIC HEALTH: WHAT IS AI? BREAKING DOWN COMMON TERMS AND MISCONCEPTIONS

Continued from page 11

- **Natural language processing (NLP)**
This branch of AI focuses on enabling machines to understand, interpret, and respond to human language. LLMs are a subset of NLP technologies.
- **Artificial general intelligence (AGI)**
AGI refers to a hypothetical AI system capable of performing any intellectual task a human can do, demonstrating true general-purpose intelligence. Unlike today's narrow AI tools, AGI would be able to reason, learn, and adapt across a wide range of tasks without specific training. AGI does not yet exist and remains a goal of AI research.
- **Retrieval-augmented generation (RAG)**
RAG is a technique that combines LLMs with external data retrieval systems. When generating a response, the model retrieves relevant information from external sources (like a database or document collection) to improve accuracy and provide citations. This approach helps overcome LLM limitations, such as hallucinations or lack of up-to-date information.
- **Hallucination (in AI)**
This term refers to instances where an AI system generates incorrect or fabricated information. LLMs, for example, may confidently provide an answer that sounds plausible but is factually wrong.
- **Prompt engineering**
This is the process of crafting inputs (prompts) to an AI system, like an LLM, to generate specific and useful outputs. The quality of the prompt often determines the quality of the response.

MISCONCEPTIONS

- **AI knows the truth.**
AI systems like LLMs don't "know" anything. They predict responses based on patterns in the data they've been trained on. They can generate convincing text but don't have the ability to verify facts or discern truth. This is why it's critical to fact-check AI outputs and not rely on them as sources of truth.
- **AI learns from every conversation.**
People often believe that interacting with an AI program helps it improve, but most systems don't learn in real time. Instead, they operate within a fixed context window during a session and forget the conversation once it ends. True learning requires retraining the model with new data, which is a complex, offline process.

Continued on page 13



TECH CORNER

PROVIDING PUBLIC HEALTH EXPERTS WITH PRAGMATIC EXPLANATIONS OF TECHNICAL CONCEPTS

AI IN PUBLIC HEALTH: WHAT IS AI? BREAKING DOWN COMMON TERMS AND MISCONCEPTIONS

Continued from page 12

- **AI decisions are explainable.**

Users sometimes expect AI to explain its reasoning, but LLMs and similar models don't have transparent decision-making processes. They generate responses probabilistically, meaning even their explanations are fabricated based on the patterns they've learned. This randomness can lead to inconsistency or unpredictability in their answers.

- **AI is inherently creative.**

AI doesn't create entirely new ideas; it generates outputs based on patterns in the data it's trained on. For example, an LLM combines existing ideas in novel ways, while diffusion models blend visual elements into realistic-looking images. The true creativity lies in how humans prompt and guide these tools.

- **AI can cite its sources.**

LLMs don't retain or track specific sources for their outputs. Their responses are derived from patterns in a massive data set, much like how a person synthesizes general knowledge from books they've read. While augmented systems can integrate citation tools, AI alone isn't a reliable source for detailed references.

CONCLUSION

AI is an incredibly powerful tool, but its strengths lie in narrow, specific tasks rather than replicating all aspects of human intelligence. By understanding common terms and addressing misconceptions, we can set realistic expectations for what AI can do and avoid the hype that surrounds it. In the next articles, we'll explore how AI augments, not replaces, human efforts and how tools like LLMs can be used practically in public health and beyond.

By understanding common terms and addressing misconceptions, we can set realistic expectations for what AI can do and avoid the hype that surrounds it.

For additional information regarding AI, visit the AIRA Repository to watch the recording of the January Discovery Session, [Artificial Intelligence and IIS](#).

- Submitted by Nathan Bunker, Senior Technical Standards Architect, American Immunization Registry Association (AIRA)

The "AIRA Tech Corner" is published as a blog. [Read more](#) on the AIRA website.