



# SNAPSHOTS

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

## PRESIDENT'S REPORT

Dear Colleagues,

It's hard to believe it's June and we're already halfway through 2021. This year has brought a lot of ups and downs, but I feel a sense of positivity as we continue to distribute COVID-19 vaccine and come out of the fog of the pandemic.

Speaking of the pandemic, I know many of us are focused on COVID-19 and all the emerging issues that come along with it. The hard work being done across the IIS community is critical. So is the continuation of work that began before the pandemic, such as work on the Immunization (IZ) Gateway. You can find more information on this important work and how it's helping connect IIS across the country in this edition of *SnapShots*.

You'll also find an article about how technical assistance work done with Texas over the past year helped them build a communication platform between the state and electronic health record vendors, as well as an article on Tennessee's IIS, a data quality guide from the Modeling of Immunization Registry Operations Workgroup, and information on the Public Health Informatics Institute's IIS Learning Hub.

I hope when you have a moment to read these articles you'll feel as proud as I do to be part of this amazing community.

It just so happens that the birthstones for the month of June (pearl, moonstone, and alexandrite) all symbolize health and longevity. Let's hope that June is filled with the vigor and endurance we need to propel us forward into the next half of the year as we continue our hard work.

Regards,

**Dave McCormick**

AIRA Board President

Director, Indiana Immunization Division

Indiana State Department of Health

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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](mailto:info@immregistries.org) with information about a successful programmatic or technical innovation, major accomplishment, or milestone that your IIS has reached.



## PREP FOR SUCCESS WITH THE IIS LEARNING HUB

Navigating the complex and fast-paced world of immunization information systems (IIS) can be a challenge, both for newly onboarded IIS staff and for seasoned veterans of the IIS world.

In partnership with the Centers for Disease Control and Prevention (CDC) and AIRA, the Public Health Informatics Institute (PHII) has developed a suite of practical and actionable trainings and planning resources for public health staff and partners supporting and using IIS and their data. These eLearnings and other resources cover a range of basic and advanced IIS topics, appropriate for staff who are new to IIS, new to their role, seeking level-setting, or looking for a refresher.

On the [IIS Learning Hub](#), visitors can start with courses that provide background on basic concepts fundamental to IIS, from interoperability to data quality. They can also delve into the context of IIS history—how IIS came to be in the United States, how IIS standards evolved, and why technology and funding in IIS exist in their present-day forms. Alternatively, more experienced visitors may wish to skip straight to advanced eLearnings, which cover topics including high-level HL7 messaging and immunization evaluation and forecasting. These various trainings provide a foundational introduction to IIS, with specialized deep-dives available to help flesh out a more complete understanding of concepts that underpin the IIS world.

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In addition to trainings, the IIS Learning Hub also provides guidance and toolkits on working within an IIS. Visitors can benefit from more general guidance on day-to-day IIS operations and management, as well as walk-throughs of more highly specialized topics. Specialized tools include the migration toolkit, a road map that guides users through an IIS platform migration or other large-scale IT project, rooted in project management best practices and featuring dozens of tested tools. Finally, the IIS Learning Hub offers examples of stories from the world of IIS, including podcast interviews with IIS experts Therese Hoyle and Mary Beth Kurilo, and features on state IIS programs, including Oklahoma and Minnesota.

The IIS Learning Hub regularly undergoes updates and refreshes to remain current and relevant in a rapidly evolving immunization world. PHII is grateful for ongoing collaboration with CDC, AIRA, and IIS programs from around the country in developing and refining these tools.

*- Submitted by Piper Hale, PHII*



# A TEXAS COMMUNICATION STORY

## Background

In July 2020, the Texas Immunization Registry encountered many provider organizations that wanted bidirectional data exchange but had problems with their electronic health record (EHR) vendors being able to support the unique consent requirements of the Texas registry.

Texas is one of two registries in the country whose state legislation requires consent from individuals to store their personal and immunization data in the registry. Texas statute has more complexity and is not in line with national standards. To streamline registry consent via HL7, Texas implemented unique registry consent values for PD1-12 that aligned with its state law. Unfortunately, most EHRs are unable to meet these specific Texas values. This prompted the registry's Interoperability Team to seek AIRA's help in meeting with EHR vendors.

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## Monthly Meetings

Starting on July 20, 2020, AIRA collaborated with the Texas Interoperability Team to establish monthly EHR community meetings. AIRA held pre-planning meetings with the Interoperability Team two weeks prior to each one-hour EHR community meeting to develop agendas. The monthly EHR community meetings were initially focused on Texas consent legislation and how best to capture registry consent via HL7 by asking the EHRs about their systems and background.

As meetings continued:

- The EHRs were asked for topics of interest to them
- The Interoperability Team offered key Texas data exchange updates
- The EHRs shared common areas of concern for EHR clients
- The Interoperability Team shared common data quality issues and data exchange errors experienced by most Texas data exchange providers

At the onset of the COVID-19 pandemic and with the rollout of COVID-19 vaccine, the meetings with the EHRs became very important. They allowed Texas to provide guidance to EHRs on how to correct data quality issues related to COVID-19 vaccines and the importance of accurate reporting for proper decrementing of vaccines in the state's vaccine allocation and ordering system (VAOS). The meetings allowed the Texas Interoperability Team to establish a better and more unified relationship with its EHR community and AIRA partners.

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## A TEXAS COMMUNICATION STORY *Continued from page 3*

### Successes

- **Meeting format:** It helped the EHR community learn about data quality errors and brainstorm with the registry team for solutions that were helpful to providers.
- **Feedback:** The registry learned from the EHR community.
- **Consistent attendance:** Fourteen varying partners, including all major EHRs and hospital systems in Texas, participated in the monthly call.
- **Number of meetings:** Ten monthly calls were held, with an average of 26 participants.

### Lessons Learned

- Pre-meeting planning sessions helped with agenda and slide development.
- Capturing live feedback (e.g., through Menti or Zoom polls) made the meetings more interactive.
- A flexible agenda offered space for EHR partners to bring up topics for discussion.
- A live communication format with open information sharing increased cooperation and made for effective interoperability.

- Submitted by **Angela De La Cruz**, Texas Immunization Registry,  
**Nathan Bunker and Assiatou Diallo**, AIRA



## THE STORY OF IIS DATA QUALITY DURING THE COVID-19 RESPONSE

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Fortunately, our community has come together via workgroups, townhalls, and webinars to collaborate and support each other in responding to data quality issues. The recent [AIRA Discovery Session on COVID Hot Topics](#) highlighted the challenges and successes of increasing completeness for race and ethnicity data. AIRA has also been working to support the IIS community with resources, such as the [Talking Points for IIS Regarding COVID-19 Data Quality](#).

At the same time, a workgroup of IIS community members has been developing an updated Modeling of Immunization Registry Operations Workgroup (MIROW) Data Quality Guide. The workgroup is composed of experts from IIS programs and IIS vendors/implementers and supported by a team of AIRA, Centers for Disease Control and Prevention (CDC), and consultant staff. The updated guide will be based on the two existing MIROW guides on data quality ([Data Quality Assurance in IIS: Incoming Data](#) and [Data Quality Assurance in Immunization Information Systems: Selected Aspects](#)) and will update the content using the many lessons learned over the past decade and during the COVID-19 response. The guide will also provide best practices that can be helpful in meeting the goals set in CDC's [IIS Data Quality Blueprint](#). AIRA would like to thank the workgroup for coming together during this busy time to develop a guide that will help us continue to strengthen data quality in IIS. The updated guide will be available in spring 2022.

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# THE STORY OF IIS DATA QUALITY DURING THE COVID-19 RESPONSE

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## **AIRA Guides Currently Available to Support Data Quality:**

- [Consolidating Demographic Records and Vaccination Event Records](#)
- [Data Validation Guide for the IIS Onboarding Process](#)
- [IIS Data Quality Practices - To Monitor and Evaluate Data at Rest](#)
- [IIS Data Quality Practices - Monitoring and Evaluating Data Submissions](#)
- [Importing Legacy Data to Improve IIS Saturation](#)
- [MIROW Data Quality Assurance in Immunization Information Systems: Incoming Data](#)
- [MIROW Data Quality Assurance in Immunization Information Systems: Selected Aspects](#)
- [Onboarding Consensus-Based Recommendations](#)
- [Vaccination Level Deduplication in Immunization Information Systems](#)

**- Submitted by Beth Parilla, AIRA**



## TENNIIS COVID-19 DATA QUALITY PARTNERSHIP

Like many immunization information systems (IIS), Tennessee's IIS (TennIIS) is receiving thousands of COVID-19 immunization records from new and well-established providers.

As of April 19, 2021, more than 34% of Tennesseans (3.9 million) have received at least one dose of COVID-19 vaccine. With this (exciting) increase in doses reported to TennIIS, there is also an increased need to monitor data quality. Thanks to forward thinking by both the TennIIS and Vanderbilt University Medical Center (VUMC) informatics teams, data quality reports using acknowledgment (ACK) messages were created before new mass vaccination efforts. Since July 2020, TennIIS has been coordinating efforts with Vanderbilt's Department of Biomedical Informatics (DBMI) to produce an ACK error report that helps both the IIS and the provider organization stay on top of data quality issues. Their efforts focus on fixing systemic and technical errors on both sides.

In July 2020, about 15% of all vaccine update (VXU) messages sent to TennIIS from DBMI were rejected due to errors. Since the regular production and review of the weekly reports in the summer of 2020, errors that may have otherwise been unnoticed are monitored and tracked. Particular attention is paid to errors that occur most frequently, which may vary from one report to the next. A TennIIS and DBMI team collaboratively investigate the root causes. Several types of errors have been addressed with updates in system configuration on both sides, preventing those errors from occurring in the future. Once these changes were made, when possible, data were resubmitted to ensure doses were incorporated into TennIIS. These activities are more important than ever as providers look to IIS for records of their patients' COVID-19 immunizations, which may be delivered outside a patient's traditional place of care.

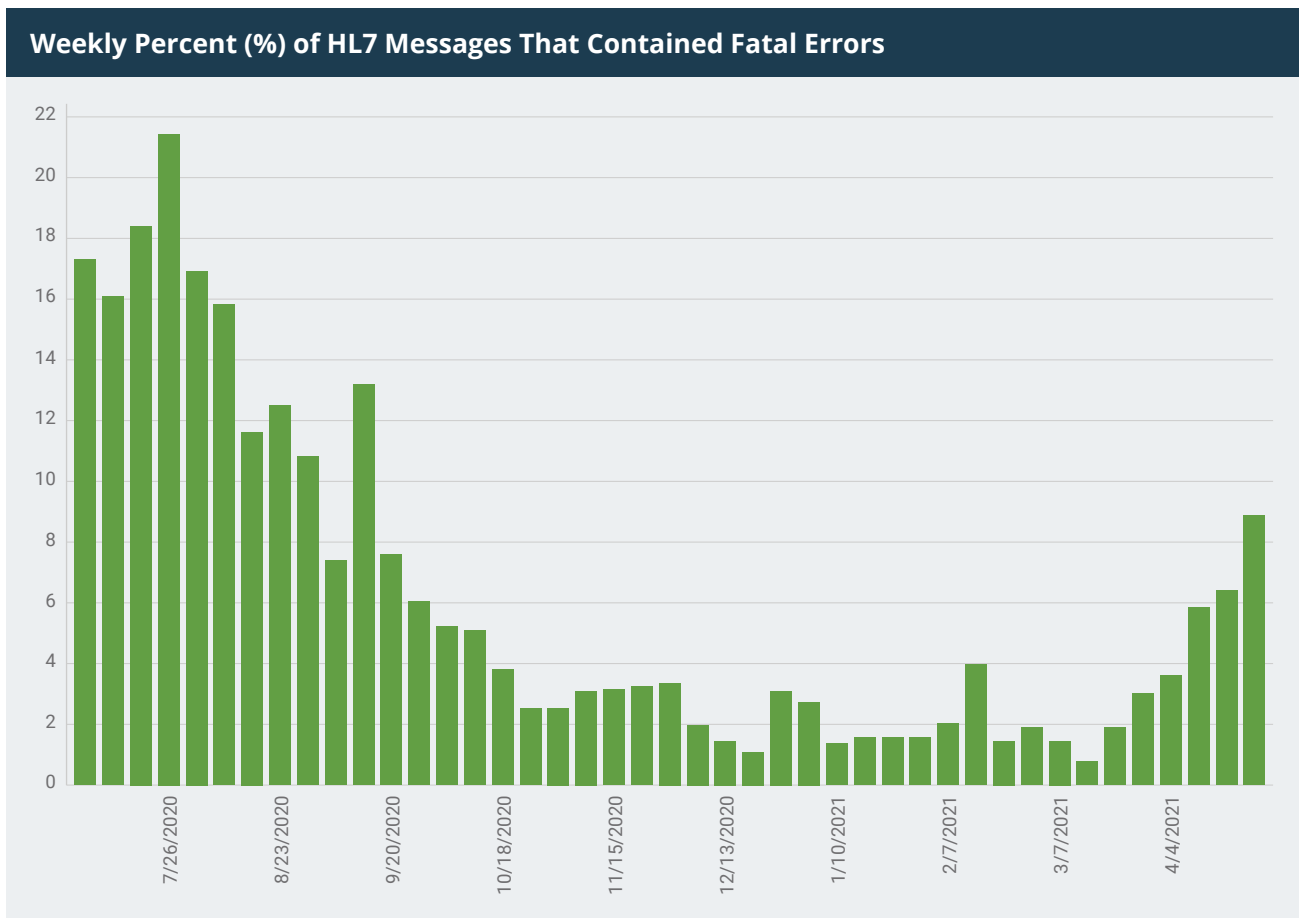
This collaboration helped drive new guidance being developed by the [Immunization Integration Program \(IIP\)](#). The IIP is composed of leaders representing clinicians, clinical informaticians, electronic health record (EHR) developers, health information exchanges (HIE), IIS, and other public health agencies. The IIP Acknowledgments Workgroup was composed of 23 immunization interoperability subject matter experts and co-led by Emily Martinez from the New York Citywide Immunization Registry and Amit Popat from Epic. The group's guidance focuses on improving visibility and access to information from ACK messages. The guidance recommends that all parties involved in ACK data (sending, receiving, or passing through) should provide users access to reports summarizing ACK messages or add functionality to allow users to extract ACK data to create their own reports. New providers, mass vaccination efforts, vaccine products, vaccine codes (NDC, CVX), lot numbers, and expiration dates are all adding to the routine challenge of monitoring data quality. The need for clear ACK reports containing explanations that are understandable to both technical and non-technical individuals to support successful vaccination data exchange is considered a high priority by the IIP.

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## TENNIIS COVID-19 DATA QUALITY PARTNERSHIP *Continued from page 7*

The graph below illustrates the ongoing need to monitor, identify, and address the underlying issues. The larger spikes during the summer of 2020 and in April 2021 represent imported immunization records from Vanderbilt University's Student Health system to VUMC's EHR, which are then submitted to the IIS in real time. Because the EHR might not yet have a student's demographics, which are required by the IIS, the resulting submission of historical immunization records generates fatal errors. Errors also spiked at the beginning of the flu season in September 2020 as new National Drug Codes were reported but not yet updated in TennIIS.



The graph above shows the ebb and flow of errors within vaccination updates sent from Vanderbilt University Medical Center to TennIIS.

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# TENNIIS COVID-19 DATA QUALITY PARTNERSHIP Continued from page 8

TennIIS team members developed a report that summarized ACK messages and broke them down by segments and fields to evaluate the fatal errors preventing patients and/or vaccinations from updating TennIIS. Auto-generated reports are emailed weekly to provider organizations interested in improving their data quality. Errors identified highlight the involvement of both the provider organization and TennIIS. Some of the errors identified include missing or mismatched information from the provider organization (e.g., patient addresses, NDC/CVX code mismatch) or a need to update TennIIS (e.g., new NDC and CVX codes that need to be mapped, failure to process vaccine refusals).

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**VANDERBILT**  
Review Date: 7-Day Period 12/28/2020 through 1/3/2021

**Number of VX Messages Reviewed:**  
**9736**

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**Response type Breakdown (MSA-1):**

**AA:**  
**1323 (13.58%)**

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**AE:**  
**8413 (86.41%)**  
185 (2.198%) contained fatal errors  
8228 (97.8%) contained only warnings

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**AR:**  
**0 (0%)**

Fatal errors will be rejected by TennIIS and will not enter the system. See below for the type and frequency of common errors being submitted (Note: could be more than one error per VXU message).

Error Location and Description	Message Count	Message Percent
RXA; SEGMENT SEQUENCE ERROR; VACCINATION CVX CODE IS MISSING - MESSAGE REJECTED	78	7.10
RXA; SEGMENT SEQUENCE ERROR; VACCINATION NDC CODE IS MISSING - MESSAGE REJECTED	78	7.10
RXA^1^5-1; REQUIRED FIELD MISSING; VACCINATION CVX CODE IS MISSING	78	7.10
RXA^1^5-1; REQUIRED FIELD MISSING; VACCINATION NDC CODE IS MISSING	78	7.10
PID; SEGMENT SEQUENCE ERROR; PATIENT ADDRESS CITY IS MISSING - MESSAGE REJECTED	65	5.92

An example of the report generated by TennIIS for Vanderbilt Health breaks down response types and frequent errors by segment and field.

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## TENNIIS COVID-19 DATA QUALITY PARTNERSHIP *Continued from page 9*

The ACK Error Report summarizes the frequency of errors by type. While this helps the provider understand the rate of error, providers need to dive deeper into their own data. Dr. Stuart Weinberg reviews the report from TennIIS to get a high-level view of the frequency of specific types of ACKs and if any ACK errors are trending up or down from previous weeks. He also worked with VUMC's HealthIT team members and Chandler Faulman, an EHR engineer from Epic, to create functionality that allows for report generation and exports of both ACK and related VXU data to facilitate additional analysis. Weinberg has developed an evaluation tool that allows for different views data, which can more easily demonstrate patterns of errors across different types of vaccines and facilities. This has been particularly helpful for the review of errors associated with COVID-19 vaccines. The VUMC informatics and TennIIS teams routinely discuss issues and potential process enhancements. Identified issues are brought to the appropriate teams to be addressed. In addition, a work queue, allowing EHR administrators to review, correct, and resubmit data has been developed. After training and workflow adjustments, members of the ambulatory team will be able to regularly fix these errors and resubmit to TennIIS themselves.

Collaborative efforts are a great way to continually improve data quality. IIP participants advance the adoption of EHR capabilities and interoperability that will help assure that both clinicians and public health agencies have the information they need to increase vaccination coverage and reduce vaccine-preventable diseases. The IIP provides technical assistance to those interested in testing and implementing error reports. For more information on the IIP or technical assistance, contact [IIPHelp@himss.org](mailto:IIPHelp@himss.org).

**- Submitted by Jacqueline Logan, TennIIS, Tennessee Department of Health,  
and Stuart Weinberg, MD, VUMC Department of Biomedical Informatics**