

# NEDSS Interoperability and Functional Improvements (NIFI) Project



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CATEGORY: Epidemiology and Laboratory Capacity (ELC)

CATEGORY: Nationally Notifiable Diseases Surveillance System

Texas engaged in a massive undertaking to enhance their disease surveillance system including expanding its capability, integrating it with other systems, improving data access and quality, and enhancements to outreach. This will improve timeliness and efficiency of all processes.

## The “What”

The NEDSS Interoperability and Functional Improvements (NIFI) project was a large scale project implemented in Texas with the goal of improving the overall interoperability and functional capacity of the Texas National Electronic Disease Surveillance System (NEDSS) and its base infrastructure. A major focus of the project included expanding current capabilities to enable a bulk import function for vaccination data.

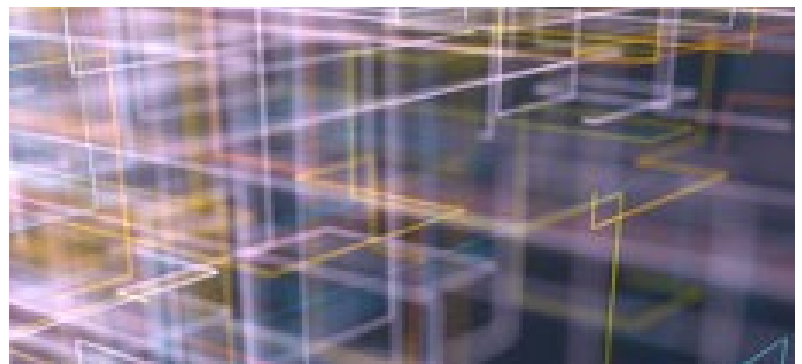
Additionally, the NEDSS Enhancement project migrated the NEDSS ecosystem from an agency on-premise data center to the AWS cloud-hosted environment. The project also migrated the database from Oracle to MS SQL Server and upgraded the application to the current version offered by CDC.

NEDSS has some system limitations that introduce manual processes, inefficiencies, and reduced flexibility. The system has some basic features that are not being used today due to the requirement to upgrade those features to address the current business requirements. CDC is adopting the next generation of Health Level Seven (HL7) message format and recommending states begin to transition to this new standard.

## The “So What”

The NIFI project will implement a solution divided into four initiatives. These initiatives are expanding system capabilities, system integration improvements, data access and quality improvements, and outreach enhancements.

To expand the system capabilities, the project will implement bulk imports of vaccination data, improve the application performance for imports and exports, and implement the electronic initial case reporting process. The system integration improvements will focus on enhancing how the NEDSS system ingests data from lab and case reports. The data access and quality improvements will enhance the security model to provide more flexibility in roles and assignments, implement audit logging capabilities to help track changes to the historical data and improve the process to update the reporting database which will reduce the run-time hours, and advance to the next level of Health Level Seven International

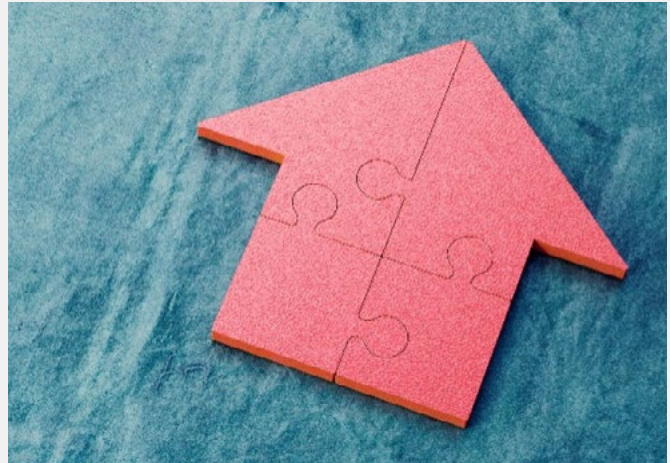


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(HL7) messages by implementing Fast Healthcare Interoperability Resources (FHIR). These improvements will be aligned with the CDC recommendation to adopt this new standard of message formats. The final initiative of outreach enhancements will provide public health follow-up activities and outbreak management capabilities to increase the impact of health officials addressing rising counts of positive lab reports of various conditions.

This work is fully funded by the ELC grant by CDC. To implement the bulk import of vaccination data, the project team will partner with the Texas immunization registry, ImmTrac2.



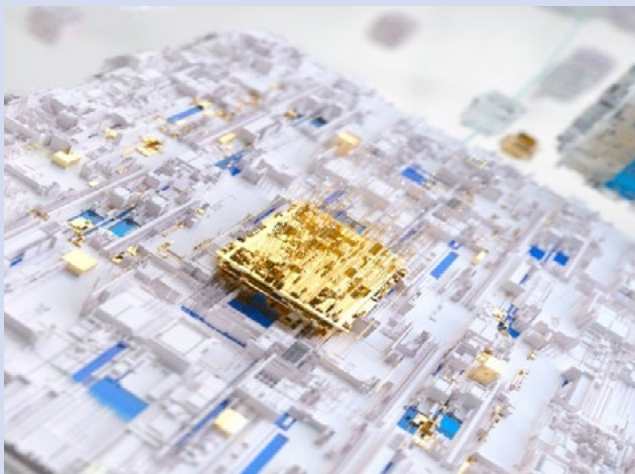
## The “Now What”

With today’s system, an epidemiologist is only able to pull vaccination data one patient at a time. This project will expand the current capabilities to enable a bulk import function for vaccination data into NEDSS. This feature will provide immunization data in a readily available format for the epidemiologist and eliminate the manual steps to pull that patient data.

The work for this improvement was only for COVID-19 vaccinations. Sixty-five million vaccinations were exported from the immunization tracking system and imported into NEDSS. There is a daily process to import new vaccination records. For each vaccination auto populated into the investigation page, this saves the epidemiologist 20 minutes it would take to get that data from the immunization tracking system. Due to the

COVID-19 pandemic, both negative and positive lab reports were imported into NEDSS. Over 62 million COVID-19 negative lab reports were in the NEDSS database, which caused performance issues for the queues, searches, and reports. This project removed those COVID-19 negative lab reports and improved performance in loading the queues by 15 percent, searches by 20 percent, and reports by 10 percent.

The electronic Initial Case Report (eICR) is a consensus based HL7 standard developed for use in electronic Case Reporting (eCR). It was constructed in the HL7 Clinical Document Architecture (CDA) almost entirely from Consolidated-Clinical Document Architecture (C-CDA) templates that are certified to already be used by electronic health records (EHRs) for other purposes. When specific patient encounter data matches one of the trigger codes in the Electronic Reporting and Surveillance Distribution (eRSD) Reportable Condition Trigger Codes (RCTC), and the encounter timing is as specified in the eRSD, an eICR should be created and sent. An eICR can also be manually initiated by a clinician if they suspect the presence of a reportable condition. If manually initiated, the clinician should record the reason for sending the eICR for public health awareness. While an eICR can be created and sent directly from an EHR system, it can also be created in an EHR and sent through a designee of clinical care, such as a Health Information Network (HIN) or Exchange (HIE). NEDSS has been expanded to be able to import all these eICR records.



NEDSS also implemented a connection with the Association of Public Health Laboratories (APHL) Informatics Messaging Services (AIMS) platform. Importing these records into NEDSS will provide the Texas Department of State Health Services (DSHS) and local health departments with the initial findings of reportable diseases from the health care provider or hospital. Having these initial reports will aid DSHS in providing an advance alert into data that may result in a pandemic of that disease condition. eICR has been implemented for all conditions currently reportable via Texas NEDSS.

This project has improved the ability to perform public health follow-up activities to assist in slowing the spread of dangerous outbreak conditions such as COVID-19. NEDSS already provided a module for Public Health Follow-Up, but it was not currently in use. This module supports all reportable disease conditions, including COVID-19. Implementing and enhancing this module in NEDSS has improved the reporting and visibility of case investigations to make this information more actionable to epidemiologists and the DSHS management team.

## The next phase of NIFI will implement importing non-COVID-19 vaccinations into NEDSS to support all the vaccine-preventable diseases

Building on the success achieved by the NIFI project, the next phase of NIFI is implementing expansions and enhancements to those features delivered in NIFI. The next phase of NIFI will implement importing non-COVID-19 vaccinations into NEDSS to support all the vaccine-preventable diseases. This will increase the available capacity of the epidemiologists to manage other tasks. With this change, all the other program areas will benefit from the time-saving efforts of having those vaccinations auto-populated into the case investigation pages.

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Key contributors to this effort include: Our partner, SS Data Info (SSDI); Jessica Romano, Lucille Palenapa, Sepehr Arshadmansab, Kenzi Guerrero, Shamim Ahmed, Daisy Sierra, Regena Wheeler, Ashwini Talur, Dennis Bitterlich, Marco Aviles, and Brendon Blomquist, with the Texas Department of State Health Services.