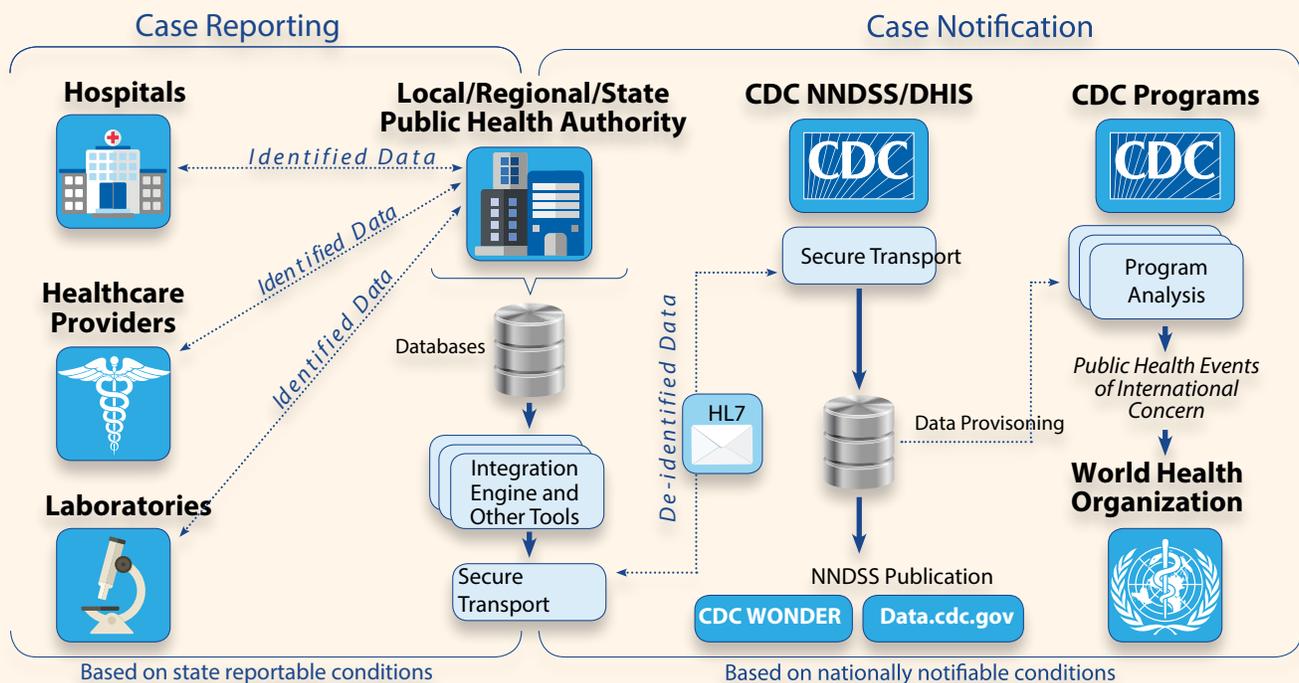# NNDSS Modernization Initiative

With the evolution of technology and data and exchange standards, CDC is strengthening and modernizing the infrastructure supporting the National Notifiable Diseases Surveillance System (NNDSS) (https://wwwn.cdc.gov/nndss/). As part of the CDC Surveillance Strategy (http://www.cdc.gov/surveillance/), the NNDSS Modernization Initiative (NMI) is enhancing the system's ability to provide more comprehensive, timely, and higher quality data than ever before for public health decision making.

## NNDSS
National Notifiable Diseases Surveillance System

## National Notifiable Diseases Surveillance System Data Flow



**Case Reporting**

Hospitals — *Identified Data* — Local/Regional/State Public Health Authority

Healthcare Providers — *Identified Data*

Laboratories — *Identified Data*

Databases → Integration Engine and Other Tools → Secure Transport

Based on state reportable conditions

*De-identified Data*

**Case Notification**

CDC NNDSS/DHIS — Secure Transport

HL7

Data Provisoning

NNDSS Publication — CDC WONDER / Data.cdc.gov

CDC Programs — Program Analysis

*Public Health Events of International Concern*

World Health Organization

Based on nationally notifiable conditions

In the NNDSS data flow, hospitals, healthcare providers, and laboratories send disease data to local and state public health departments. State health departments send data to CDC when persons are identified with one of about 90 different diseases. CDC scientists use these data to monitor disease trends, study risk factors, and evaluate prevention and control efforts. CDC has launched the NNDSS Modernization Initiative to enhance the system's ability to provide more comprehensive, timely, and higher quality data than ever before for public health decision making.

## Improving the Technology Behind NNDSS

Through this multi-year initiative, CDC is increasing the robustness of the NNDSS technological infrastructure so that it is based on interoperable, standardized data and exchange mechanisms.

NMI has three key components:

- development of prioritized message mapping guides (MMGs) for Health Level 7 (HL7) case notifications, which provide guidance for how to package and transmit case notification data;

- the Message Validation, Processing, and Provisioning System (MVPS), software that validates and processes nationally notifiable disease case notification messages sent by jurisdictions and provisions the data to CDC programs; and

- technical assistance for implementation of HL7 case notification messages in jurisdictions submitting case notifications to NNDSS.

The initiative to modernize NNDSS began in January 2014 and will extend over several years. Programs representing conditions covered by the generic V2 and hepatitis message mapping guides began to receive timely, complete, and high-quality data from the first jurisdictions to implement the new messages in late 2016. As NMI progresses, CDC will increase the number of conditions and jurisdictions using HL7 messages and MVPS for NNDSS.

**U.S. Department of Health and Human Services**
Centers for Disease Control and Prevention

# NMI Key Components



## Accelerate Standardization and Development of Message Mapping Guides

Through collaboration and commitment from subject matter experts across multiple CDC national centers and involvement of jurisdiction partners and other key stakeholders, CDC is accelerating the development and adoption of new-generation message mapping guides for HL7 case notifications.

With these guides, CDC will migrate from legacy messaging structures to the widely adopted HL7 standards that provide content standardization and interoperable message exchange structures. In addition to providing core data elements and data exchange formats, these new MMGs are satisfying CDC program requests for disease-specific variables for notifiable conditions.

CDC prioritized the following six MMGs for development and adoption for the initial phase of NMI: generic v2, hepatitis, STD, and congenital syphilis, pertussis, and mumps. Final message mapping guides are now available for all of these conditions on the NNDSS HL7 Case Notification Resource Center at https://wwwn.cdc.gov/nndss/case-notification/.

In addition, to support public health's emergency arboviral response needs, CDC developed and published an updated arboviral MMG (v1.3), which is now also available on the resource center.

Work also is underway on other guides, including babesiosis, carbapenemase producing carbapenem-resistant Enterobacteriaceae, congenital rubella syndrome, foodborne and diarrheal disease, malaria, measles, respiratory and invasive bacterial disease, rubella, trichinellosis, tuberculosis (TB) and latent TB infection, and varicella.



## Enhance MVPS to Support the Electronic Exchange of Surveillance Data

CDC is replacing the existing NNDSS messaging infrastructure with a message validation, processing, and provisioning system—MVPS—that facilitates the receipt and distribution of notifiable disease data. MVPS supports collection of data through new guides and a data exchange system that is resulting in more comprehensive, timely, and more accurate information than ever before provided to CDC programs.

MVPS allows CDC programs to receive, process, store, access, share, and analyze health-related data, including electronic health record data, to further the agency's public health goals. Through the MVPS Dashboard, the system provides submitting jurisdictions the ability to view the data they have submitted and identify data quality issues.

## Provide Technical Assistance and Support for Program Implementation

CDC has partnered with the Council of State and Territorial Epidemiologists and the Association of Public Health Laboratories to provide and evaluate technical assistance to state and local jurisdictions to implement HL7 case notification messages.



Through this technical assistance, CDC and its partners help jurisdictions adopt the MMGs and use them to send test case notification messages to MVPS to ensure that these messages are properly received, processed, and stored for analysis through this new system. The NMI State Implementation and Technical Assistance team provides webinars, online technical guides, and other training materials to support implementation.

All jurisdictions are invited to adopt finalized MMGs, go through onboarding, and send case notification messages to CDC through MVPS.

---

**Need NMI technical assistance or onboarding?**

NMI Technical Assistance and Training Resource Center:
https://www.cdc.gov/nmi/ta-trc/index.html

**Want to keep in touch with NMI?**

NMI eSHARE webinar series:
https://www.cdc.gov/nmi/eshare.html

*NMI Notes* newsletter: https://www.cdc.gov/nmi/news.html

# www.cdc.gov/nmi