

National Electronic Disease Surveillance System Base System

The National Electronic Disease Surveillance System (NEDSS) Base System (NBS) is a CDC-developed integrated information system that helps local, state, and territorial public health departments manage reportable disease data and send notifiable disease data to CDC. NBS provides a tool to support the public health investigation workflow and to process, analyze, and share disease-related health information. NBS also provides reporting jurisdictions with a NEDSS-compatible information system to transfer epidemiologic, laboratory, and clinical data efficiently and securely over the Internet.



Built and maintained by CDC, NBS integrates data from many sources on multiple public health conditions to help local, state, and territorial public health officials identify and track cases of disease over time. This capability allows public health to provide appropriate interventions to help limit the severity and spread of disease.

NBS facilitates the adoption of national consensus standards used across public health and healthcare—including vocabulary standards such as LOINC, SNOMED, and RXNORM and messaging standards such as HL7—and helps local, state, and territorial public health departments use standards when sending information to CDC about notifiable diseases and conditions.

To date, 22 health departments (19 states; Washington, DC; Guam; and U.S. Virgin Islands) use NBS to manage public health investigations and transfer general communicable disease surveillance data to CDC.

Features

NBS features include:

- a patient-centric model that allows all public health events for a patient to be viewed from one central location;
- role-based security by program area and jurisdiction;
- support for more than 140 different diseases and conditions, including hepatitis, general communicable diseases, vaccine-preventable diseases, meningitis, and tuberculosis;
- Page Builder module for design of data collection forms on the fly as surveillance needs change and new diseases of public health significance are identified;
- automated receipt of electronic laboratory reports (ELR)—19 out of 22 sites receive and process ELR in production;
- automated receipt of electronic case reports from healthcare providers, other health information systems, and other public health jurisdictions;
- user-customizable decision support functionality for automated processing of ELRs and electronically received public health case reports;
- workflows to support the surveillance and follow-up processes used during public health investigations;
- contact tracing;
- reporting module to extract data for analysis, visualization, and reporting;
- near real-time case reporting to CDC; and
- patient deduplication.

Benefits

NBS has been helping to improve public health outcomes for more than a decade. Since the system was launched in 2003, the following has occurred:

- State and local public health agencies receive reportable disease information for investigation and follow-up more quickly; this may result in decreases in disease spread.
- Public health staff are able to manage information more efficiently, allowing more time for investigation and prevention activities.
- Standardized data are available to inform public health activities, identify disparities, and evaluate the effectiveness of public health programs.
- CDC has received more than 700,000 Nationally Notifiable Disease (NND) case notification electronic messages generated by jurisdictions using NBS, resulting in timely available data for CDC programs to use to make informed public health decisions.

Benefits of the system include:

- reduction in communicable disease reporting time;
- increase in the number of laboratory reports received by public health;
- improved communication among local, state, and federal public health staff, delivering the right information to the right person at the right time;
- ability to push data entry back to the source to reduce reporting time and data transcription errors while improving data quality;
- reduction in paper-based reporting; and
- robust reporting module with flattened data marts.



NBS has been built as a long-term system to meet the changing needs of jurisdictions. Each jurisdiction has unique requirements for a public health surveillance system, but all need a system that is:

- standards-based,
- interoperable,
- configurable,
- extensible, and
- collaborative.



NBS helps jurisdictions meet their public health surveillance needs by:

- facilitating local and state public health department collaboration;
- providing an integrated data repository, which is a hub for public health surveillance;
- reducing the data entry burden on public health professionals;
- providing customizable tools such as easily configurable electronic disease data collection forms to quickly respond to emerging diseases;
- reducing the need to support multiple, siloed systems;
- connecting state and local public health departments to laboratories, healthcare providers, and national public health;
- providing a system that combines technology, standards, public health policy, and disease surveillance; and
- shifting from paper to electronic data exchanges.

Background

The primary goal of the first release of NBS was to support the electronic processes involved in state reportable and notifiable disease surveillance, investigation, and analysis and replace the functionality supported by the National Electronic Telecommunications System for Surveillance (NETSS). CDC started development of NBS in 2001, and the first version of the application went live in the state of Nebraska in January 2003. Since then, the system has evolved into a modern disease surveillance, case management, and case notification system. It serves as a reference implementation of the NEDSS standards and living laboratory for testing implementation of best practices in public health surveillance systems.

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