

**White Paper**

**Communicable Disease Surveillance Systems**

**Approach for Developing a State-level  
National Electronic Disease Surveillance System (NEDSS)  
Strategic Technology Plan**

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## **1. Understanding the Purpose of NEDSS**

NEDSS is not only a technology integration plan it is a vision. A vision that represents a roadmap for public health agencies to facilitate their collection, storage, management, reporting, integration sharing and use of public health data. Use of this data to monitor, detect and become proactive in addressing public health problems and policy.

NEDSS means standardization and integration between programs. NEDSS means movement toward real-time and near real time electronic data collection and usage of public health data from a variety of sources. To include the non traditional public health sources such as managed care, physician and clinical information systems, third party emergency medical systems, pharmacies, laboratories, veterinarians, etc.

The well being of the public is not limited to only the programs and services provided through state and local health agencies. As such, the need to integrate information is becoming more and more of a necessity. NEDSS supports this model in that standards, and the Common Information for Public Health Electronic Reporting (CIPHER) guidelines encourage the creation of information systems that can share data. The ability to share information and to develop effective public health surveillance systems will directly impact public health. NEDSS is the vision and guide that can be used to overcome past barriers and effectively implement technology that will lead to success.

## **2. Assessment and Planning Methodology**

In order for a state to implement a population based NEDSS environment it is essential that a detailed assessment and plan be developed. The following paragraphs outline the approach and expected deliverables. This approach should result in a plan to address the major components of a NEDSS implementation and the many issues, some of which are outlined in the following table.

<b>Issues</b>	<b>Considerations to be Addressed in the Assessment and Plan</b>
Multiple Case Reports and Data Sources	Where do reports go and what happens to the data? When are case reports required to be submitted to the state? Timeliness of the information, format, content, etc.? How are patients identified? Method for record matching (Patient Duplicate Identification)?
Data Entry at the Health Departments	Unique systems for each Program, as such database and User Interface? Location of data? Confidentiality issues? Data elements?
Data Transmission to State Health Departments and CDC	Current electronic formats? Adherence to HL7 standards? Use of encryption? Frequency of transmissions? HAN utilization? Data flows?
Data Analysis	How is data used, statistics, reports, ability to query ad hoc etc.? Value of information? Users of information? Ability to correlate and spatially view information? Timeliness of analysis?
Linkages	How to match cases between systems? How to integrate key population based information such as immunization registries?  Interfaces with health data warehousing efforts? External links (Hospitals, private providers, insurers, etc.)?
Data Access and Dissemination	Who can see what data and when?

A detailed plan must be based upon identified needs and requirements. These needs are determined through site visits, user surveys, program requirements definition, and future goals and objectives. NEDSS assessment and planning requires the identification of a set of specific needs and requirements that can be translated into system goals and objectives. Technology and programmatic alternatives can then be developed and assessed to determine how well each meets the specific goals. Through cost benefit analysis and risk assessment it is then possible to develop a set of specific recommendations, estimate costs, resource requirements, implementation schedules, etc.

The following section outlines a specific approach for this plan

## **Approach to Conduct Assessment**

### ***1- Interviews and Data Collection***

**Objective:** Collect information to establish needs and requirements for NEDSS, through on-site interviews specific to State public health information systems both in the private and public sectors.

**Process:**

- Establish NEDSS stakeholder community and notify of study, process. Identify points of contact, roles and responsibilities as they would apply to disease surveillance.
- Conduct interviews of State Health Department program managers and information technology (IT) support staff, to include CDC funded efforts.
- Collect information on existing state health information systems and support personnel, to include local health and community health.
- Collect data elements and data flows specific to each program.
- Conduct interviews and collect information with 3<sup>rd</sup> party sources of data, to include laboratories, hospitals, large private clinics, and 3<sup>rd</sup> party insurers, Indian Health, veterinarians, medical examiners, etc.
- Summarize NEDSS standards, functions, architectures, etc.
- Review information with NEDSS stakeholders. Note, this will include the bioterrorism and immunization program staff who are expected to be key participants in the overall effort.

**Outcome:** Document NEDSS Needs and Requirements.  
Document NEDSS Goals and Objectives, to include overall issues to be solved.  
Summary of existing infrastructures, systems, data resources, etc.

**Time frame:** Three – four month effort.

### ***2- Alternative Generation and Evaluation***

**Objective:** Develop alternative solutions and conduct cost, benefit and risk assessments for the NEDSS components which are defined to meet each of the stated goals and objectives.

**Process:**

- Establish alternative NEDSS architectures (hardware, telecommunications, databases, tools) to create technology alternatives to Collect, Store, Deduplicate, Record Match, Detect , Alert, Communicate, and Evaluate use of information.

- Evaluate each alternate in terms of costs, benefits and risks specific to State Health Department goals, vision, resources, etc.
- Review with NEDSS stakeholders options and impacts.
- Based upon feedback generate recommendations specific to each area.

**Outcome:** Document NEDSS technical recommendations

**Time frame:** One - two months

### **3- Develop State NEDSS Plan**

**Objective:** Provide a detailed implementation plan that builds upon existing and future information systems within the State and adheres to the requirements of NEDSS while satisfying the overall needs of the users.

**Process:**

1. Determine a plan for developing and implementing the recommended solution.
2. Determine the resources required to support the technical recommendations, to include staff, equipment and facilities.
3. Determine a projected budget of a minimum five year time frame.
4. Determine a recommended pilot project(s) and a method for achieving project success.
5. Determine timeliness, deliverables and milestones.
6. Determine responsibilities and expected outcomes.
7. Review with NEDSS stakeholders the Implementation Plan and update given feedback.
8. Review with CDC and compare with other State planning efforts.

**Outcome:** Document (50-75 pages) providing results of the analysis and a detailed strategic plan for the state's NEDSS effort. Specific sections on how NEDSS will support Bioterrorism initiatives and how public health information systems can be integrated into this environment.

**Time frame:** Two – Three months