2012 NEDSS Assessment Summary

Background

The National Electronic Disease Surveillance System (NEDSS) is a web-based infrastructure for exchanging public health surveillance data between states and CDC. Implementation of NEDSS-compatible systems can provide jurisdictions with capacity for integrated public health surveillance. In order to assess states' electronic disease surveillance capacity and their progress and challenges related to surveillance system implementation, the Council of State and Territorial Epidemiologists (CSTE) conducted a follow up to assessments conducted in 2007 and 2010.

Methods

In August 2012, CSTE distributed a web-based (SurveyMonkey©) assessment to NEDSS project coordinators and State Epidemiologists in all 50 states and the District of Columbia. Each jurisdiction completed multiple-choice and open-ended questions focused on the system defined as their NEDSS system based on established criteria[1]. Responses were received from all 50 states and D.C.

Results
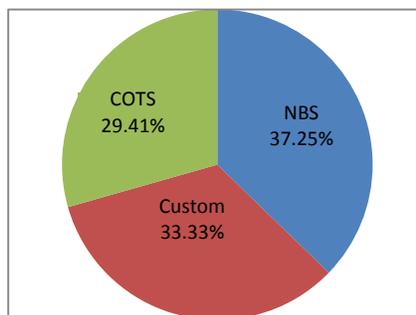
The number of jurisdictions reporting production systems increased to 50 (98%) from 47 (94%) in 2010 and 40 (80%) in 2007. The type of NEDSS development was very evenly proportioned (*Figure.*). However, the NEDSS Base System (NBS) used by 19 states was the most common type of NEDSS-compatible system in production.

Figure. NEDSS system development
COTS = Commercial Off The Shelf (Maven, Atlas, Trisano, STC)
Custom Systems could include state-developed or hybrid systems (e.g., vendor and state developed)

Most maintenance of NEDSS systems in 2012 was funded by federal grants. The Public Health Emergency Preparedness funding supported an average of 38% of annual costs. The Epidemiology Laboratory and Capacity (ELC) funding supported an average of 28% of annual costs, and the ELC Affordable Care Act funding supported an average of 20% of annual costs. Nationally, state funding supported just 7% of annual funding for NEDSS maintenance. Respondents ranked the most important barrier to NEDSS implementation as health department funding shortages. While additional barriers were identified, states leveraged innovative solutions to improve surveillance system capacity, including integration of separate surveillance systems; collaborating with HIEs, hospitals, providers, and other organizations; and utilizing standard messages and vocabulary.

Staff resources responsible for NEDSS implementation and maintenance varied widely across jurisdictions (*Table 1*). The type of Full Time Equivalent (FTE) most needed in addition to current staff was information technology personnel.

Table 1. Current and additional needed staff resources for NEDSS system implementation or maintenance

Position/Type	N	Range	Mean	FTE Need (N=46)
Information Technology (*e.g.*, programmers, database administrators)	45	0.5-21.5	2.9	2.5
Informaticians (*e.g.*, system architects, messaging experts)	30	0.2-6.0	1.1	1.5
Programmatic (*e.g.*, epidemiologists, public health nurses)	45	0.3-61.0	4.5	1.7
Administrative	19	0.1-15.0	1.1	0.5
Other (not further specified)	13	0.5-4.0	0.7	0.6

System integration, as measured by the ability to manage surveillance data from multiple public health program areas, varied by system type and jurisdiction. Custom systems were more likely to include STD surveillance (71%) compared with vendor systems (53%) and the NBS (0%). Conversely, NBS systems were more likely to include tuberculosis surveillance (84%) compared with custom (76%) and vendor (73%) systems. Vendor systems were more likely to include animal surveillance (60%) compared with the NBS (37%) and custom systems (29%).

[1] Pezzino G and Participants of the National NEDSS Stakeholders' Meeting. Available at http://www.cste.org/pdffiles/NEDSS_Book_Final.pdf

Overall, inclusion of specific program area surveillance data within the NEDSS system was highest for vaccine preventable diseases (100%), general communicable diseases (98%), enteric diseases (98%), and zoonotic diseases (98%). The lowest were injury (2%) and other chronic conditions (2%) (*Table 2*).

Table 2. Percentage of NEDSS systems with program-specific surveillance data included

Program area	N	%	Program area	N	%
Vaccine-preventable	51	100.0%	Sexually transmitted	20	39.0%
General communicable	50	98.0%	Blood lead levels	13	25.5%
Enteric	50	98.0%	HIV	10	19.6%
Zoonotic	50	98.0%	Environmental	5	9.8%
Hepatitides	49	96.1%	Poisoning	3	5.9%
Arboviral	47	92.2%	Cancer	2	3.9%
Influenza	45	88.2%	Occupational	2	3.9%
Tuberculosis	40	78.4%	Injury	1	2.0%
Animal surveillance	21	41.2%	Other chronic	1	2.0%

Overall, 96% of jurisdictions reported the ability to receive electronic laboratory reports (ELR) in their NEDSS system, an increase over 2010 (90%) and 2007 (70%). Other functionality reported in 2012 indicated NEDSS systems have functionality beyond simply storing and managing case investigation data (*Table 3*).

Table 3. NEDSS system functionality

Functionality	n	%	Functionality	n	%
Receive ELR	49	96%	Receive ECR from providers*	32	63%
Case/contact tracing**	46	90%	Outbreak management**	29	57%
Case management**	39	76%	Receive ECR from other jurisdictions	18	35%

ECR= electronic case report
* Includes systems with and without web data entry
**For at least some diseases

Of the Message Mapping Guides (MMG) published at the time of the assessment, the tuberculosis MMG was the most commonly implemented. However, 10 jurisdictions reported they had not yet implemented any MMGs (*Table 4.*).

Table 4. Percentage of published MMGs in production

MMG	N	%	MMG	N	%
None in Production	*51*	*19.6%*	Varicella v2.0	49	30.6%
Tuberculosis v2.03	50	44.0%	Generic v1.0	49	28.6%
Tuberculosis v1.0	41	43.9%	Arboviral v1.2	51	11.8%
Varicella v1.0	43	32.6%	Generic Summary v1.0	49	8.2%

Of 38 states that had implemented MMGs, 58% took less than 6 months, on average, to implement a new MMG. The most critical barriers to timely implementation were staff resources, internal competing priorities, and lack of a core attribute MMG.

Discussion

Since 2007, NEDSS-compatible systems in production increased from 80% to 98%. The percentage of NEDSS systems able to receive ELR increased from 70% to 96% and the percentage able to receive electronic public health case reports rose from 54% to 63%. Funding and workforce needs continue to be barriers to NEDSS implementation and maintenance, and greater training in electronic data exchange is needed to improve NEDSS system functionality. With the current federal budget challenges and the majority of funding for NEDSS systems coming from federal sources, limited resources are likely to remain a barrier for the near future, demanding further exploration of innovative technical and collaborative solutions for improving NEDSS capacity.