

January 2012

Evaluation of Syndromic Surveillance Data Use for Communicable Disease Control Practice in North Carolina, 2009

Summary of Report of Findings to North Carolina Division of Public Health

In recent years, the implementation of electronic syndromic and reportable disease surveillance systems has greatly increased the amount of data available to public health agencies in near real time. However, effective use requires efficient access to the data from these sources.

North Carolina has been a pioneer in the development of electronic surveillance systems for state, regional and local-level public health use. To assess how public health staff are accessing and using these new data sources, the North Carolina Preparedness and Emergency Response Research Center (NCPERRC) evaluated the two electronic communicable disease surveillance systems the state operates: the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) and the North Carolina Electronic Disease Surveillance System (NC EDSS).

NC DETECT is a population-based syndromic surveillance system that includes data from emergency department visits, poison control center calls, and emergency medical services runs.

In 2009, NCPERRC examined the use of NC DETECT and developed recommendations to improve the use of NC DETECT data. This research brief summarizes findings of this work.

The public health system may benefit from the increasing amounts of electronically available surveillance data, but additional systems and related data may also present challenges. Surveillance data systems should be designed for efficient review and management of data.

Analysis of NC DETECT System Data and Survey of NC DETECT Users

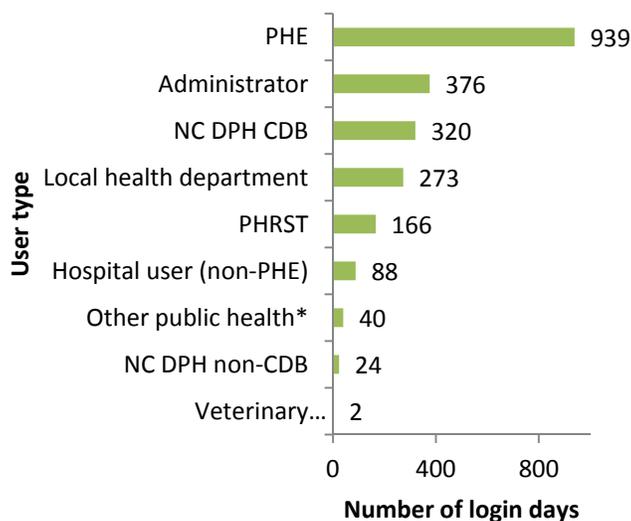
NCPERRC researchers analyzed NC DETECT system data from April-October 2009 and surveyed 55 public health staff who might make use of data collected by NC DETECT. Staff included epidemiologists and nurses at the state level, the primary user of surveillance data on each public health regional surveillance team (PHRST), hospital-based public health epidemiologists (PHEs), and a sample of staff from North Carolina's 86 local health departments (LHDs). The use of NC DETECT was assessed for an event investigation in the past year, for the H1N1 influenza pandemic, and for program management, policy development and reporting.

Results

System Data

There were 136 registered users of NC DETECT and 2,229 login days during April-September 2009. Users from LHDs made up the single largest user group (40; 29%). However, hospital-based public health epidemiologists (PHEs) were responsible for the highest proportion of login days (939; 42%, Figure 1).

Figure 1. Number of NC DETECT login days by user type, April-September 2009



*Includes school-based users, military users, municipal staff.

Abbreviations: NC DPH, NC Division of Public Health; CDB, Communicable Disease Branch; PHE, hospital-based public health epidemiologist; PHRST, Public Health Regional Surveillance Team member

Survey

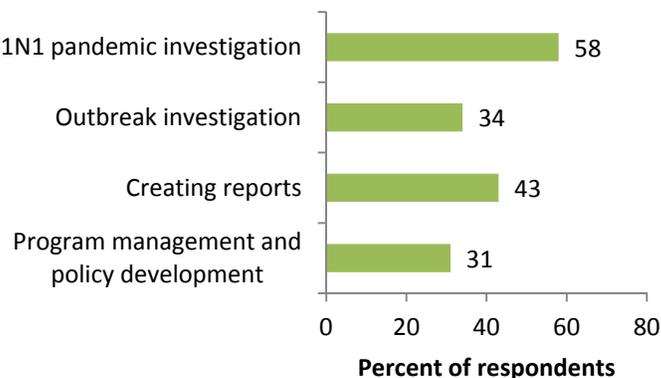
Twenty-eight state staff, 11 regional staff (6 public health regional surveillance team members and 5 PHEs), and 27 LHD staff members participated in the survey. Respondents reported accessing NC DETECT data directly (via the web application) and indirectly (receiving case information or aggregate reports from others). The largest group of respondents (23; 42%) accessed data both directly and indirectly. Some respondents, however, did not access the data at all.

Fifty respondents had participated in an event investigation in the past year. NC DETECT was used for case finding and event monitoring during 17 (34%) investigations of whooping cough, *Escherichia coli*

infection, hepatitis A, salmonellosis, norovirus infection, and chemical exposure (Figure 2). NC DETECT data was used in reports by 20/47 (43%) respondents, and for program management and policy development by 13/42 (31%) respondents.

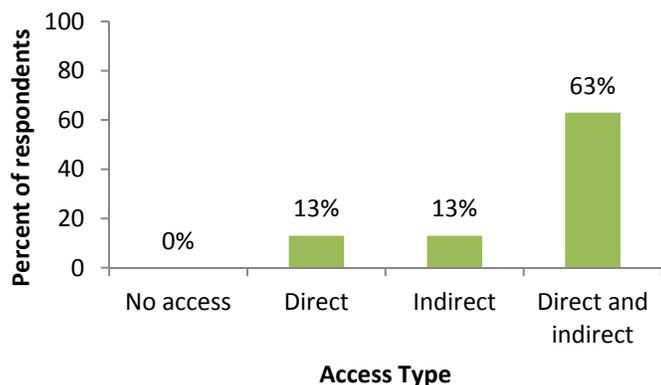
NC DETECT use increased during the H1N1 influenza pandemic that began in May 2009. In this pandemic, suspect influenza cases were known to be presenting in emergency rooms and the North Carolina Division of Public Health was regularly forwarding syndromic surveillance data to LHDs. During the pandemic, 21/28 (75%) state/regional respondents and 9/13 (69%) LHDs reported using NC DETECT data in their pandemic response. NC DETECT data were used for situational awareness to identify cases and create reports and press statements.

Figure 2. Use of NC DETECT for public health tasks by state, regional, and local staff, North Carolina



The use of NC DETECT information for an event in the past year was associated with the type of access the respondent reported having to NC DETECT data. Respondents who accessed data directly from the NC DETECT system and received data indirectly from other staff were much more likely to report using NC DETECT during the event (Figure 3). Respondents with both types of access to NC DETECT were also more likely to report using NC DETECT data for program management and policy development and for reporting. Use of NC DETECT information for the event was not associated with county size, staff education level, or survey respondent age.

Figure 3. NC DETECT use for event detection and monitoring by survey respondent access to NC DETECT, North Carolina, May 2008-May 2009.



When asked to list the surveillance data they needed, survey respondents listed 62 types of data; ambulatory care data, influenza data, and better or more rapidly available laboratory data were most commonly cited. Survey respondents made many suggestions for changes to NC DETECT. The most frequently recommended changes were providing additional training for LHD staff and addition of ambulatory care data to NC DETECT.

Respondents at both state/regional (11; 39%) and local (19; 70%) levels indicated interest in receiving NC DETECT summary reports; similar numbers of respondents at each level indicated interest in receiving an e-mail when an event in their jurisdiction is investigated using NC DETECT. A high proportion of local survey respondents (21; 78%) and regional respondents (8; 73%) indicated that user-based search functionality (i.e., custom report creation) is a highly desired NC DETECT function.

Discussion

This study found that use of syndromic surveillance data by North Carolina state, regional, and local public health levels resulted in meaningful public health actions, including both public health event detection and management and additional activities such as informing program management. Employees at state, regional, and local public health levels used syndromic surveillance data both for the originally envisioned purpose (rapid detection of large-scale public health events) and for traditional public health needs. Thus, this new data source has been incorporated into daily

surveillance practices in North Carolina and is used for critical public health purposes across the state. Although NC DETECT data result in public health action, the study findings suggest that many data users do not find access to the NC DETECT system efficient enough to regularly use data obtained this way. However, when staff receive data or information from an expert user of NC DETECT, they find the data useful. Thus, these findings suggest that access to NC DETECT must be efficient enough to allow staff to integrate these data with other surveillance information for event investigation as well as program management and policy development.

Two approaches may be taken to address the issue of efficient access. A centralized approach would continue to support a group of North Carolina Division of Public Health (NC DPH) staff responsible for reviewing NC DETECT and forwarding relevant information to data users, including LHD staff. A decentralized approach would focus on developing more simple and efficient access to NC DETECT data. These approaches could also be combined. Ultimately, efficient access may best be guaranteed by making NC DETECT and other surveillance data available through a single system.

To help prioritize recommendations, cost levels (low, medium, high) were determined collaboratively by NCPERRC and NC DETECT informatics staff. Suggestions were prioritized by implementation cost and user support (number of survey respondents indicating support for the suggestion). Given the current economic climate, no high-cost changes were recommended

RECOMMENDATION 1: Changes to NC DETECT training and programming could be made by NC DPH and NC DETECT informatics staff to better support use of NC DETECT at LHDs.

RECOMMENDATION 2: Protocols could be developed by NC DPH personnel that make it clear when NC DETECT could be accessed in public health practice and which signals could be prioritized for review. Protocols are available from other states to guide this work.

RECOMMENDATION 3: Develop user-based custom search capacity in NC DETECT. This capacity will permit more flexible and customized use by users at various levels, and facilitate investigation of potential clusters that are not captured by the syndromes.

RECOMMENDATION 4: NC DETECT informatics staff could find opportunities to distribute information products on NC DETECT into settings accessed by surveillance and LHD staff, such as the “Epi Notes” quarterly newsletter.

RECOMMENDATION 5: Data flow between NC DETECT and NC EDSS could be supported, with electronic data flow between NC DETECT and NC EDSS as a future goal.

Some of the changes suggested in this report and by survey respondents are currently being implemented, including programming to allow user-based search capacity, training interventions, addition of data streams to NC DETECT, and the creation of an NC DETECT web portal oriented toward efficient use at the LHD level (accessible to LHD users at ncdetect.org).

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The research was Research Center (NCPERRC) which is part of the UNC Center for Public Health Preparedness at the University of North Carolina at Chapel Hill's Gillings School of Global Public Health and was supported by the Centers for Disease Control and Prevention (CDC) Grant 1Po1TP000296. The contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC. Additional information can be found at <http://cphp.sph.unc.edu/ncperrc>.