



Lessons Learned

Syndromic surveillance systems are inherently flexible and provide valuable situational awareness during natural disasters.

When Disaster Medical Assistance Teams (DMATs) are deployed, data are available in the NSSP to monitor public health issues among populations in shelters that might not be represented in other data streams.

Lessons learned from this experience include the following tips:

- Update emergency response plans to include the *potential* use of additional data streams, including DMAT data. Where possible, identify these data streams and points of contact.
- Work with the NSSP team *before* an event to prepare for the deployment and use of additional data streams.

North Carolina Integrates Data from Disaster Medical Assistance Teams for Improved Situational Awareness

Public Health Problem

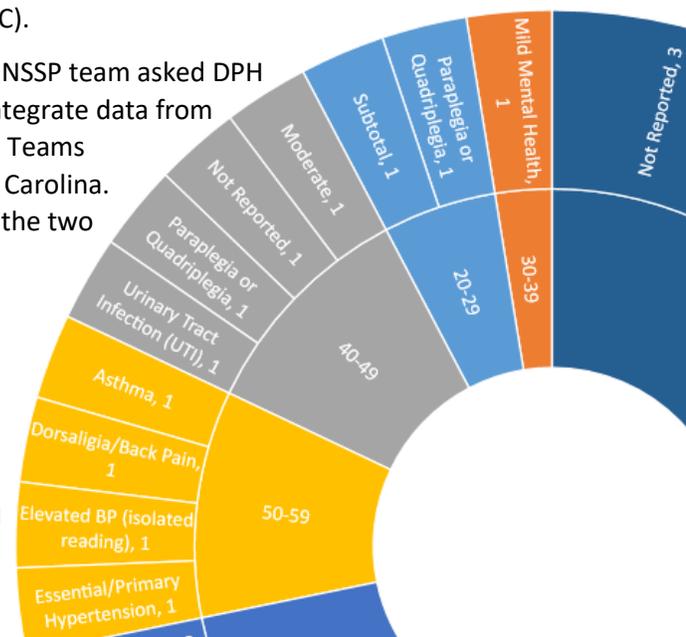
Hurricane Florence made landfall as a Category 1 hurricane in North Carolina in September 2018. As a slow-moving storm, it brought record-breaking rainfall and catastrophic flooding to the southeastern region of the state. Mandatory evacuations swelled statewide shelters to more than 20,000 residents. Hazards such as breaches of coal ash and hog wasters added to the list of potential exposures. Real-time syndromic surveillance data were essential not only to monitor injuries, illness, and deaths during and post-hurricane but to provide *actionable* situational awareness to responders and the public.

Actions Taken

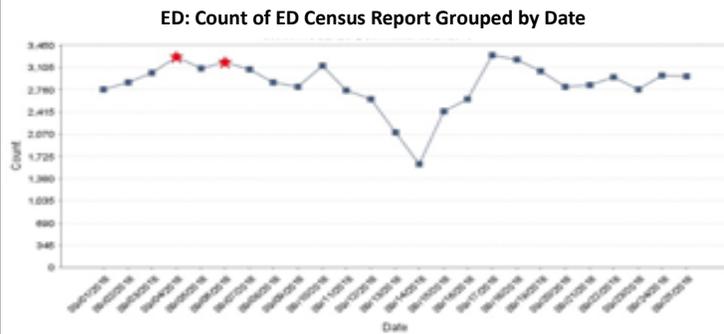
The North Carolina Division of Public Health (NC DPH) conducted active, enhanced surveillance before, during, and after Hurricane Florence using the state syndromic surveillance system, NC DETECT, and the National Syndromic Surveillance Program (NSSP). NC DETECT uses emergency department (ED) visits from the state's 126 acute care hospitals, poison center calls, and emergency medical services (EMS) runs. NSSP has the same statewide ED data as NC DETECT. A hurricane dashboard was created in both systems before landfall to make information more easily available to any user. A diverse set of syndromes were included to monitor injuries, drownings, motor vehicle accidents, carbon monoxide exposure, medication refills, etc. A hurricane syndrome was also created to try to capture visits specific to the event. Syndrome data were reviewed by staff epidemiologists, and pertinent information was included in a daily situation report that was shared with the State Emergency Operations Center (SEOC) and the Centers for Disease Control and Prevention (CDC).

During the response, CDC's NSSP team asked DPH officials if they wanted to integrate data from Disaster Medical Assistance Teams (DMATs) deployed in North Carolina. Within 24 hours, data from the two deployed DMATs, one in Wake County and one in Mecklenburg County, were available in NSSP.

Situational reports included visualization of syndrome and subsyndrome categories. ►



ED Census (NC DETECT regions 2, 3; see map)



Exposures, Investigations, Outbreaks

- Total deaths: **37** (20 counties)
- CO Exposure/Poisonings (total since 9/13): **33** (2 deaths)
 - Alamance, Brunswick, Cabarrus, Carteret, Craven, Cumberland, Duplin, Durham, Gaston, Mecklenburg, Robeson, Sampson, Wake, Watauga, Wayne counties
- Chemical/Environmental Hazard reports: **Ongoing**
 - DEQ is monitoring swine lagoons and coal ash events at: <https://deq.nc.gov/news/deq-dashboard>
- Urgent communicable diseases: **0**
- **Outbreak reports/investigations: 1**
 - **Salmonellosis** outbreak among a first responder team, 1 person hospitalized (Brunswick/Lenoir)

Syndrome Surveillance (ED visits)

ED census: AT baseline (figure 1)
Syndrome summaries:
ALL syndromes have returned to baseline (pre-hurricane)
 Bites/stings: AT baseline
 Diabetes related: AT baseline
 Heat illness: AT baseline
 Infectious diseases: AT baseline
 Overall injuries: AT baseline
 Trauma injuries: AT baseline
 Fumes, gas vapor: AT baseline
 Medication refills: AT baseline
 Poison center calls: AT baseline for CO exposures

CO Poisonings (statewide)

Carbon Monoxide Poisonings*— North Carolina, September 13–26, 2018



Contact the North Carolina Division of Public Health for a more accurate representation of the dashboard used to support the hurricane and other response efforts.

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The National Syndromic Surveillance Program (NSSP) BioSense Platform is a product of the Centers for Disease Control and Prevention (CDC). The findings and outcomes described in this NSSP success story are those of the authors and do not necessarily represent the official position of CDC.

- This success story shows how NSSP
- Improves Data Representativeness
 - Improves Data Quality, Timeliness, and Use
 - ✔ Strengthens Syndromic Surveillance Practice
 - ✔ Informs Public Health Action or Response

Actions Taken, continued

DMAT data were monitored along with ED visits and poison center calls. NSSP staff provided visual summaries of data for DPH review and analysis. Findings from the DMAT data, which were added to daily situation reports, provided insight into the health events experienced by those in shelters receiving DMAT care. Data were monitored for about one week until the DMATs were no longer deployed.

Outcome

A surveillance plan was in place before Hurricane Florence, but that plan did not include field hospital (DMAT) data. Because the DMAT field hospitals serve shelters, the situation report would be incomplete and likely biased without these data. Once NSSP provided DMAT data to the North Carolina DPH, these data were integrated with speed and ease and monitoring began immediately. DMAT data did not reveal major health events among shelter populations—still, DPH officials acquired a more representative picture of affected populations.

Improved situational awareness leads to thorough, better coordinated response efforts that could, potentially, discover vital public health issues. The DMAT data provided by NSSP gave DPH another piece of the surveillance puzzle and helped DPH take an important first step toward improving the state’s disaster surveillance plan.

Now, whenever DMATs are deployed, data are available to the state through NSSP.