

# CHD Epidemiology Hurricane Toolkit 2020



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## I. Introduction

This toolkit will help a county health department (CHD) plan for and carry out the epidemiologic response to a natural disaster. CHD staff should review this toolkit annually at the beginning of the hurricane season.

These tools are designed to be flexible to a wide range of situations, such as:

- Hurricanes
- Wildfires
- Flooding
- Tornadoes
- Other natural disasters

After an event, the impacted area can experience extensive infrastructure damage, including health resources. At times, the CHD will function at close to a normal level, while at other times its own facilities and staff are severely impacted and will require extensive outside assistance. The details of the response will differ, based on needs.

The toolkit offers guidance on the following topics:

- CHD response activities
- Surveillance
- Outbreak response
- Infection control guidance

Additionally, the [Environmental Health Response Guide](#) offers guidance on the following topics:

- Precautionary boil water notice
- Recommendations and template letters
- Environmental health assessments
- Planned actions for counties for pre- and post-incident

This toolkit can be found by navigating to the [Florida Department of Health \(FDOH\) SharePoint](#) site and navigating to:

1. State Health Office tab
2. Divisions: Disease Control and Health Protection
3. Bureau-Programs sidebar: Bureau of Epidemiology
4. Disease Reporting Guidance and Response sidebar: Hurricane Toolkit

Please note that the SharePoint site is accessible via Office 365 even when the FDOH network is offline.

Contact lists:

[CHD epidemiology contacts \(for external partners\)](#)

[CHD epidemiology contacts \(for internal partners\)](#)

[CHD environmental health contacts \(for internal partners\)](#)

[Bureau of Epidemiology contacts](#)

[Bureau of Environmental Health contacts](#) (contacts are on page 5 of this EH document)



## II. CHD Response Activities

### A. Pre-Event Activities

In the 24–72 hours before a storm, start planning for operating with limited resources. Pre-event activities may include, but are not limited to, the following.

Activity	Details
Participate in epidemiology conference call to review preparation activities	<p><b>Discuss</b> CHD activities prior to, during, and after storm</p> <p><b>Review</b> all event-related communications from State Health Office</p>
Print contact lists with phone numbers	<p><b>CHD epidemiology contacts (for external partners)</b></p> <p><b>CHD epidemiology contacts (for internal partners)</b></p> <p><b>Bureau of Epidemiology contacts</b></p> <p><b>Bureau of Environmental Health contacts</b> (see page 5)</p>
Ensure epidemiology staff are familiar with relocation, communication, and operation plans post-storm	<p><b>Distribute</b> alternate phone numbers/FAX machine numbers to community partners (web-hosted FAX numbers may alleviate potential communication disruptions)</p> <p><b>Review</b> CHD continuity of operations plans</p> <p><b>Designate</b> staff to cover critical routine epidemiology functions post-storm</p> <p><b>Contact</b> Bureau of Epidemiology to arrange coverage if all epidemiology staff will be unavailable post-storm (e.g., staffing special needs shelter)</p>
Prepare to work with limited resources (no Internet/power)	<p><b>Print</b> and store critical documents on flash drive (e.g., forms, manuals, contacts)</p> <p><b>Charge</b> laptops and phones; ensure chargers are available</p> <p><b>Ensure</b> sufficient supply of laboratory collection specimen kits, submission forms, shipping/packing materials, coolers, and freezing gel packs</p> <p><b>Ensure</b> VPN is working</p> <p><b>Download</b> Everbridge app to work and personal cell phones</p> <p><b>Ensure</b> staff have access to applicable systems/software and have websites stored (see Section II.C)</p> <p><b>Obtain</b> maps of locations of interest (e.g., schools, hospitals, shelters) in case street signs are damaged</p>
Establish communication with key disease control partners in coordination with the county Emergency Operations Center (EOC); ensure all parties have primary and alternate contact information	<p><b>Local public information officers:</b> review procedures, discuss relevant public health press releases for the event (e.g., carbon monoxide poisoning prevention)</p> <p><b>Health care partners</b> (e.g., hospitals, health care providers, infection control nurses, emergency departments, urgent care centers, correctional facilities, laboratory directors, long-term care facilities, nursing homes, assisted living facilities)</p> <p><b>Shelters:</b> establish communication through local incident command system (ICS) and discuss infection control procedures with shelter staff and continue to communicate in-person or via phone until shelters close</p> <p><b>Local environmental health staff:</b> determine roles for post-storm events (e.g., animal bites, shelter outbreaks), know location of foodborne investigation kits (blue cooler) and waterborne investigation kits (red cooler), ensure laboratory submission kits for animal heads are available</p> <p><b>Local immunization staff:</b> vaccine-preventable disease may occur post-storm; demand for tetanus shots may increase due to storm-related injuries</p> <p><b>Local TB, STD, HIV/AIDS staff:</b> trained investigators may assist with epidemiology investigations or surveillance</p> <p><b>Local mosquito control:</b> sentinel surveillance may be impacted by hurricane damage; standing water may result in need for additional mosquito spraying</p> <p><b>Local animal control:</b> animal bites frequently increase pre-storm; ensure continued reporting of bites</p>
Prepare to review surveillance data post-storm	<p><b>Set up</b> ESSENCE-FL surveillance dashboards designed to identify possible post-storm health issues (contact Bureau of Epidemiology for access to existing dashboards)</p> <p><b>Create</b> template for surveillance report; determine approach for distribution</p>

## II. CHD Response Activities (Continued)

### B. Post-Event Activities

Post-event surveillance should focus on maintaining routine surveillance and enhancing surveillance for impacts seen in previous hurricanes:

- Increases in injuries, carbon monoxide poisoning, animal and insect bites, medication refills, and seizures
- Possible respiratory or gastrointestinal outbreaks in shelters
- Mosquito control may be needed one to two weeks after hurricane landfall
- Decrease in emergency department (ED) visits day before and day of hurricane landfall
- Increase in ED visits in days immediately following hurricane landfall
- Increase in tetanus vaccinations due to post-storm injuries

Post-event activities may include, but are not limited to, the following. Every county may have different needs after a hurricane.

Activity	Details
Assess local epidemiology capacity	<b>Contact</b> all potential epidemiology staff (including regional epidemiologists and regional food and waterborne epidemiologists) to determine availability to work and resources needed
Re-establish communication with key disease control partners in coordination with the county EOC and determine to what extent they can continue usual communicable disease reporting	<p><b>Contact:</b></p> <ul style="list-style-type: none"> <li>• Infection preventionists</li> <li>• Emergency departments</li> <li>• Urgent care centers participating in ESSENCE-FL</li> <li>• Facilities serving at-risk populations (e.g., long-term care, intermediate, and transitional facilities)</li> <li>• Shelters</li> <li>• Local environmental health</li> <li>• Local mosquito control</li> </ul> <p><b>Determine</b> need for assistance to conduct routine surveillance activities, enhanced surveillance activities, shelter surveillance, and outbreak response</p>
Stay in contact with the local emergency operations center (EOC)	<p><b>Determine</b> impact on local health care and public health infrastructure</p> <p><b>Determine</b> if federal disaster medical assistance teams (DMATs) or U.S. Public Health Service mobile clinics have been deployed to your area</p> <p><b>Request</b> assistance (as needed) for routine surveillance activities, enhanced surveillance activities, shelter surveillance, and outbreak response through the EOC</p>
Monitor emergency departments (ED), urgent care centers (UCC), poison control centers (PCCs), and DMAT data	<p><b>Determine</b> whether EDs, UCCs and PCCs are able to submit data; review visit volume (Bureau of Epidemiology will also monitor ESSENCE-FL data and work to restore data feeds if they go down)</p> <p><b>Review</b> ED, UCC, and PCC data to monitor injuries, carbon monoxide poisoning, animal and insect bites, medication refills</p> <p><b>Contact</b> EDs daily to determine whether they have seen patients with unusual diseases or clusters of exposures/diseases/conditions that need public health intervention</p> <p><b>Determine</b> need to implement shelter surveillance (see <a href="#">Shelter Surveillance Section</a>)</p> <p><b>Respond</b> to reports of outbreaks in the community or in shelters</p> <p><b>Summarize</b> surveillance data as necessary for internal use, sharing with partners, and reporting to the EOC</p>

Qualified public health epidemiologists can be activated and deployed to support local missions when CHD resources are or may be overwhelmed. Epidemiologists may be deployed as single resources, in pairs, in strike teams, or surge support may be provided by epidemiologists working remotely. **During a hurricane or other Governor’s emergency declarations, an official resource request should be made through the county EOC.**

## II. CHD Response Activities (Continued)

### C. Accessing Surveillance and Communication Systems

Below is a list of surveillance systems, their websites, and how to get access. Do not wait until a hurricane is approaching to get access and become familiar with these systems.

<p><b>Merlin</b></p> <p>Reportable disease surveillance system</p>	<p><a href="https://merlin.doh.ad.state.fl.us/merlin">https://merlin.doh.ad.state.fl.us/merlin</a>  <b>Request access and help via email:</b> <a href="mailto:Merlin.Helpdesk@FLHealth.gov">Merlin.Helpdesk@FLHealth.gov</a>  <b>Access requirements:</b> user must be on FDOH network  <b>Notes:</b> user access forms available on <a href="#">Merlin User Community SharePoint</a> site (copy of FDOH Information Security training required for access)</p>
<p><b>ESSENCE-FL</b></p> <p>Syndromic surveillance system</p>	<p><a href="https://www.essencefl.com/">https://www.essencefl.com/</a> (access via Google Chrome or Mozilla Firefox)  <b>Request access and help via email:</b> <a href="mailto:ESSENCE.HELP@FLHealth.gov">ESSENCE.HELP@FLHealth.gov</a>  <b>Access requirements:</b> user must have Internet (FDOH network not needed)  <b>Notes:</b> user access forms and user guide available on <a href="#">ESSENCE-FL SharePoint</a> site</p>
<p><b>EpiCom</b></p> <p>Epidemiology communication forum</p>	<p><a href="http://www.servfl.com/Account/Login">http://www.servfl.com/Account/Login</a>  <b>Request access and help via email:</b> <a href="mailto:EpiCom.Administrator@FLHealth.gov">EpiCom.Administrator@FLHealth.gov</a>  <b>Access requirements:</b> user must have Internet (FDOH network not needed)</p>
<p><b>Everbridge</b></p> <p>Florida's health alert network</p>	<p><a href="https://member.everbridge.net/index/453003085611185#/login">https://member.everbridge.net/index/453003085611185#/login</a>  <b>Request access and help via email:</b> <a href="mailto:FloridaHealthSystems@FLHealth.gov">FloridaHealthSystems@FLHealth.gov</a>  <b>Access requirements:</b> user must have Internet (FDOH network not needed)</p>

## III. Surveillance

**Following hurricanes or other natural disasters, surveillance of affected populations is important, particularly when medical facilities are damaged, and transportation and communication systems are disrupted.** Enhanced surveillance for diseases and injuries should be implemented to detect emerging health threats in affected communities. Rumors of disease outbreaks, some of which may be exaggerated or inaccurate, are common following a disaster. Ongoing, systematic surveillance for general health conditions is an effective means to inform the community, public health decision makers, and other community decision makers of the actual risks in the community. This type of surveillance can dispel false rumors of outbreaks and allow public health responders to allocate resources where they are most needed.

**Public health impacts previously identified post-storm include:**

- Increases in injuries, carbon monoxide poisoning, animal and insect bites, medication refills, and seizures.
- Possible respiratory or gastrointestinal outbreaks in shelters.
- Mosquito control needed one to two weeks after hurricane landfall.

CHDs, with the assistance of emergency responders if necessary, should quickly identify diseases, exposures, or health conditions that can pose a threat to community health. In addition to reportable diseases and syndromic surveillance, CHDs should try to assess areas not covered adequately by these approaches.

**POST-EVENT SURVEILLANCE IS CRITICAL FOR IDENTIFYING HEALTH CONCERNS IN THE COMMUNITY AND ALLOCATING RESOURCES APPROPRIATELY.**

### A. Routine Reportable Disease Surveillance

Health care providers and laboratories are required to notify FDOH of cases of reportable diseases and conditions. These data should be monitored for any unexpected increases, particularly for enteric diseases, vaccine-preventable diseases, and carbon monoxide poisonings. This information is crucial for making decisions about resource allocation, public health interventions, or outbreak investigation and control.

**Regular reportable disease surveillance should continue regardless of response activities following a hurricane.** Surveillance is a critical component of the state’s public health infrastructure to:

- Estimate the magnitude of post-event health problems.
- Support outbreak detection.
- Evaluate disease control measures in the short and long term.
- Monitor changes in disease patterns post-event.
- Facilitate planning prior to, during, and after an event.

**HEALTH CARE PROVIDERS AND LABORATORIES MUST NOTIFY THE FLORIDA DEPARTMENT OF HEALTH OF CERTAIN DISEASES.**

**Merlin** is the web-based surveillance system used by all 67 counties for reportable disease data (see [Accessing Surveillance and Communication Systems Section](#) for information on accessing Merlin). Users must be on the FDOH network to access Merlin. The Bureau of Epidemiology can provide just-in-time training as needed.

Disease-specific guidance for how to investigate diseases and outbreaks is available on the [Surveillance and Investigation Guidance](#) webpage.

The Bureau of Epidemiology also can offer CHDs support for maintaining reportable disease surveillance through follow-up, investigation, and analysis assistance remotely. **If CHDs are not able to maintain reportable disease surveillance data due to structural damage, re-assigned staff, or absent staff, request assistance through the county EOC or contact the Bureau of Epidemiology at 850-245-4401.**

### B. Post-Event Surveillance

Post-event surveillance in Florida relies heavily on syndromic surveillance, aimed at identifying general groupings of health events that might indicate an increase or decrease in community health problems. For example, an increase in people with gastrointestinal symptoms may indicate a diarrheal disease outbreak due to a contaminated food or water exposure, which could be caused by several pathogens such as norovirus, *Salmonella*, *Giardia*, or *Cryptosporidium*.

## III. Surveillance (Continued)

Florida’s syndromic surveillance system, ESSENCE-FL, receives data from emergency departments (EDs), urgent care centers (UCCs), and poison control centers (PCCs). When activated, syndromic data from disaster medical assistance teams (DMATs) are also collected and reviewed. Enhanced surveillance may be implemented in shelters, nursing homes, assisted-living facilities, correctional facilities, or other locations that may be impacted post-storm.

Whenever possible, electronic surveillance using existing systems is preferred to paper-based surveillance as it saves time and energy for both facility and CHD staff. However, power and network outages may prevent electronic data from being transmitted and paper-based surveillance may be necessary.

### Syndromic Surveillance – EDs, UCCs, DMATS

Electronic data from EDs, UCCs, and PCCs are routinely submitted in near-real time to ESSENCE-FL. DMAT data are configured to be submitted to ESSENCE-FL every 15 minutes. During response events, the Bureau of Epidemiology will initiate DMAT data flow into ESSENCE-FL.

**To prepare for post-hurricane syndromic surveillance**, CHDs should have multiple trained ESSENCE-FL users who have reviewed the recorded Training Tuesday on using ESSENCE-FL for storm-related surveillance from June 11, 2019 (available [here](#) and must be accessed using Google Chrome or Mozilla Firefox).

#### Post-hurricane:

- The Bureau of Epidemiology will:
  - Monitor regional and statewide data daily.
  - Provide summary reports to regional incident command, CHDs, and facilities, as appropriate.
  - Assist with county-specific surveillance as needed.
  
- CHDs should conduct routine (ideally daily) surveillance of functioning EDs and DMATS (if activated) using ESSENCE-FL focusing on:
  - Injuries
  - Chronic respiratory disease (asthma)
  - Acute disease (e.g., gastrointestinal, respiratory, dermatologic, febrile illness)
  - Animal bites
  - Insect-borne disease (acute neurologic)
  - Carbon monoxide and other poisoning
  - Disease outbreaks
  - Chronic health conditions
  - Health maintenance visits
  - Mental health conditions



**CHDs SHOULD MONITOR ESSENCE-FL DATA DAILY IF POSSIBLE. THE BUREAU OF EPIDEMIOLOGY WILL ANALYZE REGIONAL AND STATEWIDE DATA.**

See the **Accessing Surveillance and Communication Systems Section** for information on accessing ESSENCE-FL. For additional information on using the system, see the **ESSENCE-FL User Guide** or contact the ESSENCE-FL help desk: [ESSENCE.HELP@FLHealth.gov](mailto:ESSENCE.HELP@FLHealth.gov).

Manual syndromic surveillance may need to be conducted if facilities are not operational or if feeds go down (see **Manual Surveillance Section**).



### Syndromic Surveillance – Poison Control Centers

Call data from Florida’s three PCCs (located in Jacksonville, Tampa, and Miami) are submitted to ESSENCE-FL every 10 minutes and are used to provide situational awareness for hurricane-related poisonings. PCC data include demographics, date and site of exposure, exposure scenario, case management site, substance of exposure, signs and symptoms, and medical outcome. This information can be accessed through ESSENCE-FL and the statewide Florida Poison Information Center Network (FPICN) database and utilized for targeted prevention and education. To obtain additional information on a specific PCC call (e.g., patient name, phone number, and detailed case notes), contact your **Regional Environmental Epidemiologist** or the statewide Chemical Surveillance Epidemiologist, Dr. Prakash Mulay, at 850-245-4576.

**Carbon monoxide is the primary poisoning concern following a hurricane due to improper placement, ventilation, and maintenance of generators during power outages.** Other concerns include:

Type of exposure	Common sources
Carbon monoxide	Improper placement, ventilation, and maintenance of generators
Hydrocarbon fuels	Gasoline siphoning for fuel and lamp oils as alternative light sources
Batteries, fire, matches, explosives	Dermal injuries related to the use of alternative power sources for lights and electronics
Bites, stings, snakes, poisonous plants	Environmental exposures due to the loss of electricity and displacement rather than activities unrelated to storm (e.g. routine restoration of property)
Contaminated, polluted, or sewage water	Storm surges, excessive rainfall, and electrical outages disabling lift stations used to transport sewage away from residential neighborhoods, leading to overflows and spills
Food poisoning	Inadequate temperature holding, storage, and undercooked food products

**To prepare for post-hurricane PCC surveillance**, CHDs should have multiple users trained to be capable of using PCC data within ESSENCE-FL. Review the recorded Training Tuesday on using ESSENCE-FL for storm-related surveillance from June 11, 2019 (available [here](#) and must be accessed using Google Chrome or Mozilla Firefox).

#### Post-hurricane:

- The Bureau of Epidemiology will:
  - Monitor ESSENCE-FL daily for hurricane-related poisonings for all affected counties.
  - Notify CHDs of exposures that warrant follow-up investigation.
  - Provide summary reports to regional incident command, CHDs, and facilities, as appropriate.
  - Provide training, consultation, and support to conduct case investigation and data entry into Merlin.
- CHDs should:
  - Create cases in Merlin (statewide reportable disease surveillance system) and investigate all possible cases of reportable conditions identified by the state or the CHD.
  - Monitor ESSENCE-FL daily for hurricane-related poisonings (optional, contact the statewide Chemical Surveillance Epidemiologist at 850-245-4576 for assistance with queries).

See the **Accessing Surveillance and Communication Systems Section** for information on accessing ESSENCE-FL. To access county-specific PCC data in ESSENCE-FL, users must complete an online training that is offered quarterly. Please contact the statewide Chemical Surveillance Epidemiologist, Dr. Prakash Mulay, at 850-245-4576 for a training schedule and any other questions about PCC data. For poisoning questions or emergencies, call 800-222-1222.

### Manual Surveillance

#### Hospitals and DMATs

Post-storm, CHDs should ideally contact the charge nurse, infection preventionist, or medical director at each hospital or DMAT in their county daily to determine whether they have seen patients with unusual diseases or clusters of exposures/diseases/conditions that need public health intervention.

**CHDs SHOULD REACH OUT TO HOSPITALS DAILY, IF POSSIBLE, TO IDENTIFY ISSUES THAT NEED PUBLIC HEALTH INTERVENTION.**

#### Shelters

The Bureau of Epidemiology also recommends implementing shelter surveillance in general shelters and special needs shelters that are open longer than one week to identify communicable diseases that could potentially cause outbreaks, dispel rumors of outbreaks, and provide education to shelter staff and residents to quickly identify any public health concerns that may arise (see the [Shelter Surveillance Section](#) for more information about implementing shelter surveillance).

#### Other congregational settings

Other congregational settings like nursing homes, assisted-living facilities, long-term care facilities, and correctional facilities may need additional surveillance on a case-by-case basis. There is no rule to determine when manual post-event surveillance should be implemented. The decision should be made based on circumstances with input from the EOC and the Bureau of Epidemiology. Shelter surveillance tools can be applied to these settings if necessary.

#### Community

A community needs assessment may be valuable in determining the critical health needs and assessing the impact of the disaster. The decision to conduct a community needs assessment should be made based on circumstances with input from the EOC and the Bureau of Epidemiology. A description of community assessments for public health emergency response (CASPERs) is available in [Appendix A](#).

**If CHDs do not have adequate staffing for manual surveillance, request assistance through the county EOC or contact the Bureau of Epidemiology at 850-245-4401.**

### Shelter Surveillance

While the risk of infectious disease outbreaks immediately following a disaster is low, the risk increases with longer-term sheltering.

**Before the shelter is occupied**, prepare for prevention and control of infectious diseases:

- **Identify** all general and special needs shelters in the county.
- **Provide** infection control guidelines to all shelters prior to the event:
  - [Guidelines for Disease Control in Shelters](#) (Appendix B)
  - [Norovirus Illness: Key Facts](#)
  - [Norovirus Guidelines for Healthcare Settings](#)
  - [Guidelines for Managing Norovirus in Shelters](#) (Appendix C)
  - [Guidelines for Managing Acute Diarrhea](#) (Appendix D)
- **Ensure** that shelter staff know how to contact the CHD and how to report outbreaks.
- **Establish** chain of command for reporting status of shelters in coordination with environmental health and county EOC.

## III. Surveillance (Continued)

**Post-event**, CHDs should monitor shelters for possible infectious diseases:

- **Re-establish** regular contact with each shelter.
- **Assess** any shelter damage that could impact shelter operations or the health of the shelter population including electricity, functioning toilets and sinks, showers, food preparation facilities, drinking water, and sanitation facilities (in coordination with the county EOC).
- **Consider** implementing active disease surveillance in shelters open longer than one week when staffing allows to:
  - Detect communicable diseases that could potentially cause outbreaks.
  - Confirm the lack of communicable diseases to dispel rumors.
- **Investigate** possible outbreaks and implement control measures as appropriate (see the **Outbreak Response Section**).

Depending on the shelter, CHD epidemiologists can use the **Hurricane Shelter Health Surveillance Survey** to conduct disease surveillance using one of two methods:

- **Cot-to-cot method:** for shelters without a medical clinic; implemented by administering the survey to each resident daily
- **Clinic method:** for shelters with a medical clinic; have clinic staff fill out the survey for each patient seen and submit data to the CHD daily

Both methods use the **Hurricane Shelter Health Surveillance Survey** that collects patient symptoms within the past 24 hours and contact information for further follow-up if needed. The survey is available online with several advantages:

- Web survey can be administered using any mobile device in the field.
- Multiple people can administer survey at the same time.
- Results are immediately available for analysis.

### Steps for shelter surveillance

### Detail

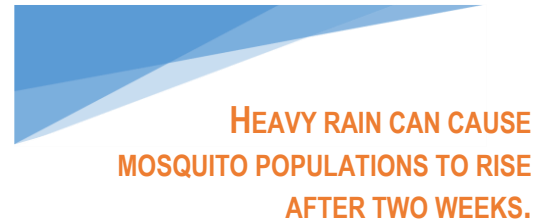
1. Contact Bureau of Epidemiology to discuss logistics	<p><b>Obtain</b> information about the shelter beforehand, including the shelter name, address, approximate census, staff contact, anticipated surveillance start date</p> <p><b>Obtain</b> links to the web survey and a practice survey for training from the Bureau of Epidemiology</p> <p><b>Request</b> assistance from the Bureau of Epidemiology as needed, who can summarize data for the county or provide summary templates</p>
2. Form surveillance team	<p><b>Designate</b> member roles, including team lead, survey administrators, shelter staff liaison</p> <p><b>Consider</b> foreign language skills based on shelter population</p> <p><b>Consider</b> recruiting team members outside of epidemiology program if needed</p>
3. Determine whether cot-to-cot method is appropriate	<p><b>Assess</b> cellular and Internet connectivity at shelter</p> <p><b>Train</b> team members on administering survey before going into the field using practice survey</p>
4. Gather materials for survey	<p><b>Print</b> copies of survey as a backup in case cellular networks are down and Internet is not available (enter data as soon as Internet is accessible)</p> <p><b>Bring</b> cell phones, tablets, mobile hotspots, printed surveys, pens, clipboards</p>
5. Meet with shelter manager	<p><b>Explain</b> the purpose of surveillance, expected timeline, overall approach, expected duration</p>
6. Administer the survey	<p><b>Assign</b> team members to areas (ahead of time if possible) and administer survey (after shelter residents have settled in for the evening has been the most successful time of day in previous efforts)</p>
7. Debrief	<p><b>Decide</b> on a strategy for the next day</p>
8. Summarize and distribute results	<p><b>Notify</b> person summarizing the data as soon as survey administration is complete for the day</p> <p><b>Distribute</b> reports to internal and external partners the day following survey administration</p>

### Mosquito-Borne Disease Surveillance

Public health officials should closely monitor activity of endemic arboviruses such as West Nile viruses, eastern equine encephalitis, and St. Louis encephalitis. Starting about two weeks after a heavy rain event, mosquito populations may start to rise, though that does not necessarily correlate with risk of disease transmission. The Bureau of Epidemiology produces [weekly mosquito-borne disease updates](#).

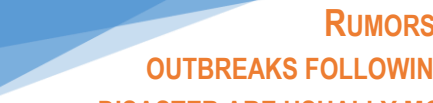
**Mosquito surveillance efforts are primarily performed by local mosquito control programs or with support from the Florida Department of Agriculture and Consumer Services.** Should Federal Emergency Management Agency (FEMA) funding be requested to reimburse mosquito control efforts, the CHD is responsible for supplying a letter to the local mosquito control director or the county emergency manager notifying them that there is a serious health threat or a mosquito nuisance that is hampering the recovery effort. This reimbursement process is largely undertaken by the local emergency management. More information on vector control emergency response, including a template letter for CHDs, is available on the [Vector Control Emergency Resource](#) webpage.

For more information on mosquito bite prevention and mosquito-borne diseases, please refer to the [Florida Mosquito-Borne Disease Guidebook](#).



## IV. Outbreak Response

The risk of infectious disease outbreaks immediately following a disaster is low, but the risk increases with longer-term power outages and sheltering. Rumors of outbreaks following a disaster are usually more common than actual outbreaks. Rumors can have detrimental effects and unintended consequences that can make public health and related responses difficult. Public health responders should take all necessary steps to dispel rumors of disease outbreaks.



**RUMORS OF  
OUTBREAKS FOLLOWING A  
DISASTER ARE USUALLY MORE  
COMMON THAN ACTUAL OUTBREAKS.**

**CHD epidemiology units should be prepared to investigate all reports of outbreaks.** For guidance on how to conduct an outbreak investigation, see the [Outbreak Investigations](#) document on the [Surveillance and Investigation Guidance](#) webpage. Other disease-specific investigation guidance is also available on that webpage.

When ruling out rumors of outbreaks, some questions to consider include:

**Who is reporting the outbreak/case?** Is it medical personnel? Shelter staff? Staff from another health public health agency? A community member? The media? Some sources may be more reliable than others.

**Is the reported outbreak/case plausible?** An alleged outbreak of cholera would be unlikely in a Florida county; however, it may signal an outbreak of gastrointestinal illness, like norovirus or another common etiology, that may not be understood by the person reporting it.

**Outbreak investigations and their outcome should be summarized** in terms of person, place, and time (i.e., who is ill, where and when did they become ill?) and reported to the county EOC.

**If CHDs do not have adequate staffing for outbreak investigations, request assistance through the county EOC or contact the Bureau of Epidemiology at 850-245-4401.**

## V. Appendices

### A. Community Assessment for Public Health Emergency Response (CASPER)

**A community needs assessment may be valuable in determining the critical health needs and assessing the impact of the disaster.** The decision to conduct a community needs assessment should be made based on circumstances with input from the EOC and the Bureau of Epidemiology. One possible approach for collecting information is a community assessment for public health emergency response (CASPER), which is an epidemiologic technique designed to provide quick, low-cost household-based information about a community. The Centers for Disease Control and Prevention (CDC) has developed a **CASPER toolkit** that provides guidelines on data collection tool development, methodology, sample selection, training, data collection, analysis, and report writing.

CASPER is a door-to-door survey of randomly selected homes in a defined area intended to:

- Produce household-based population estimates of needs in areas surveyed for use by decision-makers.
- Determine critical health needs and assess impact of the disaster on the community.
- Characterize the population residing in the disaster area, including any ongoing health effects.
- Determine where resources are needed and the best ways to deliver them.
- Evaluate the effectiveness of relief efforts.

CASPER is **not** intended to deliver food, medicine, medical services, or other resources to the affected area or to provide direct services to residents such as cleanup or home repair.

**If interested in performing a CASPER in your community, please review the [CASPER toolkit](#) and contact the Bureau of Epidemiology for assistance (850-245-4401).**

**Review the following when considering a CASPER approach:**

<b>Purpose</b>	<p>What is the goal of the survey?</p> <p>What information needs to be gathered?</p> <p>Why is this information needed?</p> <p>Could another source be used to acquire the same information?</p>
<b>Resources</b>	<p>Clear goals will help determine if CASPER is an appropriate method to identify public health actions.</p> <p>What local resources can be used (e.g., field survey teams, tech support)?</p> <p>Realistically, how quickly can the survey be implemented, and results obtained?</p> <p>Are staff available to create the survey, determine sampling, conduct the survey, write a report, and disseminate results?</p> <p>Is the use of resources justified to reach these goals?</p> <p>Will this time frame adequately meet our needs?</p> <p>What local resources can be used (e.g., field survey teams, tech support)?</p>
<b>Results</b>	<p>CASPERs are resource-intensive; determine whether necessary resources are available ahead of time.</p> <p>Who needs these results and for what purpose?</p> <p>How will the results improve our current disaster response?</p> <p>What will be done differently if the results show one outcome versus another?</p>

CASPER process	Details
Survey development	Develop survey with local, state, and CDC epidemiologists Update census data and maps, handheld PDAs/cellular devices, and GIS mapping programs
Sample area selection using two-stage cluster sampling methodology	Select clusters, then select homes within each cluster (typically 30 clusters and 7 homes per cluster) Use simple or systematic random sampling and GIS mapping tools to select homes Select homes beforehand or on the ground
Survey administration	Administer survey door-to-door by a two-person team
Analysis	Complete analysis shortly after sampling has finished

## General infection control

### General principles

- Perform** hand hygiene consistently; ensure access to soap and running water as well as alcohol-based hand sanitizers
- Do not share** eating utensils or cigarettes
- Keep** your immunizations up-to-date (e.g. influenza, tetanus, hepatitis B, MMR, varicella)
- Cover** your mouth when you cough or sneeze, keep tissues handy
- Avoid** touching your eyes or mouth
- Dispose** of needles and sharps in appropriate sharps containers to avoid injuries
- Do not let** ill health care workers care for other people (exclude ill workers from shelter until 24–48 hours after symptoms resolve)

## Hand hygiene

### General principles

- Use** bar soap, liquid soap, or alcohol-based hand rub for hand hygiene (use soap if hands are visibly soiled)
- Meet** with residents/staff to discuss importance of hand hygiene and provide demonstration
- Post** signs in visible areas reminding people to perform hand hygiene thoroughly
- Store** bar soap on a rack that allows drainage
- Empty, rinse, and** clean liquid soap containers before refilling
- Use** disposable paper towels instead of cloth towels (do not share cloth towels if must use)

### When to perform hand hygiene

- Before** eating
- After** going to the bathroom
- Before and after** tending to someone who is sick or has a wound or cut
- Before and after** touching a patient or shelter attendee, after touching their environment, and after touching their respiratory secretions even if gloves are worn
- After** blowing your nose, coughing, or sneezing
- After** handling trash or garbage

## Personal protective equipment (PPE)

### Precautions for health care and shelter workers

- Wear** gloves and gowns when in direct contact with ill people or items in the person’s environment
- Change** gloves and practice hand hygiene between patient encounters
- Properly** remove and carefully discard all PPE
- Wear** a mask, gloves, and gowns when cleaning areas grossly contaminated by feces or vomitus
- Wear** a mask, gloves, and gowns if there is possible aerosolization of contaminated materials/bodily fluids
- Provide** masks for persons with respiratory illnesses

## Cleaning contaminated areas, equipment, and clothing

### General cleaning

- Avoid** sharing patient care equipment if possible
- Disinfect** frequently touched surfaces (e.g., door knobs, toilet seats, hand rails) often
- Schedule** regular cleaning for shelter common areas, bathrooms, and dining facilities
- Clean** restrooms frequently (hourly if used by sick persons)
- Use** paper towels or a disposable mop and soap/detergent to clean feces, vomitus, or body fluid and throw away in a plastic bag
- Disinfect** areas after cleaning with 1,000 ppm sodium hypochlorite solution (2 ounces of 6% household bleach in 1 gallon of water): wet surfaces with solution, leave area wet for 2 minutes, and air dry
- Wear** gloves when disinfecting and wash hands with soap and water after removing gloves

### Laundry services

- Wear** PPE (e.g., gowns, gloves) when handling bedding, linens, or garments soiled with blood, stool, or vomitus
- Clean** donated clothing or linens before distribution to shelter residents
- Wash** laundry in hot water 160°F (7°C) for 25 minutes (For laundry that is not hot water compatible, low-temperature washing at 71 to 77°F (22–25°C) plus a 125-part-per-million chlorine bleach rinse has found to be effective and comparable to high-temperature wash cycles)
- Dry** clothes completely in a dryer (temperature >171°F)

## Waste disposal

### Garbage and trash

- Do not overfill** trash bags
- Comply** with local medical waste requirements, including disposal of syringes and needles
- Place** sharps waste disposal containers where sharps items are used (can use heavy plastic laundry detergent bottles with a lid if sharps containers not available)
- Separate** medical waste from other waste, follow local guidelines for pickup of medical waste

## Food safety

### General principles

- Obtain** or purchase foods from reliable sources
- Do not leave** food unrefrigerated for extended periods of time
- Do not use** canned goods that have rusted or are bulging or swollen

### Food preparation

- Wash** hands with soap and water before handling foods or utensils
- Disinfect** food preparation surfaces using 2 ounces of 6% household bleach in 1 gallon of water
- Thaw** frozen foods in the refrigerator, microwave, or under cold running water
- Do not refreeze** meats that have been thawed

### Food service

- Do not prepare or serve** food if you have nausea, vomiting, diarrhea, or sore throat and fever
- Keep** hot foods at a temperature of 135°F or above and cold foods at 40°F or below
- Serve** food as close to preparation time as possible
- Do not leave** cooked food at room temperature for more than 2 hours
- Cook or reheat** foods to a minimum of 165°F

### Food storage

- Refrigerate** foods containing meats or dairy as soon as possible to prevent bacterial growth
- Discard** any food kept for over one hour in a room above 90°F
- Label** leftovers and non-perishable foods with the date and name of the product
- Use** perishable foods that have been stored first
- Store** food products in a different area than cleaning products
- Do not use** foods that are beyond the expiration date
- During power outage, use** food in the following order: (1) refrigerated food (2) food from unpowered freezers (3) food from disaster reserve supplies

## Managing persons with infectious diseases

### General principles

- Screen** shelter residents for cough, diarrhea, fever, rash, open wounds, sores, and vomiting
- Maintain** illness log of ill residents and staff
- Report** clusters of two or more persons with similar symptoms to the county health department (contact information: [www.FloridaHealth.gov/CHDEpiContact](http://www.FloridaHealth.gov/CHDEpiContact))
- Encourage** residents to report any of the above conditions to the shelter staff
- Isolate** potentially infectious people in a separate room or specific area if room not available
- Designate** one room as clinic area if possible and keep healthy people out
- House** residents with similar symptoms together:
  - Gastrointestinal: acute diarrhea, fever, nausea, vomiting
  - Respiratory: fever and cough
  - Vesicular rash
  - Maculopapular rash with cough, coryza, and fever
  - Skin/wound infection: abscesses or draining wound that cannot be covered
- Designate** a separate restroom for ill people to use (more than one designated area may be needed if more than one illness is identified)
- Transfer** people with potential infectious diseases from the shelter to a health care facility, notify the receiving facility, and consult with health care providers on diagnoses of public health concern
- Advise** all staff, residents, families, and visitors when outbreaks are identified; post notices on all shelter entrances and where visible to residents
- Base** transmission precautions (e.g., PPE, patient isolation) on the type of symptoms patients have



Norovirus illnesses often occur when large numbers of people are crowded together in one location, such as a shelter.

In a shelter situation, it will be impossible to immediately determine whether diarrhea is caused by this virus, so it is best to consider any diarrhea syndrome as “possibly” caused by norovirus. Norovirus is easily transmitted from person to person in close quarters and can eventually become foodborne or waterborne.

## Stop transmission of norovirus to others

**Isolate ill persons as much as possible from others.** Clean areas that may be contaminated immediately and effectively.

### Cleaning

**Wear** gloves and, if possible, a protective mask (standard isolation mask is adequate) when around ill persons or contaminated areas

**Use** disposable materials such as paper towels, disposable diapers, or disposable bed pads with water and detergent to clean up vomitus and feces and place materials in a plastic bag

**Place** soiled bedding and clothing in a plastic bag and store them away from clean areas

**Disinfect** the surfaces using an appropriate bleach solution

### Disinfectant

**Bleach solution** with concentration of at least 1,000 ppm needed to inactivate noroviruses (The active ingredients in bleach break down rapidly when in extreme temperatures or when older than 1 year. Bleach bottles should be **replaced** in these instances.)

**Determine** your bleach’s concentration then dilute accordingly (read label)

**Most household bleach** is 6% sodium hypochlorite

**Add to 1 gallon of water:**

22 ounces of 0.5% sodium hypochlorite

OR 11 ounces of 1% sodium hypochlorite

OR 6 ounces of 2% sodium hypochlorite

OR 2 ounces of 6% sodium hypochlorite (most common)

**Determining ounces:**

2 ounces = 5 capfuls using large cap (1-inch-wide by  $\frac{3}{4}$  inch deep) from bleach bottle

2 ounces = 8 capfuls using small cap (1-inch-wide by  $\frac{1}{2}$  inch deep) from bleach bottle

### Application

**Use** spray bottles to apply disinfectant

**Apply** to contaminated surfaces, including toilets, sinks, floors, tables, water fountains, and other areas a symptomatic person has been

**Allow** disinfectant to remain on surfaces for 2 minutes and then either wipe dry with a disposable towel or air dry

**Dispose** of gloves and mask in a plastic bag and wash hands thoroughly with soap and water

**Acute diarrhea illnesses may increase after hurricanes or other natural disasters where access to power, clean water, and sanitary facilities is limited and crowded shelter conditions allow easy transmissibility.** Normal hygiene practices may be disrupted, and health care-seeking behaviors may be altered. Below are general guidelines for health care providers evaluating and treating patients with acute diarrhea after a hurricane. Specific patient treatment should be determined based on the health care provider’s clinical judgement. Acute diarrhea is defined as stool with increased water content, volume, or frequency that lasts less than 14 days.

Please notify your county health department (CHD) of any clusters of acute diarrheal illness (CHD contact information: [www.FloridaHealth.gov/CHDEpiContact](http://www.FloridaHealth.gov/CHDEpiContact)). Your CHD is also available to answer questions.

## Indications for medical evaluation of persons with acute diarrhea:

- Infants (aged <6 months or weight <18 pounds)
- Elderly age
- Premature infants
- History of chronic medical conditions or concurrent illness
- Fever  $\geq 100.4^{\circ}\text{F}$  ( $\geq 38^{\circ}\text{C}$ ) for infants <3 months old or  $\geq 102.2^{\circ}\text{F}$  ( $\geq 39^{\circ}\text{C}$ ) for children and adults  $\geq 3$  months old
- Visible blood in stool
- High output diarrhea, including frequent and substantial volume of stool
- Persistent vomiting
- Signs consistent with dehydration (e.g., sunken eyes, decreased tears, dry mucous membranes, decreased urine output)
- Change in mental status (e.g., irritability, apathy, lethargy)
- Suboptimal response to oral rehydration therapy already administered or inability of the caregiver to administer oral rehydration therapy

## Appropriate treatment principles for persons with acute diarrhea:

- Oral rehydration solutions (ORS) such as Pedialyte®, Gastrolyte® (for adults), or similar commercially available solutions containing sodium, potassium, and glucose should be used for rehydration whenever a patient can drink the required volume; otherwise appropriate intravenous fluids may be used.
- Oral rehydration should be taken by the patient in small, frequent volumes (spoonfuls or small sips); see table below for recommendations.
- An age-appropriate unrestricted diet is recommended as soon as dehydration is corrected.
- For breastfed infants, nursing should be continued.
- **Adults only:** antimotility agents such as Lomotil® or Immodium® may be considered only in patients who are not febrile or having bloody/mucoid diarrhea. Antimotility agents may reduce diarrheal output and cramps but do not accelerate cure and are contraindicated for children.
- Additional ORS or other rehydration solutions should be administered for ongoing losses through diarrhea.
- No unnecessary laboratory tests or medications should be administered.
- The decision to treat with antibiotics should be based on clinical evaluation.

## Treatment recommendations based on degree of dehydration

Degree of dehydration	Rehydration therapy	Replacement of ongoing losses	Nutrition
Minimal or none	Not applicable	<b>&lt;10 kg body weight:</b> 60–120 mL ORS for each diarrheal stool or vomiting episode <b>&gt;10 kg body weight:</b> 120–240 mL ORS for each diarrheal stool or vomiting episode	Continue breastfeeding or resume age-appropriate normal diet after initial rehydration, including adequate caloric intake for maintenance
Mild to moderate	ORS: 50–100 mL/kg body weight over 3–4 hours	Same	Same
Severe	Coordinate with hospitalization management		

Shelter location	Interviewer name	Date

Ask each evacuee in the shelter the following question and record their response by marking off a numbered square. For those who report symptoms, please fill out a separate symptom questionnaire.

Have you experienced any new symptoms in the past 24 hours?

**Yes**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

**No**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

**Prefer not to answer**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

## Symptom Questionnaire

Please mark reported symptoms and record contact information for each symptomatic evacuee.

General	Gastrointestinal	Respiratory	Dermatologic	Neurological	Animal bite (excluding insects)
<input type="checkbox"/> Headache <input type="checkbox"/> Fever <input type="checkbox"/> Achy muscles or joints	<input type="checkbox"/> Vomiting <input type="checkbox"/> Nausea <input type="checkbox"/> Diarrhea <input type="checkbox"/> Stomach pain or cramping	<input type="checkbox"/> Runny nose or congestion <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Shortness of breath	<input type="checkbox"/> Rash	<input type="checkbox"/> Muscle weakness <input type="checkbox"/> Confusion <input type="checkbox"/> Poor coordination	<input type="checkbox"/> Yes, specify animal type:
<input type="checkbox"/> Other (no need to specify)					
Name:			Location in shelter:		
Phone number:					

General	Gastrointestinal	Respiratory	Dermatologic	Neurological	Animal bite (excluding insects)
<input type="checkbox"/> Headache <input type="checkbox"/> Fever <input type="checkbox"/> Achy muscles or joints	<input type="checkbox"/> Vomiting <input type="checkbox"/> Nausea <input type="checkbox"/> Diarrhea <input type="checkbox"/> Stomach pain or cramping	<input type="checkbox"/> Runny nose or congestion <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Shortness of breath	<input type="checkbox"/> Rash	<input type="checkbox"/> Muscle weakness <input type="checkbox"/> Confusion <input type="checkbox"/> Poor coordination	<input type="checkbox"/> Yes, specify animal type:
<input type="checkbox"/> Other (no need to specify)					
Name:			Location in shelter:		
Phone number:					

General	Gastrointestinal	Respiratory	Dermatologic	Neurological	Animal bite (excluding insects)
<input type="checkbox"/> Headache <input type="checkbox"/> Fever <input type="checkbox"/> Achy muscles or joints	<input type="checkbox"/> Vomiting <input type="checkbox"/> Nausea <input type="checkbox"/> Diarrhea <input type="checkbox"/> Stomach pain or cramping	<input type="checkbox"/> Runny nose or congestion <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Shortness of breath	<input type="checkbox"/> Rash	<input type="checkbox"/> Muscle weakness <input type="checkbox"/> Confusion <input type="checkbox"/> Poor coordination	<input type="checkbox"/> Yes, specify animal type:
<input type="checkbox"/> Other (no need to specify)					
Name:			Location in shelter:		
Phone number:					

General	Gastrointestinal	Respiratory	Dermatologic	Neurological	Animal bite (excluding insects)
<input type="checkbox"/> Headache <input type="checkbox"/> Fever <input type="checkbox"/> Achy muscles or joints	<input type="checkbox"/> Vomiting <input type="checkbox"/> Nausea <input type="checkbox"/> Diarrhea <input type="checkbox"/> Stomach pain or cramping	<input type="checkbox"/> Runny nose or congestion <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Shortness of breath	<input type="checkbox"/> Rash	<input type="checkbox"/> Muscle weakness <input type="checkbox"/> Confusion <input type="checkbox"/> Poor coordination	<input type="checkbox"/> Yes, specify animal type:
<input type="checkbox"/> Other (no need to specify)					
Name:			Location in shelter:		
Phone number:					

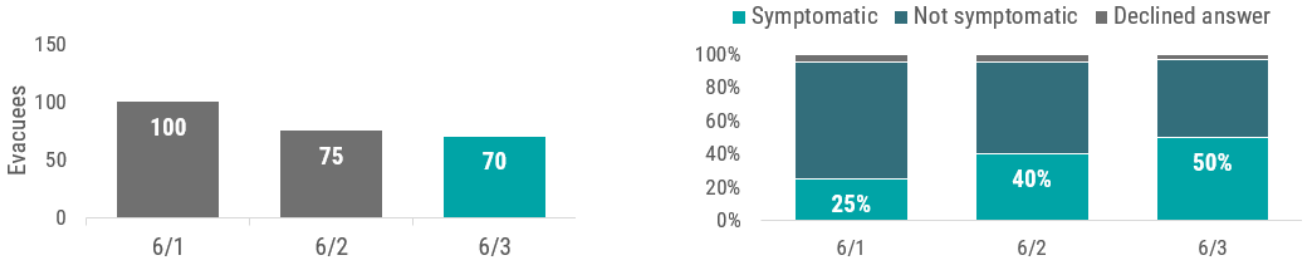
F. Shelter Surveillance Example Report

Below is an example of the type of report that can be produced daily to summarize shelter surveillance findings.

If CHDs would like assistance in designing a daily situation report to share with internal and external partners, contact the Bureau of Epidemiology at 850-245-4401.

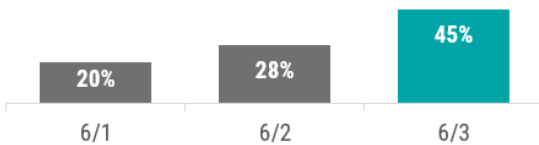
**Shelter A Surveillance**  
**June 3, 2019**

There were **70 total evacuees interviewed** on June 3, 2019, and **50% reported experiencing symptoms** in the past 24 hours.

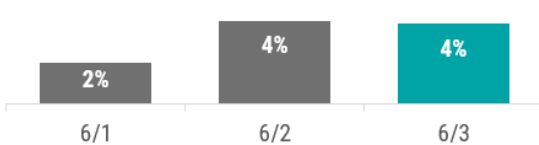


The most commonly reported symptoms were general, experienced by 45% of all evacuees, followed closely by respiratory.

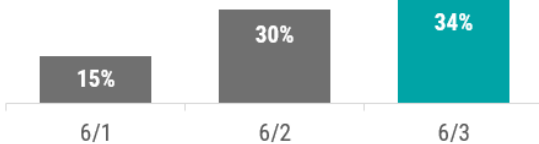
**General**



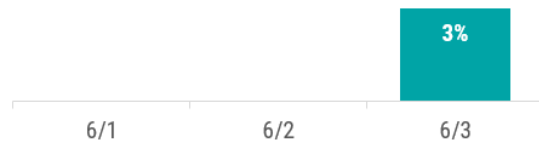
**Gastrointestinal**



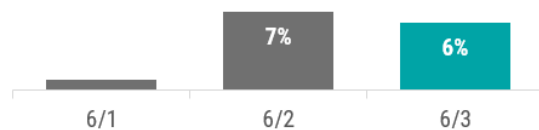
**Respiratory**



**Neurological**



**Dermatologic**



On June 3, 2019, 35 evacuees reported symptoms:

General	
Headache	12
Fever	26
Achy muscles/joints	14

Gastrointestinal	
Vomiting	1
Nausea	1
Diarrhea	2
Stomach pain/cramping	2

Respiratory	
Runny nose/congestion	20
Sore throat	15
Cough	16
Shortness of breath	18

Neurological	
Muscle weakness	1
Confusion	2
Poor coordination	1

Dermatologic	
Rash	3

G. Daily Situation Report Example

Below is an example of a Bureau of Epidemiology situation report, which is shared with the state’s incident management team daily following a hurricane. It provides a concise summary of systems, diseases investigations and outbreaks, carbon monoxide exposures, and syndromic surveillance data to provide situational awareness and support resource allocation.

If CHDs would like assistance in designing a daily situation report to share with internal and external partners, contact the Bureau of Epidemiology at 850-245-4401.

**Epidemiology and Surveillance Situation Report: Hurricane Michael**  
October 19, 2018 as of noon

Counties included in today’s report Bay, Calhoun, Franklin, Gadsden, Gulf, Hamilton, Jackson, Jefferson, Leon, Liberty, Madison, Suwannee, Taylor, and Wakulla

**Systems**

- Merlin normal operation and volume
- ELR normal operation and volume
- ESSENCE-FL ED visits normal operation and volume
- ▲ ESSENCE-FL PCC calls normal operation, volume above expected

**Disease investigations and outbreaks**

- Bureau of epidemiology (BOE) staff supporting response:
  - 1 staff in Bay County assisting with EH assessments
  - 1 staff in Bay County assisting with general assessments
  - Staff assisting with animal bite reports from Gadsden, Gulf, and Franklin counties
- Food safety education and education materials are being shared with affected CHDs for local inquiries
- No other new outbreaks, epidemiological investigations, or requests for epidemiological assistance received

**Disaster medical assistance team (DMAT) surveillance**

DMAT	10/14	10/15	10/16	10/17	10/18	Trend
Bay Medical Center	31	113	62	52	50	▬▬▬▬
Fort Walton Medical Center	69	84	97	101	65	▬▬▬▬▬
Gulf Coast Medical Center	61	85	77	84	49	▬▬▬▬▬
Gulf County Health Department	18	21	15	22	4	▬▬▬▬▬
Rutherford High School	15	5	1	25	7	▬▬▬▬▬
Surfside School	0	0	0	11	19	▬▬▬▬▬
<b>Total</b>	<b>194</b>	<b>308</b>	<b>252</b>	<b>295</b>	<b>194</b>	▬▬▬▬▬

See next page for overall summary of syndromes by facility

ED=emergency department  
PCC= poison control center

**Carbon monoxide (CO) poisoning**

Source	New	Total investigated	Still being ruled out	Counted as case in Merlin
ED visits	0	9	2	3
PCC calls	0	1	0	0
Merlin cases	5	15		15

- 5 new Merlin cases in Gadsden County family (improper generator use)

**Syndromic surveillance (ED visits and PCC calls)**

▼ = Below normal ● = Normal ▲ = Above normal

Syndrome/exposure	ED visit	PCC calls
Gastrointestinal/foodborne illness	●	●
Respiratory illness	●	●
Injuries	▲	N/A
Dialysis	●	N/A
Medication refills	●	N/A
Animal and insect bites	▼	●
Rash illness	●	●
Hydrocarbon exposures	N/A	▲
Snake bites	N/A	●
Battery exposure	N/A	●
Workplace exposures	N/A	●

**Hurricane-related ED visits/calls**

- No ED visits mentioned “hurricane” in the chief complaint
- 4 PCC calls related to hurricane: 1 call for workers exposed to methanol fumes and foul condensate in Taylor, 2 calls for gasoline exposure in Leon and Gulf, 1 call for exposure to asbestos dust in Leon

**Expectations based on previous hurricanes**

- Increases in syndromic surveillance data for injuries, carbon monoxide poisoning, animal and insect bites, dialysis, medication refills
- Possible respiratory or gastrointestinal outbreaks in shelters
- Mosquito control needed 1-2 weeks after hurricane landfall
- Decrease in ED visits day before and day of hurricane landfall
- Increase in ED visits in days immediately following hurricane landfall

**Epidemiology and Surveillance Situation Report: Hurricane Michael**  
October 19, 2018 as of noon

Number of patients by syndrome and DMAT (note that a patient visit can be categorized into more than one syndrome)

Bay Medical

Syndrome	10/14	10/15	10/16	10/17	10/18	Trend
Fever	2	5	3	1	0	▬▬▬▬
Gastrointestinal	5	16	7	2	1	▬▬▬▬▬
Injury	9	44	17	23	10	▬▬▬▬▬
Rash	0	2	2	3	2	▬▬▬▬▬
Respiratory	1	9	6	2	8	▬▬▬▬▬
Other	16	44	30	26	34	▬▬▬▬▬
<b>Total</b>	<b>33</b>	<b>120</b>	<b>65</b>	<b>57</b>	<b>55</b>	▬▬▬▬▬

Gulf County Health Department

Syndrome	10/14	10/15	10/16	10/17	10/18	Trend
Fever	1	1	1	0	0	▬▬▬▬
Gastrointestinal	0	1	0	1	0	▬▬▬▬
Injury	1	2	1	4	1	▬▬▬▬▬
Rash	1	1	1	2	0	▬▬▬▬▬
Respiratory	5	4	4	1	2	▬▬▬▬▬
Other	12	13	10	15	1	▬▬▬▬▬
<b>Total</b>	<b>20</b>	<b>22</b>	<b>17</b>	<b>23</b>	<b>4</b>	▬▬▬▬▬

Ft. Walton Beach Medical Center

Syndrome	10/14	10/15	10/16	10/17	10/18	Trend
Fever	10	7	9	3	8	▬▬▬▬▬
Gastrointestinal	17	10	22	19	7	▬▬▬▬▬
Injury	16	16	15	21	12	▬▬▬▬▬
Rash	4	5	1	1	1	▬▬▬▬▬
Respiratory	27	14	23	16	20	▬▬▬▬▬
Other	24	47	48	46	30	▬▬▬▬▬
<b>Total</b>	<b>98</b>	<b>99</b>	<b>118</b>	<b>106</b>	<b>78</b>	▬▬▬▬▬

Gulf Coast Medical

Syndrome	10/14	10/15	10/16	10/17	10/18	Trend
Fever	3	2	2	3	5	▬▬▬▬▬
Gastrointestinal	3	7	4	7	2	▬▬▬▬▬
Injury	21	19	21	26	10	▬▬▬▬▬
Rash	0	2	2	3	3	▬▬▬▬▬
Respiratory	10	3	11	7	9	▬▬▬▬▬
Other	33	56	45	43	27	▬▬▬▬▬
<b>Total</b>	<b>70</b>	<b>89</b>	<b>85</b>	<b>89</b>	<b>56</b>	▬▬▬▬▬

Rutherford High School

Syndrome	10/14	10/15	10/16	10/17	10/18	Trend
Fever	0	0	0	1	0	▬▬▬▬
Gastrointestinal	2	0	0	6	1	▬▬▬▬▬
Injury	1	1	0	0	2	▬▬▬▬▬
Rash	0	1	0	0	0	▬▬▬▬▬
Respiratory	1	0	1	3	1	▬▬▬▬▬
Other	11	3	0	18	3	▬▬▬▬▬
<b>Total</b>	<b>15</b>	<b>5</b>	<b>1</b>	<b>28</b>	<b>7</b>	▬▬▬▬▬

Surfside School

Syndrome	10/14	10/15	10/16	10/17	10/18	Trend
Fever	0	0	0	0	0	▬▬▬▬▬
Gastrointestinal	0	0	0	3	4	▬▬▬▬▬
Injury	0	0	0	2	4	▬▬▬▬▬
Rash	0	0	0	1	0	▬▬▬▬▬
Respiratory	0	0	0	0	0	▬▬▬▬▬
Other	0	0	0	6	13	▬▬▬▬▬
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>21</b>	▬▬▬▬▬

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