



Hurricane Irma Related Carbon Monoxide Poisonings: Enhanced Surveillance Guidance for County Health Departments

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Version 1.0 (September 18, 2017)

Background:

When power outages occur during emergencies such as hurricanes or winter storms, the use of alternative sources of fuel or electricity for heating, cooling, or cooking can cause carbon monoxide (CO) to build up in a home, garage, or camper and poison the people and animals inside. On September 9, 2017, Hurricane Irma landfall occurred in Florida. About 90% (59 out of 67 counties) of Florida counties were affected and reported power outages on September 11. Many county health departments are monitoring carbon monoxide (CO) poisoning-related injuries and deaths in your communities and are working with local partners to get information out about safe generator use in particular. The Bureau of Epidemiology (BOE) is monitoring this “epidemic” from a statewide perspective and submit these data daily for the ESF 8 Situation Report. BOE also works closely with the Communications Office on opportunities for statewide messaging. All state and local epidemiologists have the ability to monitor CO poisoning surveillance using ESSENCE-FL data from emergency departments (EDs), urgent care clinics (UCCs), and the Florida Poison Information Center Network (FPICN) in real time. CO poisoning is also a reportable condition. From September 9 to September 16, BOE identified a total of 570 potential CO exposure events (190 FPICN CO exposure calls and 380 patient ED and UCC visits related to CO poisoning).

Due to the very high volume of potential CO poisoning reports received, and the importance of capturing CO exposure risks that we were not previously aware of, BOE is providing guidance to further enhance data collection and support county investigation efforts. Data collected (statistics and exposure risks) can be translated to prevention messages in real time.

Surveillance and Investigation:

Please review CO poisoning guidelines for surveillance and investigation (<http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/documents/gsi-carbon-monoxide.pdf>). In addition to these guidelines, the following information can be used to conduct surveillance and investigations for suspect CO poisoning cases related to Hurricane Irma. Please see Appendix I for a process flow summarizing the information below.

1. Identifying CO poisoning cases:

ESSENCE-FL is being used to access:

- All FPICN CO exposure calls.
- All patient ED and UCC visits with chief complaints related to CO poisoning.

Other reporting sources include self-reporting from health care providers, media, exposed persons, and other sources like electronic laboratory reporting.

BOE will email a list daily of FPICN exposure calls, ESSENCE-FL ED and UCC visits, and media reports related to CO poisoning to primary epidemiology contacts of affected counties at 11 am daily. The daily email will come from Epi_Event@flhealth.gov. The list will include all reports that have not yet been entered into Merlin (see section 8 below for more information on how Merlin cases will be tracked) and any cases that BOE created on behalf of the county.

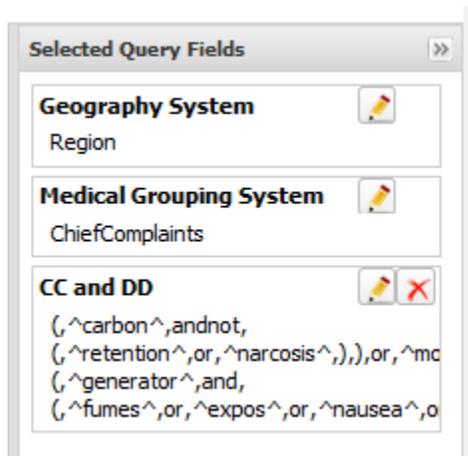
- 2. FPICN CO-related exposure calls:** The daily BOE email to impacted counties will include a list of FPICN exposure calls related to CO poisoning, each with a Merlin case ID. BOE will create a case in Merlin for each report of CO poisoning and attach the full FPICN report (see screen shot of full report below) if not already completed by the county. This report will provide basic demographic information of the exposed person (e.g., name, phone number) and case notes with details of CO exposure. Please follow-up with all these reports starting with medical record request (for calls from hospital) and contacting exposed person for interview.

Exposure# M2056716	Center Originating FPICN - Miami	Center Closing FPICN - Miami	Patient 3 of 3	
Opened by: CUTINO, Letizia		Closed by: CUTINO, Letizia		
Caller Information				
Received:	Tuesday, September 12, 2017 9:26 AM	Phone:	*****	
Name:	*****	Alt Phone:	*****	
Title:	DR	Site:	BOCA RATON REGIONAL HOSPITAL	
Relation:	(none)	Address:	*****	
Source:	Phone	City:	Highland City, FLORIDA	33846
Language:	English	County:	Polk	
Email:	*****			
Patient Information				
Name:	*****	Phone:	*****	
Species:	Human	Address:	*****	
Age:	55 YEARS	City:	, FLORIDA	
Gender:	Male	Race:	(None)	
Weight:	lb	DOB:	*****	
Med Rec:	*****			

- 3. ED and UCC visits related to CO exposure:** The daily BOE email to impacted counties will include a list of ED and UCC visits related to CO poisoning. Information about date of ED and UCC visit, age, gender, hospital name, medical record number, chief complaint, discharge diagnosis (if available), and disposition category (if available) will be included in the spreadsheet. Please begin by requesting medical records for all these patients and entering each report into Merlin. Please be sure to enter the ESSENCE-FL ID at the top of the Extended Data screen or the Event Survey screen. BOE will be maintaining a list of all ED and UCC visits and the associated Merlin number. If medical records could not be obtained for any reason, please contact BOE for assistance.

If you have access to ESSENCE-FL, you can identify CO poisoning ED and UCC visits using chief complaints and discharge diagnosis query below:

(,^carbon^,andnot,(^retention^,or,^narcosis^,)),or,^monox^,or,(^generator^,and,(^fume s^,or,^expos^,or,^nausea^,or,^headach^,or,^exhaust^,or,^garage^,or,^inhale^,))



4. **Media reports:** The daily BOE email to impacted counties will also include media reports. These reports have very limited information to conduct follow-up. Please try to identify the facility where the affected person(s) went to for treatment by contacting the reporter. Your public information officer (PIO) can help with getting information from a reporter. Alternatively, you can contact the facility if mentioned in the media report. You can also contact medical examiner's office for death reports of CO poisoning. Please work with BOE on follow-up for media reports to ensure each person from a media report on CO poisoning is entered into Merlin.
5. **Reports from other sources:** Interview any person who calls directly to report CO exposure. Any carboxyhemoglobin (COHgb) laboratory results with levels $\geq 9\%$ need follow-up. Follow-up should start with contacting ordering hospital or a provider and request medical records to confirm CO poisoning.
6. **High priority incidents:** Give priority to high priority incidents while conducting investigation. High priority incidents are those that meet one or more of the following criteria:
 - a. Incidents that result in a hospitalization or death.
 - b. Incidents that involve four or more ill individuals.
 - c. Incidents that indicate the presence of a recurrent problem at a particular place and work-related exposures.
7. **Assess case to determine if further investigation is needed**
 - Contact exposed person and conduct interview ensuring that all information for the Merlin Basic Data and Event Survey screens is collected.
 - A hurricane-specific paper case report form is available at on the Surveillance and Investigation Guidance (www.FloridaHealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/_documents/crf-co-hurricane-irma-enhanced-surveillance.pdf).
 - **If the person has already been interviewed, conduct re-interview to collect additional information for questions added to Merlin on September 17, 2017.** Please prioritize new interviews over re-interviewing.

- At least three attempts should be made to contact each exposed person.
- Consult with the Chemical Disease Surveillance Program Coordinator, Prakash Mulay at Prakash.Mulay@flhealth.gov, for high priority cases.

8. Enter case data into Merlin

- Create a case in Merlin for every suspected CO poisoning case.
- Review media reports, FPICN full reports, ESSENCE-FL data, laboratory results, and any other preliminary information to determine priority for investigation and if further follow up is needed. If the case does not meet the surveillance case definition after investigation, set the dx status to “not a case” and submit the case.
- Intentional CO poisonings are not reportable. They should be entered into Merlin and submitted as “not a case”. Ensure that the intention is noted on the Event Survey screen in Merlin. No additional follow-up is needed on these cases.
- If the suspected CO poisoning case cannot be contacted after three attempts and there is not enough information to determine whether the person meets the surveillance case definition (<http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/documents/cd-carbon-monoxide.pdf>), set the dx status to “not a case” and submit the case.
- For everyone who meets the surveillance case definition, complete the Basic Data screen and link the case to Merlin Outbreak ID 2879.
 - CHD notified date and one other date field (onset date, lab report date, diagnosis date) are required in Merlin.
 - For CHD notified date, please use:
 - FPICN CO exposure calls: date the call was received (not an exposure date).
 - ED or UCC visits for CO exposure: visit date.
 - All other reporting sources: use date you received or identified the report.
 - Please also include the symptom onset date (exposure date can also be used here).

- Note that unless the case is directly associated with other CO poisoning cases, the **Outbreak** field should be “Sporadic”.

- Once the case is linked to outbreak #2879 and you click **Save**, a link will appear on the left side menu for the Event Survey.

The screenshot shows the Merlin Communicable web interface. At the top, there is a navigation bar with buttons for Home, Search, Outbreak, Analysis, Resources, Task, and A. Below this is a search bar and a green notification banner that reads "The record was saved successfully". On the left, there is a sidebar menu with sections for Profile (Profile Details, Summary, History, Vaccine History) and Case (Basic Data, Event Survey, Extended Data, Overview). The "Event Survey" option is circled in red. The main content area displays "Current Profile Information" with fields for Name, SSN, Address, Date of Birth, and Phone. A note indicates that fields labeled in blue indicate fields that are "Age at Ever". Below this is a section for "Case Information at Time of Diagnosis" and a "Dx Status: Reportable by" field.

- The Event Survey screen includes all the routine risk factor questions from the Extended Data screen as well as additional questions to assess risk factors specifically for generator-related CO poisoning cases. Please note that you do **not** need to navigate to the Extended Data screen, as all questions are also included in the Event Survey screen.
- Please be sure to complete the FPICN ID (CaseNumber), the ESSENCE ID (EssenceID), and the ESSENCE-FL medical record number (MedRecNo) on the Event Survey screen.** This is how BOE will monitor which cases identified in FPICN and ED and UCC data have been entered into Merlin.

The screenshot shows the Merlin interface with a sidebar on the left containing sections for Case Definition (Epi Link, Health Care Visits, Travel History, Status), Additional Info (Notes, Documents), and Quick Reports (Print Case, Print Extended, Print Blank Extended). The main content area has three sections: "Interview Attempts" with a table of three attempts, "Surveillance System Identifiers" with three input fields, and "Dx Status: Reportable by". The "Surveillance System Identifiers" section is circled in red and contains the following fields:

Attempt	Date	Time
Attempt 1	09/12/2017	10:00 AM
Attempt 2	09/13/2017	12:45 PM
Attempt 3	09/14/2017	6:00 PM

- Florida Poisoning Information Control Network (FPICN) ID (CaseNumber):
- ESSENCE-FL ID (EssenceID):
- ESSENCE-FL medical record number (MedRecNo):

- Note that case symptoms are captured on the Event Survey screen. Symptoms can be entered here or on the Symptoms page (they will show on both screens regardless of which screen is used to enter them).
- Record relevant findings not covered elsewhere and actions taken in Case Notes and attach all relevant information (e.g., medical records, medical examiner's report).
- If the person does not meet the surveillance case definition, please set the **Dx Status** on the Basic Data screen to "Not A Case" and submit the case. The case should be linked to the outbreak 2879, but no additional information needs to be completed.

Additional Case Information

Investigator:

CHD Reference #:

Outbreak: Sporadic

Outbreak ID: 2879 By Outbreak ID

Outbreak Name: **STATE - Hurricane Irma CO Poisoning Surveillance**

Definition: **Enhanced CO poisoning surveillance following Hurricane Irma**

Case Classification: Primary

CHD First Notified via ELR: No

How First Notified: HOSPITAL/EMERGENCY DEPARTMENT

Reporter Name: ST. MARY'S MEDICAL CENTER

- Summary of Merlin data entry:
 - **Not a case:** submit the case in Merlin with whatever information was gathered. If any additional symptoms or exposure information is known, please fill in what is available on the Event Survey screen.
 - **Confirmed, probable, or suspect case who could not be interviewed:** complete the Basic Data screen and report the case in Merlin. If any additional symptoms or exposure information is known, please fill in what is available on the Event Survey screen.
- Confirmed, probable, or suspect case:** complete Basic Data and Event Survey screens and report the case in Merlin.

9. Assistance to county health departments: BOE is offering support to complete activities related to enhanced CO poisoning surveillance. BOE is available to conduct any or all related case investigation and follow up activities as requested by counties, including requesting medical records, conducting interviews, reviewing information to classify cases, and Merlin data entry. A needs assessment survey will be sent counties to determine the need for support. You can request assistance by contacting your regional epidemiologist ([http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/ documents/investigation-unit-map.pdf](http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/documents/investigation-unit-map.pdf)), the Merlin Helpdesk (Merlin.Helpdesk@flhealth.gov), or Prakash Mulay (Prakash.Mulay@flhealth.gov).

10. Data summaries

BOE will produce and distribute regular summaries of the information collected as part of this enhanced surveillance effort.

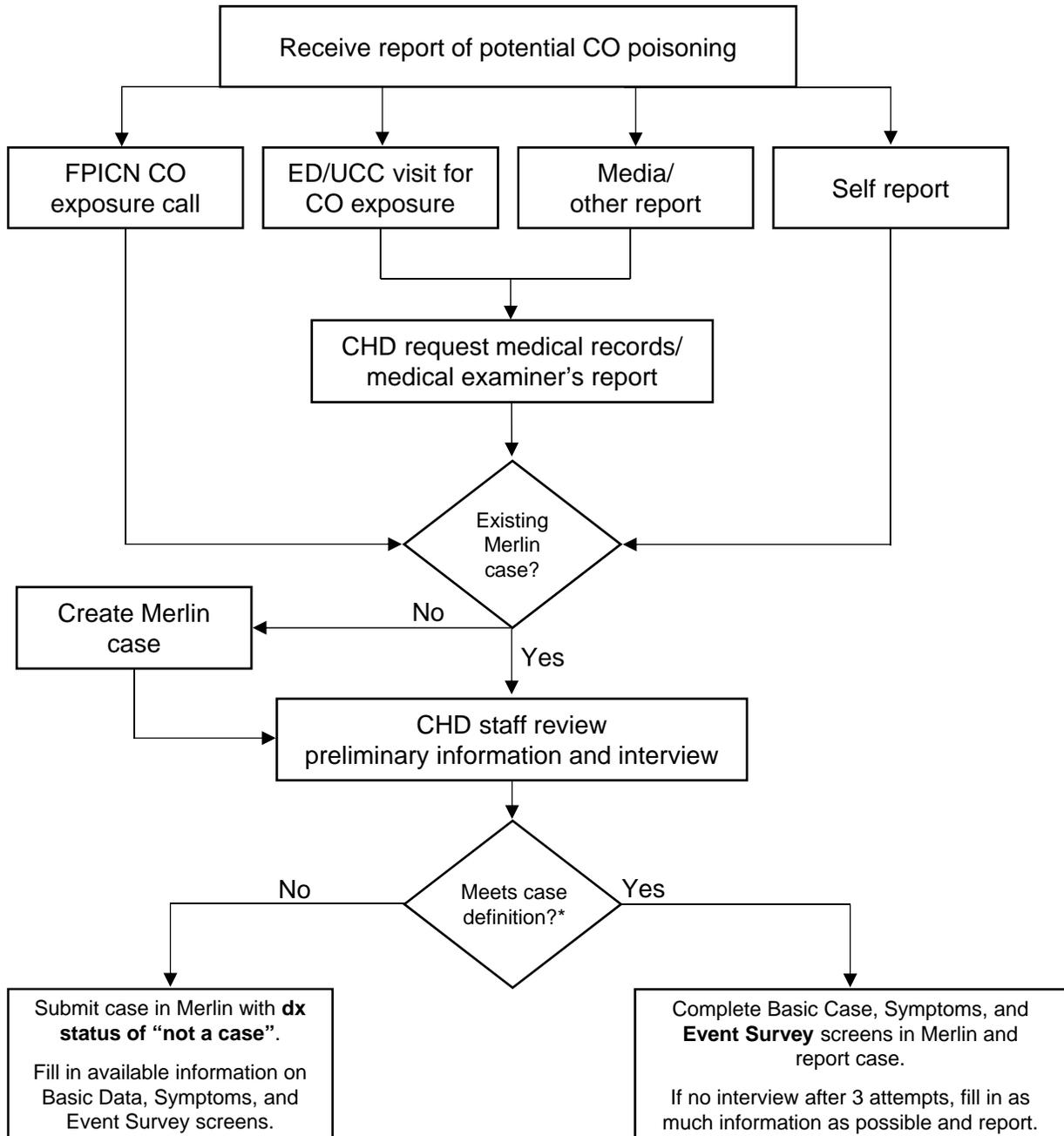
For questions, please contact the Prakash Mulay at Prakash.Mulay@flhealth.gov.



Appendix I: Process Flow for Enhanced Carbon Monoxide Surveillance

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* Note that intentional CO poisoning does not meet the surveillance case definition. Please enter any intentional exposures into Merlin and submit with a dx status of "not a case" and be sure to note the exposure was intentional on the Event Survey screen.