E-PLUS

Emergency Patient Look-Up System

Hurricane Ian After Action Report (AAR)

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Introduction

Florida's emergency response is organized into emergency support functions (ESF) at the state emergency operations center (SEOC). There are 20 ESFs that support the restoration of pre-disaster activities ranging from transportation to energy. ESF-8 is the health and medical component to disaster response and is led by the Florida Department of Health (FDOH). The Agency acts as a support to FDOH in accomplishing its mission as the ESF-8 lead. Emergency Response is further organized on a regional basis with Florida divided into 7 regions.[1] At the regional level within FDOH there is a regional planner, a regional special needs shelter consultant, and a regional emergency response advisor.[2] As local resources are exhausted, regional staff step in to support the counties within their region and relay to the SEOC additional resources that are needed.

The Emergency Patient Look-Up System (E-PLUS) is a HIPAA compliant, cloud-based software solution designed for public health officials and emergency responders to fill critical information gaps during times of disaster.[3] E-PLUS enables authorized users to search for patient clinical records, check individuals in and out of alternative care sites, and/or search for missing persons. The Agency for Health Care Administration (the Agency) administers E-PLUS and offers it at no-cost to disaster response organizations and agencies throughout the state of Florida. At the county level, organizations utilizing E-PLUS include county health departments, emergency management authorities, health systems, and law enforcement agencies. At the regional and state level, users include the Florida Department of Health's (FDOH) regional planners and special needs shelter consultants, state emergency operations center Emergency Support Function 8 (ESF-8) staff, and disaster response organizations such as End Stage Renal Disease (ESRD) Network 7 and the Florida chapter of the Red Cross.

While E-PLUS capabilities had been activated for previous disasters, the Hurricane Ian activation represents the first full utilization of the system for a declared disaster. The purpose of this after-action report is to create a written account of the Hurricane Ian activation and detail the lessons learned so that future activations can benefit from this hindsight. This report will provide background on E-PLUS, provide a high-level description of its use during Ian, discuss users' overall experience with the system, and detail the lessons learned.

Background

E-PLUS Functionality

E-PLUS is comprised of three applications, Patient Search, Emergency Census, and Missing Persons. Each application enables the users to perform a particular function.

- The Patient Search application allows authorized users to query patient clinical records and medication fill histories via the national health information exchange networks.

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[1] https://www.floridadisaster.org/dem/directors-office/regions/
[2] Some regions combine the planner and special needs consultant into one position. Region 6 is an example.
[3] E-PLUS is known nationally as the Patient Unified Lookup System for Emergencies (PULSE). Florida rebranded the system out of respect for the victims and first responders of the PULSE nightclub tragedy.

- The Emergency Census application of E-PLUS allows authorized users to check individuals in and out of alternative care sites (ACSs).
- The Missing Persons application allows authorized users to search for missing persons by leveraging the state's available ADT network, the Encounter Notification Service (ENS).

Access to E-PLUS is granted and vetted thoroughly by the Agency. Authorized users can be granted access to one application or all three applications depending upon the end user's role(s) during an emergency response. Access to E-PLUS is also role-based, meaning the user can only use applications to which access has been granted. If a user is granted access to Missing Persons, that user cannot query clinical records nor check individuals in and out of alternative care sites.

The process for vetting end users begins with an introductory call for purposes of discovery. The Agency and organization discuss the organization's role in emergency response and they ways in which E-PLUS can aid their mission and fit into their workflow. During this initial call, end users are identified by the organization. The organization then provides the Agency with a completed credentialling template detailing each user's role, email address, and application(s) to credential access. The template is also used to collect licensure information for verification and confirm that the user has an email extension from a verified disaster response organization. The Agency can credential regional or county-level organization administrators to manage end user access. Finally, the Agency has a list of regional staff from the Florida Department of Health which it can use for cross referencing.

Engagement and Training of E-PLUS prior to Hurricane Ian

The Agency implemented E-PLUS during the fourth quarter of 2020. During the initial implementation year, a priority for the Agency was to have E-PLUS certified by the Centers of Medicare and Medicaid Services (CMS). CMS certification of E-PLUS would enable the Agency to request enhanced funding participation by CMS and thus enable the Agency to provide the service at no cost to emergency organizations throughout Florida. Achieving CMS certification was resource intensive and with limited staff, allowed little time for engagement with potential system users. CMS certification of the system was achieved in December of 2021.

Engagement with emergency response organizations did not begin in earnest until 2022. During the summer of 2022, the Agency and the Department of Health began interagency collaboration on the use of E-PLUS. The Bureau of Preparedness and Response organized a July, statewide Teams meeting to enable E-PLUS staff to demonstrate the system to a diverse set of county and regional emergency response personnel. The July call led to engagement with numerous counties as well as the region 6 regional planner, which proved very important given Hurricane Ian's landfall in region 6.

E-PLUS Activation for Hurricane Ian

E-PLUS was activated on September 24, following the governor's September 23 emergency declaration. Executive Order 22-218 declared a state of emergency for all counties in the cone of uncertainty for the approaching Tropical Depression Nine. Counties under a state of emergency included: Brevard, Broward, Charlotte, Collier, DeSoto, Glades, Hardee, Hendry, Highlands, Hillsborough, Indian River, Lee, Manatee, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Pasco, Pinellas, Polk, Sarasota, and St.

Lucie. Executive Order 22-219 was issued on September 24 and amended Executive Order 22-218 to declare a state of emergency for the entire state of Florida.

On September 28, 2022, Hurricane Ian made landfall near Ft. Myers, Florida as a category 4 storm with 150 mph wind speeds. Hurricane Ian was the fifth strongest storm to hit the mainland United States and stands as the costliest storm to ever hit Florida. While Ian was reminiscent of Hurricane Charlie, a category 4 storm that hit Lee County in 2004, Ian was almost twice the size of Charlie, creating widespread devastation across the Florida peninsula. The storm surge was the most damaging aspect of the storm with Ian's storm surge reaching heights of one to two stories high, creating widespread flooding along a 60-mile stretch of coastline in Lee County.

At the time of landfall, county adoption of E-PLUS was relatively small, with authorized personnel from only nine counties (Charlotte, Collier, Indian River, Levy, Gilchrist, Dixie, Duval, Seminole, and Alachua) having access to at least one application within E-PLUS. This relatively small rate of E-PLUS adoption can be attributed to the focus on CMS system certification and conflicting priorities with potential system users. In addition to the county level agencies, End Stage Renal Disease (ESRD) Network 7 also had system access prior to Ian's landfall.

During Ian, three additional counties (Lee, Sarasota, and Osceola) and Publix Pharmacy were granted access to E-PLUS. Publix Pharmacy was asked by Lee County officials to perform medication reconciliations in the Hertz Arena, a general population shelter that held at times up to 2,000 displaced persons. Publix contacted the Agency through Surescripts to gain access to E-PLUS.

E-PLUS Utilization by Function During Hurricane Ian

Patient Search

Overview

The Patient Search application allows authorized users to query patient clinical records and medication fill histories via the national health information exchange networks. E-PLUS is connected to two national networks, the eHealth Exchange and Surescripts.

The eHealth Exchange connects providers, hospitals, and federal agencies such as the Department of Defense and Veterans Administration and allows those healthcare providers to securely share electronic clinical records. Over 89% of all hospitals across the U.S. are connected to the eHealth Exchange, including 187 acute care hospitals and a significant number of other health care providers in Florida.

Surescripts is a national network which connects pharmacies and supplies E-PLUS with a 12-month medication fill history, meaning the medications were filled and paid for at a pharmacy. Medicaid fill histories are fed into Surescripts directly by the pharmacy or through claims data held by a pharmacy benefit manager (PBM). A medication fill history includes medication name, dosage (not included if medication retrieved via PBM), quantity, refill status, prescriber name and contact information (if available) and the pharmacy where the individual filled the prescription. Access to the Surescripts network via E-PLUS is limited to a state or federally declared disaster.

Patient Search Use During Ian

During Ian, Publix Pharmacy and 6 counties utilized Patient Search: Alachua, Collier, Charlotte, Osceola, Duval, and Lee counties. There were 234 queries for clinical documents and 386 medication searches were conducted. The number of clinical documents and medication histories actually retrieved were 17.5% and 9.8% of all queries respectively. The retrieval rate was due to missing demographic data when querying for records and duplicate searches for the same individual. Table 1 below lists all the names of special needs shelters that utilized Patient Search during Ian.

Table 1: Specials Needs Shelters with Access to Patient Search within E-PLUS

County	Name of Special Needs Shelter
Alachua	Alachua County Community Support Services
Charlotte	New Day Christian Church
Collier	Palmetto Ridge High School
Duval	Atlantic Coast High School
Lee	Estero Recreation Center
Lee	Hertz Arena
Lee	Ray V. Pottorf Elementary School
Lee	South Fort Myers High School
Leon	DOH – Special Needs Shelter Operations Unit – HQ
Osceola	Central Avenue Elementary School

Patient Search System Monitoring During Ian

E-PLUS and vendor staff utilized two reports to monitor system use and provide timely feedback to users. The Patient Chart Access report enabled staff to monitor queries performed through Patient Search. The report provides detailed information such as: the user initiating the query, demographic information of the person whose medical records were queried, and details about whether documents or medications were returned.

In addition to the Patient Chart Access report, staff also monitored the Login History report, which provides details of who logged in or attempted to log into E-PLUS. A few insights were gleamed from these reports. First, staff noticed that some users were logging into the test site, rather than the production site. The vendor quickly addressed the issue by updating the login page to clearly mark it as the stage environment and adding a pop-up window to notify the user upon login they were in the stage environment.

Second, staff were able to pinpoint errors and immediately follow up with users to make adjustments. For example, one user continued typing a first name into the last name section of the Patient Search window and retrieved no results. Other users were using their email address to attempt to login rather than their username. In addition to direct outreach from the Agency, the vendor added a short pop-up tutorial which appears when the user opens the Patient Search window. The user has the option to ignore or watch the quick tutorial. Out of the 19 users that were offered the tutorial, 4 users watched all or part of it while all others dismissed or snoozed it.

Finally, we were able to determine system users were not including the minimum data set needed to make a match. In some instances, users input incomplete demographic information which led to the low retrieval rate of documents and medications histories returned to users. At a minimum, E-PLUS requires first and last name, date of birth, and gender to perform a search. However, including address and/or phone number will improve search results. There are additional reasons why documents may not be retrieved. If the source on the national network is experiencing technical difficulties, an error may occur when the user requests documents. Additionally, a source can respond positively to a patient discovery inquiry only to then respond that it does not have any records for the individual.

Patient Search Users Credentialled During Ian

E-PLUS staff was also privy to new user accounts created by organization administrators, which had been set up for Sarasota and Lee Counties, counties in the immediate impact area of the storm. These accounts were established by the region 6 regional coordinator, who was an early champion of E-PLUS. These new users accessed the tutorial that was added to Patient Search.

The E-PLUS inbox received requests for access to E-PLUS. Requests came from FDOH as well as directly from county health department personnel involved in response efforts. Users included Osceola County health department staff and FDOH Special Needs Shelter Operations Unit staff.

Publix Pharmacy was requested on behalf of Lee County to assist in performing medication reconciliations at shelters still in operation during the week after landfall. The pharmacy reached out to Surescripts to request access. Surescripts forwarded their request to the E-PLUS vendor who then forwarded their request to the Agency. All parties met to discuss and vet the use case. The pharmacy requested access for over 15 pharmacists, whose licenses were vetted by E-PLUS staff through the Department of Health. Access was granted on October 4, 2022.

Patient Search Technical Issues

On September 29, the vendor discovered a connection issue to the Surescripts network. This connection enables E-PLUS to retrieve medication fill histories. The cause of the disruption was due to an initial configuration error and because E-PLUS cannot test its connection to Surescripts outside of an active event. This connectivity issue limited medication history data for five (5) days after activation. The configuration error was corrected the same day it was discovered and the connection to Surescripts was restored later that day. After the correction, users were able to access medication histories and an email was sent to users informing them of the situation.

Patient Search User After Action Calls

E-PLUS and vendor staff met with numerous Patient Search users in the weeks and months after the storm. The most in-depth call occurred in December with a subset of the Publix Pharmacists, roughly two months after the storm. Users were initially split on the efficacy of the system. However, it was found that if users who were on-site could not return medications for a sheltered client, then that client's information would be passed onto the team headquartered in Orlando. The users in Orlando then used E-PLUS to search for the medication histories of these clients whom the on-site users could not find via E-PLUS. This discussion led to clarification of why some of the pharmacists found E-PLUS useful and others did not. In addition to the above discussion, the pharmacists also reported that in some instances, only a subset of

medications was returned. For example, a sheltered client may have reported taking five medications, but only three were produced in the medication fill history.

E-PLUS staff also spoke with a user of Patient Search who operated out of Osceola County. This user relayed a very positive experience using E-PLUS. A sheltered client, who shelter staff believed was being trafficked, did not have her medication nor did she know its name. The client also stated that she had been recently diagnosed with a condition but could not remember the diagnosis. Through Patient Search, the Osceola user was able to retrieve the client's last clinical visit, understand what the client was diagnosed with and then explain to the client the diagnosis and how to take the medication.

Emergency Census
Overview

The Emergency Census application allows authorized users to check individuals in and out of alternative care sites, such as special needs shelters. The advantage of using Emergency Census to register a client at an alternative care site is that the registration (and discharge) is reported to the Encounter Notification Service (ENS) network in the form of an HL7 standard, ADT (admit, discharge, transfer) message. ENS is an Agency governed care coordination network which alerts subscribed providers and health plans on where their patients or members have health care encounters at connected facilities. ENS is connected to over 750 health care facilities across the state of Florida, that provide real-time, encounter data to the service. Providers and health plans that are subscribed to the network, load panels of patients they wish to track. ENS then uses a sophisticated algorithm to match the demographic data of the ADT message to that of the patient panel. When a match occurs, ENS notifies the subscriber that an encounter has occurred. During times of disaster, E-PLUS enabled alternative care sites become temporary data sources to the network, closing a critical gap in post-disaster care coordination.

Through county outreach, E-PLUS staff learned that many counties in the state of Florida either use a custom shelter registration system or use the state special needs registry, operated by FDOH, to check individuals in and out of special needs shelters. The state registry has a shelter management component, which counties can use to check clients in and out of special needs shelters. Thus, using the Emergency Census application would require county-level staff to perform duplicate work.

To support the systems counties already had in place E-PLUS staff began working with FDOH, in the late summer of 2022, to execute a data use agreement which would allow FDOH to provide daily transfers of shelter registration data during a sheltering event to the Agency. On September 30, 2022, the Agency, FDOH and the Division of Emergency Management (DEM), executed the agreement and shelter registration data began to flow to the Agency on October 1. This data is transferred to a secure SFTP site by FDOH and then retrieved by E-PLUS or vendor staff. It is then transformed for upload to E-PLUS Emergency Census application. A list of all the special needs shelters that were able to generate encounter data during Hurricane Ian is listed below in table 2. A process for the sharing of registration data from counties using other registration system is still being determined.

Table 2: Emergency Census Enabled Special Needs Shelters

County	Name of Special Needs Shelter
Clay	Lake Ashbury Junior High School

Collier	North Collier Regional Park (SPNS Alternate)
Collier	Palmetto Ridge High School
DeSoto	DeSoto County Middle School
DeSoto	South Florida State College
Duval	Atlantic Coast High School
Duval	Legends Community Center
Flagler	Rymfire Elementary School

There are some limitations with the special needs shelter alerting. Alerts sent from special needs shelters are not in real-time and were delayed by up to 24 hours during Hurricane Ian. During the Ian activation, FDOH transferred data to the SFTP once daily by 10am. This process has since been updated for a twice daily transfer of registration data, cutting the delay down in half.

Emergency Census Use During Ian

In total, Emergency Census checked 131 persons into and out of 8 special needs shelters through the state registry. Roughly 1400 alerts were sent to ENS subscribers which included Medicaid managed care plans, commercial health plans, accountable care organizations, providers, hospitals, and others, including 2 home health agencies. A more detailed breakdown of these subscriber types is listed below in table 3.

Table 3: Breakdown of ENS Subscribers who Received Special Needs Shelter Alerts by Provider Type

Subscriber Type that received ENS alerts	Total Number of Subscribers who Received Special Needs Shelter Alerts	% of Subscriber Type that are also Medicaid Providers
Plans	12	75%
Federally Qualified Health Center	3	100%
Accountable Care Organization	5	0%
Provider	11	72.7%
State agency	2	N/A
Hospital	5	100%
Hospice Provider	1	100%
Home Health Agency	2	50%
Skilled Nursing Facility	1	100%
Total	42	

Emergency Census After Action Calls

E-PLUS and vendor staff held after action calls with three ENS subscribers who had received ENS alerts originating from E-PLUS Emergency Census. They shared the importance of this type of alerting. For some health plans, emergency plans are activated upon a disaster and pre- and post-storm outreach is a critical component of that plan. While health plans have many resources at their disposal, knowing that a member has been evacuated to a special needs shelter is another key resource they can rely on to track their high-risk members and maintain continuity of care. One take away from a health plan was the idea

of creating a special ENS notification, called a Smart Alert. ENS smart alerts are triggered by not just the event (admit or discharge), but also a pre-defined criterion. Creating a smart alert based on E-PLUS enabled shelter status, would allow health plans or any provider to segregate this data for higher visibility.

Several ENS subscribers requested more information be included in the special needs shelter alert. The phone number, address, and name of the shelter were missing from the alert. Thus, the ENS subscriber did not know which shelter the patients were checked into, only that their patients were checked into an emergency facility, which is not actionable data to the subscriber.

Finally, ENS subscribers reported not being aware that these alerts would be coming inbound from ENS. This was reported even though an email was sent out to all ENS subscribers notifying them of the temporary special needs shelter encounter data. In some cases, subscribers who review and act upon ENS alerts (case managers) do not deal directly with the alerts, rather they receive a report and then work the report. In these instances, while the individual who acts on the alert was notified of the shelter data, the individuals who compile or analyze the inbound alerts were not.

Missing Persons

Overview

The Missing Persons application is connected to the Encounter Notification Service and enables users to leverage that network to search for missing persons. ENS matches inbound ADT messages originating from over 750 health care facilities across the state of Florida against inbound patient panels or lists of patients that providers want to track (see Table 4 for a list of data sources). When a match occurs, notification of the health care encounter is routed to the appropriate subscriber.

During times of emergency, E-PLUS Missing Persons application uses ENS data as a mechanism to search for individuals that may have been checked into a health care facility during a declared emergency. E-PLUS users credentialed to use the Missing Persons application can upload lists of missing persons with specified demographic data. If an individual on the list has been admitted or discharged from an ENS data source facility, information on where they were treated is available on a report which details the status of those missing persons. When a person is found, E-PLUS reports the person's last seen location, date, and time.[4]

Table 4: List of ENS Data Sources as of September 30, 2022

Facility/Provider Type	Number of Facilities/Providers
Hospitals	272
Skilled Nursing Facilities	225
Home Health Agencies	69
Hospice Providers	22
Crisis Stabilization Units	5
Urgent Care Centers	64
County Health Departments	67
Emergency Medical Services	Statewide

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[4] Enhancements slated for release in time for the 2023 hurricane season include, but are not limited to, death indicator and whether the encounter was an admit or discharge.

Missing Persons Use During Ian

Missing Persons was utilized in the days and weeks following Hurricane Ian's landfall. A list of all organizations that utilized Missing Persons can be found in Table 5 below.

The first list of missing persons was uploaded by ESRD Network 7, which is part of a larger kidney care emergency response (KCER) hierarchy. KCER was established following Hurricane Katrina with the intent to ensure that dialysis patients maintain continuity of care throughout a disaster event. There are 18 ESRD networks throughout the US and each report to KCER which in turn reports to ASPR and the CMS disaster response arm of the agency, Emergency Preparedness and Response Operations (EPRO). Information reported to these agencies reflect ESRD facilities' status after a disaster including evacuation status, power generation, etc. Another piece of information that is reported is "patients unaccounted for". To help facilities locate unaccounted for dialysis patients, key personnel at ESRD Network 7 and KCER, were credentialed access and trained to use Missing Persons during the summer of 2022.

Table 5: Disaster Response Organizations and Agencies Utilizing Missing Persons during Ian

Disaster Response Organizations and Agencies Utilizing Missing Persons
Charlotte County ESF-8
ESRD Network 7 (KCER)
Florida Digital Services
Indian River County Emergency Management
Lee County ESF-8
One Home Health Agency

On the morning of October 1, ESRD Network 7 loaded its first list of missing persons into E-PLUS with a total of 29 missing. The number of missing would grow to 46 by the following day. In total, E-PLUS was able to locate 47% of these missing dialysis patients at a connected facility. By the morning of October 5, ESRD Network reported that all persons previously unaccounted for had been found either by E-PLUS, facility staff, or Emergency Medical Services.

The county level response from Indian River, Lee and Charlotte Counties were very limited in size. Each of these counties reported only one missing person. The Red Cross also only requested assistance to search for one missing person. In all cases but one, E-PLUS was able to locate the missing person. All county requests to find missing persons originated at the EOC. These missing persons requests were sent to ESF-8 in 2 cases and emergency management officials in the remaining case. In two out of the three county cases, Fire Rescue initiated the request to locate missing persons. Red Cross's request for help in locating a missing person came from a family member.

Three weeks after landfall, the Red Cross contacted the E-PLUS inbox looking for assistance in finding an individual who had been living in an assisted living facility (ALF) in Lee County when Hurricane Ian made landfall for a family member. The family was concerned because the individual had health issues and wasn't answering phone calls nor emails. The E-PLUS team took the request and while we had the missing person's full name, date of birth, and phone number; an address was needed to conduct a search. After

identifying the address for the ALF, we were able to locate them at a hospital in Sarasota. The family was relieved to know that they were safe and not in harm's way.

Two home health agencies requested access to Missing Persons via the E-PLUS inbox, however, home health agencies are not eligible for access to E-PLUS. Instead, home health agencies are directed to securely send a list of missing persons to E-PLUS staff, who in turn, load the list into E-PLUS and download reports. Of these two home health agencies, only one agency sent a list of unaccounted for patients. Those patients were not found at any of the ENS connected health care facilities nor any of the E-PLUS enabled special needs shelters.

On October 13, 2022 E-PLUS staff, the Florida Center Bureau Chief, and the Office of HIE Administrator met with staff from Florida Digital Services (FDS), an arm of the Department of Management Services, lead agency for ESF-2, Communications to determine if they could benefit from using the E-PLUS platform in searching for displaced individuals. FDS lead the effort to identify persons reported unaccounted for via two public facing websites that had been stood up for the Ian response. One website enabled individuals to self-report that they were sheltering in place. The second website enabled family members to report relatives that were impacted by the storm and still unaccounted for. After early discussions, it became apparent that the information collected via the websites was not enough to perform a search through the E-PLUS Missing Persons application. In particular, the date of birth was not collected.

Missing Persons Technical Issues

There were several technical issues that affected the use of the Missing Persons application. On September 28th, the Agency was notified of an incident causing a delay in the ability of the Encounter Notification Service to process notifications. The ENS infrastructure experienced capacity issues due to an ENS subscriber refreshing a very large panel right at the on-set of the storm. This incident did not result in a loss of data, but locating missing persons applications were not able to process in real-time and would be delayed in sending to the subscriber for more than 1 hour and up to 7 hours. The incident was resolved by 7am on September 29.

On September 29 a new incident occurred which impacted all systems, including ENS and E-PLUS and was identified as an authentication issue. This incident resulted in all outbound alerts to be halted. A fix was implemented within 30 minutes and outbound alerts were moving, but with a delay due to the queues that had built up. The issue was later identified as a server that processes logins had run out of disk space.

On October 1, the E-PLUS team was notified by ESRD Network 7 that the missing persons report did not return location information for found individuals. The E-PLUS staff quickly notified the vendor of the issue in reporting found individuals. The E-PLUS vendor discovered a technical issue with the system, which had recently been integrated into E-PLUS from a separate user interface. That issue would not have a quick fix and so the team quickly moved to the teams secondary plan known as, Plan B. Rather than allow users to log in, upload lists of missing persons and download reports, the E-PLUS team advised users to send missing persons panels through encrypted email to the E-PLUS staff, who would then upload the list to a vendor hosted SFTP site. The vendor would then take the file and manually upload to ENS. Missing persons reports were generated upon initial upload and then twice daily at 7 am and 7 pm. Reports were stored

in the SFTP and downloaded by E-PLUS staff and sent to the appropriate E-PLUS user. This process continued throughout the entire Hurricane Ian activation.

On October 11, a new incident impacting the processing of ENS notifications was reported and caused 2-hour delays in processing notifications. No data loss resulted from this incident. By October 12, systems were operational and the queue had been cleared. It is unclear what this incident was.

Although there were several technical issues during the Hurricane Ian activation, the coordination and communication between the E-PLUS staff and the vendor allowed for strategic and innovative mitigation of the issues. The teamwork during this time was key to overcoming technical problems as was the ability of both staffs to remain flexible.

Missing Persons User After Action Calls

The most extensive after-action discussions were held with ESRD Network 7 and Florida Digital Services. ESRD Network 7 reported E-PLUS Missing Persons to be an extremely helpful tool, having helped locate almost 50% of the unaccounted-for dialysis patients within a few days. The remaining unaccounted-for patients were found through in-person wellness checks (door knocks) by either facility staff or Emergency Medical Services (EMS). Given the danger inherent in visiting a potentially storm damaged site, the discussion revolved around the ability to utilize Missing Persons sooner to avoid deploying human resources to the homes of unaccounted for individuals. After some discussion, it was found that missing persons lists can be generated and uploaded to E-PLUS days sooner than what had occurred during Ian.

 Florida Digital Services' role in the Hurricane Ian response was unprecedented. The tremendous damage and large swaths of the state that were affected lead the governor's office to stand up a public facing website so that family members who live outside the state of Florida could report relatives who were unaccounted for. FDS's role was to support local efforts in locating these unaccounted-for family members. FDS will continue to provide these services for future storms that impact a large portion of the state or are so catastrophic in damage that an all-hands-on deck approach is required. The E-PLUS staff highly recommended FDS to consider obtaining the based demographic data needed to enable utilization of the Missing Persons application. Staff also provided FDS with the missing persons template as a guide to develop future, public facing websites to report the missing.

Charlotte County reported the need for faster information in the EOC. The time delay occurred because of the reporting issue and the need to use Plan B. Had Missing Persons been working as intended, E-PLUS would have reported information much sooner and at the user's pace.

Deactivation of E-PLUS

Deactivation of E-PLUS occurred on October 18, 2022. E-PLUS and vendor staff monitored usage of the system to gauge system utilization. During the week prior, organizations that were no longer affected by Hurricane Ian were deactivated. An email was sent to users on October 18 notifying them of the deactivation of the system and allowing them to reply if they needed more time in the system. E-PLUS staff received no requests for an extension and officially de-activated the system later that day.

Lessons Learned

The section details the lessons learned from the first full activation of E-PLUS. These lessons learned were garnered from real-time monitoring of E-PLUS during the activation as well as through after-action calls with end users.

Patient Search

The use of Patient Search during Hurricane Ian provide E-PLUS and vendor staff with several lessons learned. First, when the Surescripts connection issue was discovered and corrected, E-PLUS staff emailed Patient Search users to inform them of the issue. We know of at least one individual who did not receive this email. Additionally, an after-action call with an organization administrator revealed to us that he did not know how to get in touch with us, even though we included this information in the activation email. Lesson learned – during times of emergency, email communication should be augmented with other forms of communication as some people may miss those email communications due to managing a high stress environment or workload. The E-PLUS team will utilize the welcome and support boxes on the production site as a second means of communication. Additionally, the E-PLUS team has created a "What to Expect During an Activation" flyer on inform users on what to expect and how communication will occur. The E-PLUS vendor utilized the welcome and support boxes during Hurricane Ian when it was discovered that a user had mistakenly logged into the stage environment to perform a query. In addition to the need to communicate in various ways, E-PLUS staff also needed a more efficient way to collect a list of E-PLUS users and their emails. E-PLUS has since been enhanced with the ability to filter and download lists of E-PLUS users by role from the User Management window. The Surescripts connection issue also led the E-PLUS vendor to update its pre-activation procedures and add an additional level of coordination with E-PLUS staff.

After action discussion with Publix Pharmacy led to the discovery that not all pharmacies on the Surescripts Network are sharing data with E-PLUS. Rather, only pharmacies on the Surescripts Network that have opted-in to sharing data with E-PLUS are sharing data. Currently, the number and names of pharmacies that have opted-in to sharing data through Surescripts is unknown. Agency and vendor staff have been leading an effort to encourage pharmacies and pharmacy benefit managers to opt-in to sharing their data with E-PLUS.

Increased training and a focus on the demographic information required to retrieve data was also a lesson learned. Most searches for clinical records did not return records nor medication fill histories and it was due in large part to missing demographic information. Informing users ahead of time will ensure they attempt to collect as much demographic information as possible and also understand the limitations of E-PLUS if they do not have enough demographic information to input.

Emergency Census

The need to increase the information included on an ENS alert generated from a special needs shelter was a key lesson learned. Two ENS subscribers requested to have more information included in these alerts. Currently, the subscriber is alerted to the encounter and is aware that a patient or member has been evacuate to an "Ai emergency facility," but that is all the information that the ENS alert provides. Discussion between the Florida HIE Services staff and E-PLUS vendor staff has begun, although it is unclear when this enhancement will occur. Specifically, including the name, address, and phone number of the shelter where the individual had the encounter would make these alerts more actionable. Additionally,

the E-PLUS staff continues to collect information on which counties in the state of Florida use the state registry to check clients in and out of shelters. This is currently unknown on a statewide basis.

The workflow between FDOH and E-PLUS staff was formalized into a standard operating procedure. For better visibility during future disasters, E-PLUS staff were also included in an email chain notifying officials of which shelters have been opened for the disaster. During Ian, FDOH staff loaded special needs shelter registration data once daily yet have updated the procedure to twice daily to ensure the most up-to-date information as possible for users who wish to track clients among special needs shelters.

Missing Persons

The Hurricane Ian activation made clear that the Missing Persons design was flawed as the report did not produce the information that it intended to produce. Specifically, it did not report the name and location of the facility where a FOUND person was located. This was a significant failure and required a work around outside of the E-PLUS platform during Hurricane Ian. The Missing Persons redesign is slated for release in June 2023. Updates to the Missing Persons application will enable users to load missing persons panels without overriding previously loaded panels. The updated application will also require an event to be active to use the application. The redesign will provide the last known encounter type, such as whether it was an admit, registration or discharge. Lastly, the current Missing Persons application requires all fields of demographic information to be completed or else it cannot perform a search. The redesign will build in some flexibility, allowing the user to input a truncated list of demographics, in various combinations to perform a search.

Awareness of the Missing Persons application was the second and final lesson learned from Hurricane Ian. Websites that were stood up to report individual sheltering status and report missing persons, collected demographic information, but not enough to utilize Missing Persons to search for missing persons. The E-PLUS staff is using its outreach efforts to build awareness of the application and data fields required to perform a search.

Conclusion

The E-PLUS activation for Hurricane Ian was by and large a success. Operationally, the metrics show support that the system proved useful to organizations responding to the hurricane and anecdotal stories inform us that E-PLUS can help improve the lives of individuals who are experiencing the traumatic effects of a hurricane evacuation. Programmatically, the lessons learned from Hurricane Ian have served as a roadmap for current and future E-PLUS activities. The Agency has increased training and outreach efforts. At the time of Hurricane Ian's landfall, only 9 counties had access to at least one application of E-PLUS. Today that number has increased to 22 counties due to expanded education efforts.

Outreach, education, and training efforts include participation in county health department planner meetings, health care coalition meetings, domestic security meetings, and disaster related conferences such as the Governor's Hurricane Conference. In addition, monthly educational sessions are scheduled with a regular cadence to refresh users' skills and provide them with a venue to ask questions. E-PLUS staff has also updated training materials and created a mix of standard operating procedures and PowerPoint presentations to ensure users have access to a medium that best fits their learning style.

The need for improved communication was also identified as a lesson learned. This has led the Agency to create a dedicated phone number for use during emergencies and a "What to Expect Flyer" so end users are informed ahead of time of the mechanics of an activation and how communication will occur. System enhancements have also enabled E-PLUS staff to filter and download user account information to improve the speed at which communication occurs with any group of end users. Communicating the importance of good demographics has also been a priority for E-PLUS staff. Retrieving clinical records and finding missing people, first and foremost require a demographic match. In addition to communicating the importance of demographics, Missing Persons is being redesigned to add flexibility in the system so that a minimum combination of demographics will enable a search, rather than the full set of demographics.

The activities the Agency has undertaken in the wake of Hurricane Ian are leading to more widespread adoption and effective use of E-PLUS across the state of Florida. Widespread adoption and use of E-PLUS will ensure that ESF-8 officials are better positioned to meet the challenges of the next hurricane to hit the state of Florida.