

The logo for HIMSS 18, featuring the text 'HIMSS' in a bold, sans-serif font, followed by '18' in a larger, blue, stylized font.

The leading health information and technology conference

WHERE **THE WORLD** CONNECTS FOR HEALTH

Conference & Exhibition | March 5–9, 2018

Las Vegas | Venetian – Palazzo – Sands Expo Center

Learning from the Devastating Effects of Three Hurricanes: The Critical Role of Health IT

Session #64, March 6 , 2018

José L. Abrams, CIO/CTO, Servicios de Salud Episcopales

COMMITMENT

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Conflict of Interest

Jose Abrams, Eng.

Has no real or apparent conflicts of interest to report.

Agenda

- Overview of Health IT's Impact on:
 - Puerto Rico's and the US Virgin Island's Hurricane Maria
 - Florida's Hurricane Irma
 - Texas' Hurricane Harvey

Learning Objectives

- Receive a summary overview of the impact on health IT of Hurricanes Harvey, Irma, and Maria
- Identify the specific impact of the natural disasters on Texas, Florida, Puerto Rico and the Virgin Islands
- Describe ways to strengthen health IT organizational disaster plans to minimize impact should a disaster strike

Puerto Rico on the map!



- Puerto Rico (Spanish for "Rich Port"), officially the Commonwealth of Puerto Rico is an unincorporated territory of the United States located in the northeast Caribbean Sea.
- An archipelago among the Greater Antilles, Puerto Rico includes the main island of Puerto Rico and a number of smaller ones, such as Mona, Culebra, and Vieques.
- The island's population is approximately 3.4 million.
- Due to our geographic location we are susceptible to hurricane season

Preparation

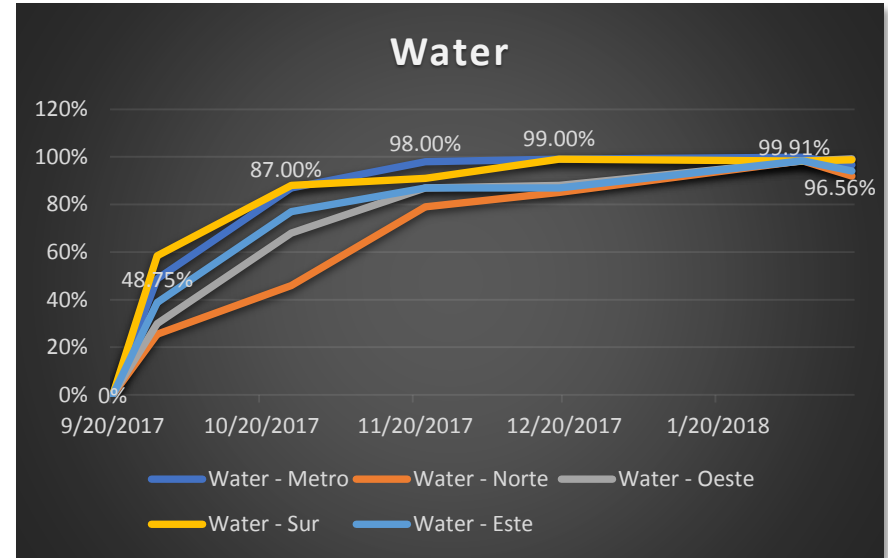
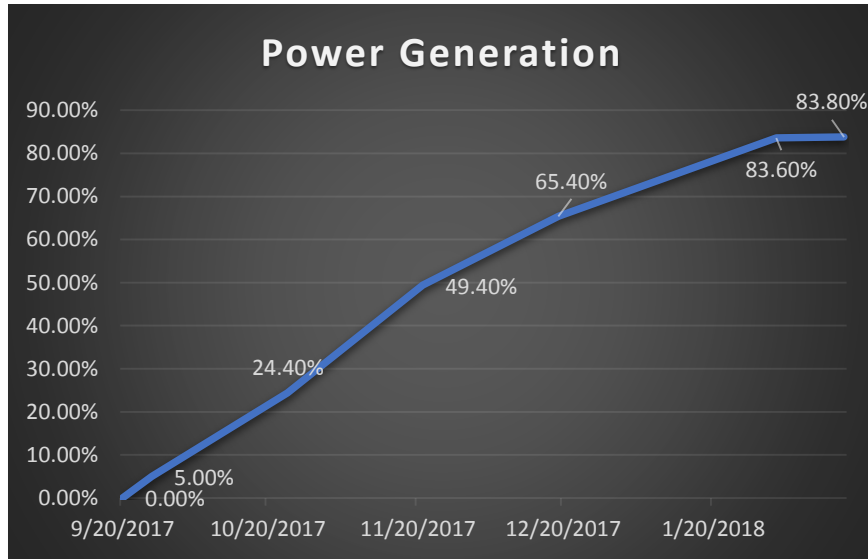
- Contingency Plans Activated
 - Hospitals, Homecare @ Hospice
 - Information Technology
- We prepare to manage a two weeks period emergency
- We rely on cellular communications and power generation

IRMA - Before MARIA



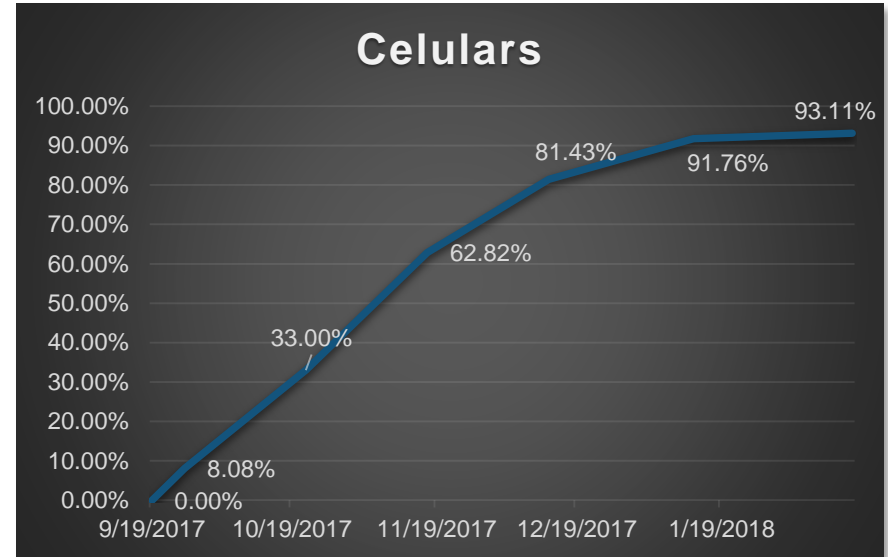
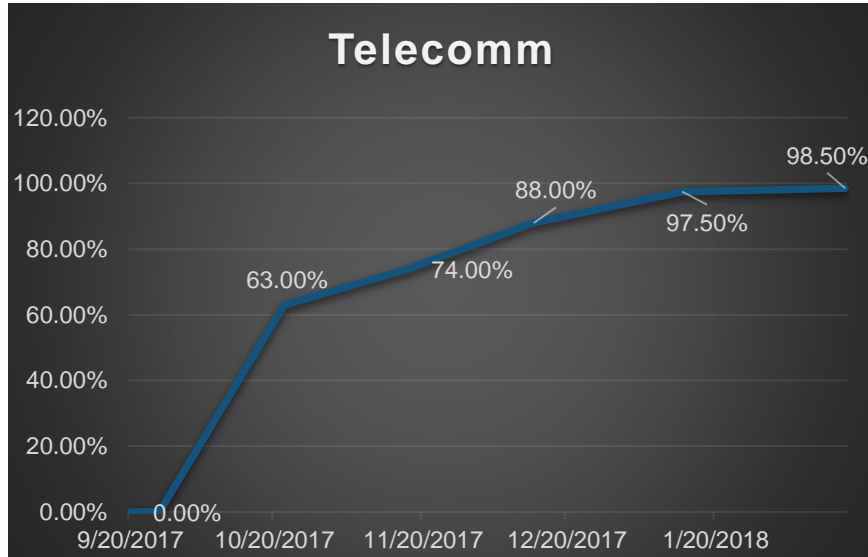
- Old and susceptible power infrastructure with a median age of power plants equal to 44 years.
- Still recovering from IRMA two weeks earlier, approximately 80,000 people remained without power while MARIA approached.
- Approximately 450 shelters opened on the afternoon of September 18. By September 19, at least 2,000 people in Puerto Rico had sought refuge.

Hour 0 - After MARIA



Power Lost 100%

Hour 0 - After MARIA



Communication Lost 100%

Challenges

- There was no information during and immediately after the emergency, only one (1) AM Radio station was on-air
- No communications with clinicians, administration personnel, service providers, suppliers, police stations, emergency responders was possible
- Airports and marine ports paralyzed

Your not their priority, all are on the same situation

What We Learned

- Usually we prepared to manage a two weeks period emergency, sometimes, is not enough
- You have to consider the worst case scenario, that power and communications could be lost 100%
- During the recovery process, both electricity and communications may fail intermittently
- After the emergency we must have the ability to install an alternate regional communications system
- A regional repository of patient data should be considered for cases where access to EHR is lost

What We Learned

- Maintain good relationships with service providers, this will ensure you are one of their priorities
- 3X redundancy is better than 2X (power generators & communications)
- During emergencies, improvisation is allowed, technology allows us to redesign during the recovery process
- Cloud vs. On-site Datacenters – must be evaluated

Systems Security Flexibilization – could be an issue

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Kendall Brown, Enterprise Sales Executive, Allscripts



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Conflict of Interest

Kendall Brown

Has no real or apparent conflicts of interest to report.

Before and After Irma

- According to the Florida Division of Emergency Management, 6.3 million Floridians were advised to evacuate the state.



- Nearly 12 percent of the state's more than 300 hospitals decided to close thanks to Irma—the closures primarily were taken as precautionary measures in advance of the hurricane's arrival, according to the Florida Hospital Association.
- 54 hospitals statewide operating on backup generators
- More than 2,000 patients have been transferred from hospitals, assisted living facilities and nursing homes to other facilities

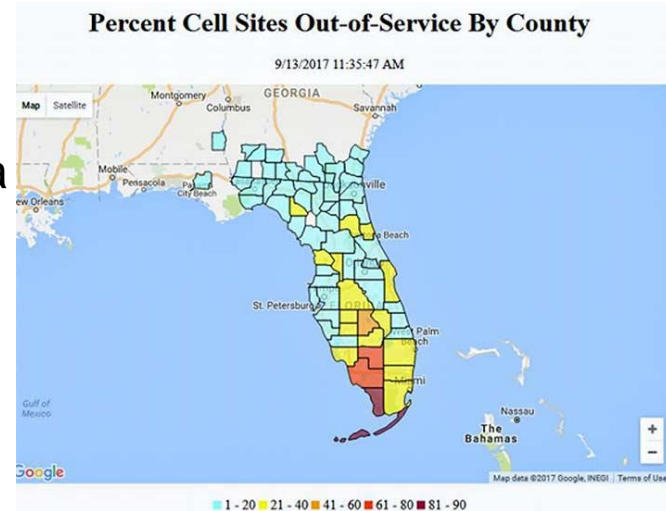
Population Health

Diversity of Residents

- Dealing with multi-language barriers for technology applications
- Dealing with residents from various countries
 - Not everyone has a signal or the Internet

Diversity of Residents

- Many Residents displaced by previous impacts of Irma
- Some not from the United States of America
- Some trapped in areas with no access to electricity
 - No power, no internet, no access to EHRs, the Cloud, apps on your phone, etc.



Primary Challenges

Power

- Loss of power limits the use of Health IT as batteries cannot run full throttle
- Some areas lost power for 1-3 weeks

Water

- Water (storm surge) impacts affect ability to provide healthcare services

Wind

- If wind conditions are too damaging, power is lost and services cannot be provided
- Overland wiring in Florida is still prevalent

What We Learned

- Planning for one element of a disaster often isn't enough
- Irma caused a variety of effects that impacted use of health IT
 - Wind damage that directly impacted overland lines
 - Power loss for extensive periods of time
 - Water damage to isolated areas
- People's expectations for technology and "Always ON" data have increased
 - Expectations for "on location" care have diminished
- Technology gives us the opportunity for "non traditional" interoperability

Key Takeaway – Role of Telemedicine

- Telemedicine companies Teladoc, Doctor On Demand, MDLive and LiveHealth Online announced that medical care visits for those in need in South Florida were available at no cost
- The multistate pediatric health system made its telehealth app, Nemours CareConnect, available free to all throughout Florida and Southern Georgia



Emerging Disaster Health IT – What Works in the Future

- Emerging technologies that enable new forms of health IT
 - Use of blockchain – explore how to create a minimal shared view of data that is viewable by all providers, payers and responders
 - Use of the cloud – not relying on data being stored in a compromised hospital location
 - Allscripts/Surescripts provided 12 months of medication history through a cloud-based smartphone app
- Tracking population health impacts using artificial intelligent applications
 - University of Miami project to track multiple sources of health data for long-term health impacts

Houston – Hurricane Harvey

James Langabeer, PhD, FHIMSS
Professor of Health Informatics



Conflict of Interest

James Langabeer, PhD

Has no real or apparent conflicts of interest to report.



Source: Tyler Morning News



Source: National Public Radio



Source: Oxygene Magazine

Devastation All Around

- Over 5' of rain in <2 days
- Over \$125 billion in storm damages
- 40,000+ people displaced
- Dozens of hospitals evacuated patients
- Largest County hospital flooded EMS bays and first floor
- 2 largest sports arenas became shelters
- Nearly 350,000 citizens without power

Technology Challenges

- Coordination between facilities
 - Inter-hospital coordination and data exchange lacking
- Information Systems
 - Volunteer “informal” response relied heavily on paper
- Communications:
 - 9-1-1 system overwhelmed with 8x normal call rates
 - Thousands of power lines down
- Cell phone coverage fared well this time

What Went Well?

- Better disaster management
 - Storm predictions were very accurate
 - Hospitals had better advance planning (early discharges, care coordination)
 - Cloud computing allowed little EHR downtime
 - Utilization of health information exchange

Recommendations for the Future

- Community-wide data coordination plans
- Integrated, patient-level “dashboard” for shelters
- Regional health information exchange
- Better patient-level analytics
- Improved patient communications and portals
- Coordinated social media strategy

Facilitated Discussion

- Facilitator
Dr. Donna Christensen and former U.S. Representation to the U.S. Virgin Islands
- Panelists:
 - Jose L Abrams Guzman, CIO/CTO Servicios de Salud Episcopales (SSE)
 - Kendall Brown, Allscripts www.linkedin.com/in/kendallkay
 - Jim Langabeer, Professor Health Informatics at The University of Texas Health Science Center at Houston

Thank you for participating today!

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