HOW HEALTH IT CAN ASSIST WITH PATIENT CARE DURING AND AFTER A HURRICANE

Michael Blackman, MD, MBA | Medical Director – Population Health, Allscripts | November 16, 2018
Learning Objectives

• Understand the impact of hurricanes and other natural disasters on patient care
• Appreciate the preparatory steps, related to Health IT, to sustain patient care during and following a hurricane
• Describe how Health IT can be used to improve patient care during hurricane response
## Costliest US Hurricanes

<table>
<thead>
<tr>
<th>Hurricane</th>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricane Rita</td>
<td>2005</td>
<td>$23.7</td>
</tr>
<tr>
<td>Hurricane Wilma</td>
<td>2005</td>
<td>$24.3</td>
</tr>
<tr>
<td>Hurricane Ivan</td>
<td>2004</td>
<td>$27.1</td>
</tr>
<tr>
<td>Hurricane Ike</td>
<td>2008</td>
<td>$34.8</td>
</tr>
<tr>
<td>Hurricane Andrew</td>
<td>1992</td>
<td>$47.8</td>
</tr>
<tr>
<td>Hurricane Irma</td>
<td>2017</td>
<td>$50</td>
</tr>
<tr>
<td>Superstorm Sandy</td>
<td>2012</td>
<td>$70.2</td>
</tr>
<tr>
<td>Hurricane Maria</td>
<td>2017</td>
<td>$90</td>
</tr>
<tr>
<td>Hurricane Harvey</td>
<td>2017</td>
<td>$125</td>
</tr>
<tr>
<td>Hurricane Katrina</td>
<td>2005</td>
<td>$160</td>
</tr>
</tbody>
</table>

National Hurricane Center; costs adjusted to 2017 dollars (billions)
Irma’s Impact

- 6.3 Million Floridians Were Advised to Evacuate\(^1\)
- 12% of Hospitals Decided to Close\(^2\)
- 54 Hospitals Operated on Generator Power\(^2\)
- Over 2000 Patients Transferred to Other Facilities\(^2\)

\(^1\)Florida Division of Emergency Management
\(^2\)Florida Hospital Association
Immediate Effects

- Decreased Resources
- Increased Demand
- Increased Stress Levels
- Work to Remain Open
Increased Utilization

• Many Hospitals Already Function at Near or Maximum Capacity

• Hospitalizations Increase Beyond the Storm
  – Study showed ↑ 4% over 30 days\textsuperscript{1}

\textsuperscript{1}Annals of Emergency Medicine 6/2018
Effects on Patients

- Dislocation
- Loss of Usual Healthcare Access
- Stress
- Exacerbation of Chronic Diseases
Disaster Planning

- Build Coalitions
- State / Local Coordination
- Have a Worst Case Plan
- Effect of Technology
Facilities

- Equipment Location
- Redundancy
- Storm Resistant Construction
Staff Preparation

• Drills
• Schedules
• Mental Health Support
Health IT Plan

• Not Just Having an EHR
• Connectivity is Expected
  – What happens when you lose it?
  – Connect with First Responders, Others
• Access from Alternative Care Sites
• Telehealth
Following the Storm

- Insure Safety
- Provide Access to Care
  - Telehealth
  - EHR
Telehealth

- Not All Patients Need to be Physically Seen
- Expands Access
- Expands Workforce
- Direct to Consumer vs. Tethered
Post Irma Experience

• Free Telehealth Services
  – Health Systems
  – Direct to Consumer Companies

• Conditions Treated
<table>
<thead>
<tr>
<th>Top Diagnostic Categories Nationally in August and September 2017 (%)**</th>
<th>Top Diagnostic Categories for Harvey and Irma, Days 1-7*</th>
<th>Top Diagnostic Categories for Harvey and Irma, Days 8-30 n (%)***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Respiratory Illnesses (31.5%)</td>
<td>Acute Respiratory Illnesses, 598 (31.5%)</td>
<td>Acute Respiratory Illnesses, 302 (32.7%)</td>
</tr>
<tr>
<td>Mental Health (11.7%)</td>
<td>Skin Problems, 75 (6.9%)</td>
<td>Skin Problems, 114 (12.2%)</td>
</tr>
<tr>
<td>Skin Problems (11.2%)</td>
<td>Chronic Illness, 65 (7.3%)</td>
<td>Chronic Illness, 67 (7.2%)</td>
</tr>
<tr>
<td>URI and Urinary Symptoms (0.4%)</td>
<td>Back and Joint, 55 (6.1%)</td>
<td>URI and Urinary Symptoms, 52 (5.0%)</td>
</tr>
<tr>
<td>Chronic Illness (5.7%)</td>
<td>Mental Health, 53 (5.9%)</td>
<td>Back and Joint, 44 (4.7%)</td>
</tr>
<tr>
<td>Eye Problems (4.0%)</td>
<td>General advice / counseling / refills, 55 (5.7%)</td>
<td>Allergies, 43 (4.6%)</td>
</tr>
<tr>
<td>Abdominal Pain, Vomiting, and Diarrhea (3.4%)</td>
<td>URTI and Urinary Symptoms, 47 (5.2%)</td>
<td>Abdominal Pain, Vomiting, and Diarrhea, 36 (4.2%)</td>
</tr>
<tr>
<td>Allergies (3.4%)</td>
<td>Urinary and URTI, 33 (3.6%)</td>
<td>General advice / counseling / refills, 36 (3.8%)</td>
</tr>
<tr>
<td>Back and Joint (3.4%)</td>
<td>Vaginitis, 30 (3.3%)</td>
<td>Eye Problems, 33 (3.5%)</td>
</tr>
<tr>
<td>General Advice / Counseling / Refills (3.3%)</td>
<td>Abdominal Pain, Vomiting, and Diarrhea, 24 (2.7%)</td>
<td>Mental Health, 30 (3.2%)</td>
</tr>
</tbody>
</table>

* Covers days 1-7 for Irma but only days 4-7 for Harvey due to implementation delays.
** Columns do not add to 100% because non-hospital diagnostic categories beyond the top ten are not listed.
*** None are censored because data is proprietary.
Connecting the Community

- Supports Improving Quality
- Post Storm Support as a “Side Effect”
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Collaborative Care and Intelligent Workflows

Analytics and Reporting

Smart Data Aggregation

Data Aggregation through Interfaces

Patient and Provider Identification

Consolidated Data Repository

Semantic Linking w/Ontologies

Data Mining / Reporting

Smart Interventions

Care Coordination
Data Harmonization

- EHRs
- Lab
- Claims
- Devices
- Public Health
- HIE
- Social Determinants

Collect
Transmit
Clean
Normalize
Patient Matching
Data Binding
Vocabulary Translation
Workflow Integration

Encounters
Problems
Immunizations
Allergies
Procedures
Medications
Medical History
Measurements
Diagnoses
Imaging
Documents
Labs
**Data Aggregation – One Patient, One Record**

<table>
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<tr>
<th>Grow the Business Without Disrupting Staff</th>
<th>Semantic Overlays Adds Crucial Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Collect data using the same mechanisms that you use to share it today.</td>
<td>• Using all relevant clinical ontologies, terminologies, and classification schemes offers ‘conceptual consistency’ across the unified patient record</td>
</tr>
<tr>
<td>• Evolve your data sharing strategies that align with the capabilities of your teams and partners</td>
<td>• Use one of four different mechanisms to share this data with others in their preferred workflow to increase their situational awareness, improve outcomes, and manage costs.</td>
</tr>
<tr>
<td>• Free up capital by leveraging existing investments and extending their ROI, all while optimizing the training and workflow improvements already in place.</td>
<td></td>
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</tbody>
</table>

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Presenting Information at the Point of Care

- Already more information than a person can review
  - Put the data in a digestible form

- Information within the workflow
  - Provide “external” information
  - Show gaps in care
Consolidated Information Improves Care

Create an easy way to answer questions that would have taken substantial time or, more likely, wouldn’t have been asked

Reduce duplicate testing

More complete information reduces the risk of error, enables a fuller understanding of the patient

- Facilitate conversations with patients
Single Record for Safer Patient Care

- Reduce time wasted searching for critical information at point of care
- Make more informed care decisions with an actionable patient record
One Health System’s Experience

• Interoperability as a Backup Tool
  – Discovered when a facility sustained fire damage
• Multiple EHRs Across Different Facilities
  – Connected by their interoperability solution
• Able to Add Users Prior to the Storm
Access Options

• Multiple Options - Dependent on Connectivity and Permissions
  – In Conjunction with the EHR
  – Independent Viewer

• Both are Read Only
Clinical Viewer
Agent

- Floats on Top of the EHR
- Can be Expanded / Minimized
- The Clinician Can Work in Both the EHR and the Agent at the Same Time
Summary

• Prepare as Comprehensively as Possible
• Create Accessible Health IT Systems Which Work Well Together
  – Essential to effective crisis response
• Don’t Forget After Event Review
  – Lessons for the future
Question

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