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Disaster Preparedness

Implications to Supply Chain and the Continuum of Care

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Headlines News…

Hurricane Jose a potential threat to U.S. East Coast next week

Doyle Rice, USA TODAY Published 1:09 p.m. ET Sept. 11, 2017 | Updated 2:17 p.m. ET Sept. 11, 2017

The New York Times

Mexico Earthquake, Strongest in a Century, Kills Dozens

By PAULINA VILLEGAS, ELISABETH MALKIN and KIRK SEMPLE SEPT. 8, 2017

Live Science > Planet Earth

Hurricane Harvey Caused 500,000-Year Floods in Some Areas

By Tia Ghose, Senior Writer | September 11, 2017 01:41pm ET

CNN U.S. » Crime + Justice | Energy + Environment | Extreme Weather | Space + Science

Orlando shooting: 49 killed, shooter pledged ISIS allegiance

By Ralph Ellis, Ashley Fantz, Faith Karimi and Eliott C. McLaughlin, CNN
Updated 11:05 AM ET, Mon June 13, 2016

FOX31 CW2 DENVER

Winds spread 3 large wildfires in northwest Colorado

POSTED 12:09 PM, SEPTEMBER 11, 2017, BY CHUCK HICKEY, *UPDATED AT 12:12PM, SEPTEMBER 11, 2017*

The Weather Channel + US °F

WEATHER MAPS SEVERE VIDEO & PHOTOS ACTIVITIES HEALTH TV SIGN UP FOR NEWSLETTER

HURRICANE NEWS

Irma Hammering Florida: Keys Hit Hard, More Than 6 Million Without Power

By Pam Wright | Sep 11 2017 02:00 PM EDT | weather.com

NATIONAL GEOGRAPHIC

By David Quammen

PUBLISHED JANUARY 28, 2016

Why Zika Is This Year's Scary Virus

It is "spreading explosively" in the Americas and may be the next public health emergency.

Learning Objectives

- Understand the need for disaster preparedness and the potential for mass casualties.
- Understand the role of Supply Chain in emergency preparedness and pre, during, and post disaster.
- Understand the team work necessary across multiple disciplines to effectively respond to a disaster.

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“Everyone has a plan until you get punched in the face”

- Mike Tyson

The Joint Commission®- Emergency Operations Plan

TJC Standards EM.02.01.01, EP 3

- The Emergency Operations Plan identifies the hospital's capabilities and establishes response procedures for when the hospital cannot be supported by the local community in the hospital's efforts to provide communications, resources and assets, security and safety, staff, utilities, or patient care for at least 96 hours.
- *Note: Hospitals are not required to stockpile supplies to last for 96 hours of operation.*
- With the baseline inventory of resources and patient census data, the determination is made with how many hours a hospital can sustain at that rate.

https://www.jointcommission.org/assets/1/6/EM_Stds_Collaboration_2016.pdf

The Joint Commission®-Emergency Operations Plan

- The hospital evaluates all of its capabilities in 6 critical areas:
  - Communications
  - Resources and Assets
  - Security and Safety
  - Staff
  - Utilities
  - Patient Care
- Process for assessing operational capabilities
  - Area(s) of vulnerability?
    - Resourced by the community to sustain operations for a full 96 hours?
    - If no, then planning moves to a partial or full evacuation as an **acceptable** option

How Prepared Are You?

Resource Utilization: Day to Day

- Inventory (in-house & storage)
- Average Daily Census (quarterly)
- Consumption Rate (quarterly average)
- Sustainability (hourly utilization needed)
- Gap Analysis (difference actual vs. needed)
- Consumption Adjustment (modify usage)

Resource Utilization: Assessment

- Inventory = 1200 N95 respirators
- Average Daily Census = 250 occupied beds (300 bed facility)
- Consumption Rate = 20 respirators/hour
- Sustainability = 60 hours
- Gap Analysis = 36 hours

Resource Utilization: Assessment

- Inventory = 1200 N95 respirators
- Average Daily Census = 250 occupied beds (300 bed facility)
- Consumption Rate = 20 respirators/hour
- Sustainability = 60 hours
- Gap Analysis = 36 hours
- Consumption Adjustment (@36th hour) = 8 respirators/hr

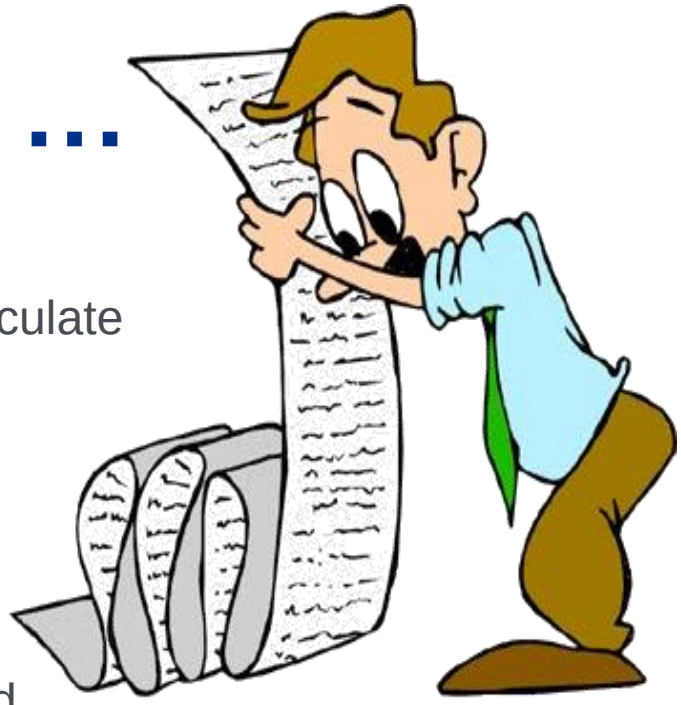
Resource Utilization: Actions

- Consumption Adjustment in respirators (@36th hour = 8 respirators/hr)
  - based on current inventory and above daily census average, adjustment to normal operation of supply.
  - Gap analysis- the difference between 96 hours and available inventory in determining increase of stock pile or inventory.

Resource Utilization: Actions

- **With a gap analysis of 36 hours, leadership determines what responses could occur for this gap**
  - i.e., plans to consumption adjustment, pulling inventory stock and only allotting those with risk patients for inventory, or stage evacuation or transfers.
- **Actions to take:**
  - Wear for more than one patient
  - Provide only to staff at risk
  - Other ideas?

The Challenges of How …



- Calculate daily usage?
  - How do we get our inventory to automatically calculate daily usage?
- Leverage quantity and usage, calculate sustainability over time?
  - How do we pull real-time QOH data and auto populate a dashboard that can calculate sustainability rates in the time increments needed of 0-2 hr.; 2 -12 hrs., etc.?
  - Very important in consideration of manufacturer backorders, solution availability, time of year, etc.
- How do we access and use that data?
- How do we apply the information to on-going and disaster preparedness and response if all of our systems are down?

The Joint Commission®- Emergency Operations Plan

TJC Standards EM.01.01.01, EP 8

- The hospital keeps a documented inventory of the resources and assets it has on site that may be needed during an emergency.

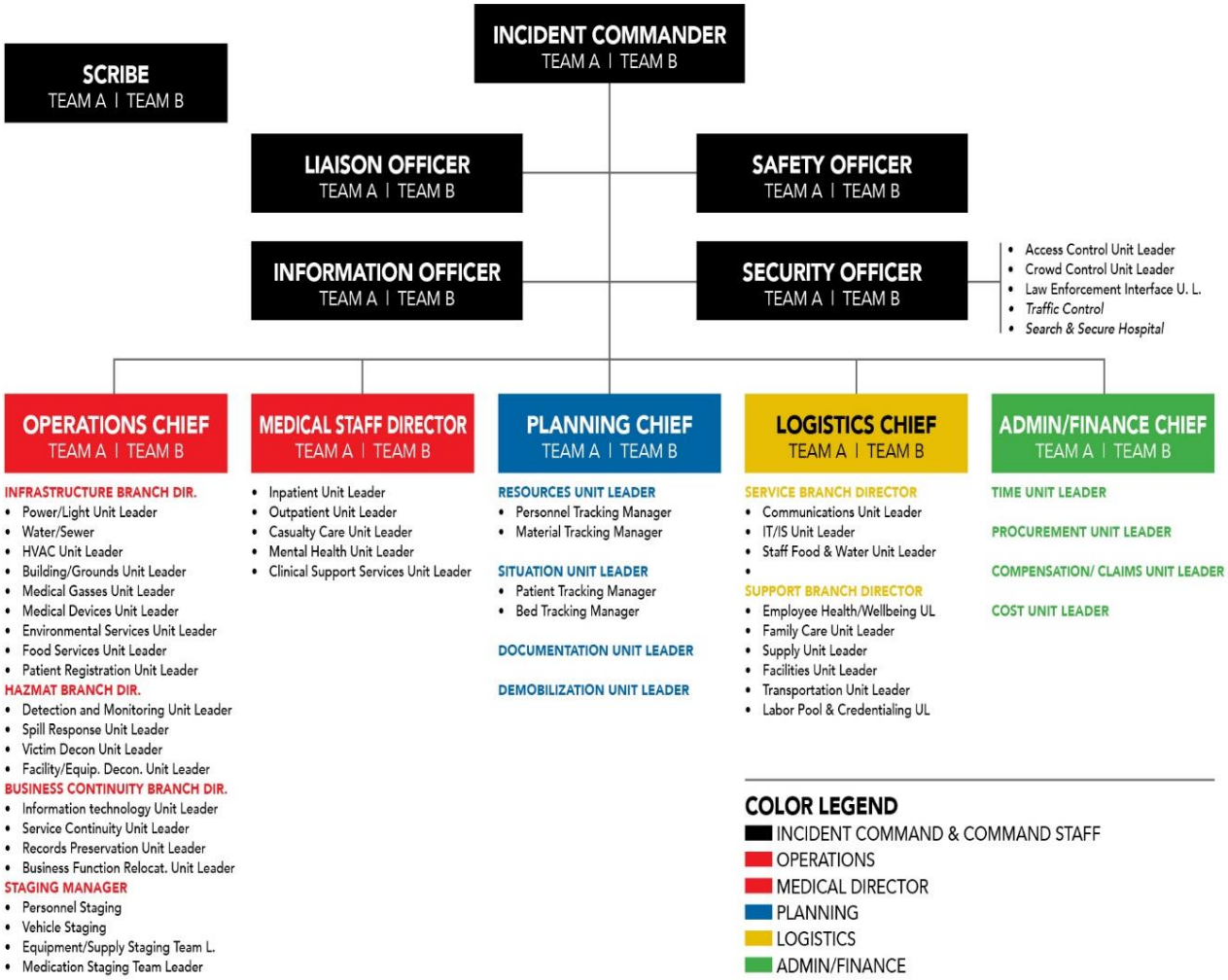
The emergencies are based on the Hazard Vulnerability Analysis including All Hazards. These supplies must be accessible while on site without travel to a warehouse off site.

https://www.jointcommission.org/assets/1/6/EM_Stds_Collaboration_2016.pdf

The Joint Commission®- Emergency Operations Plan

- Documented inventories include but are not limited to:
  - Personal Protective Equipment (PPE)
  - Water
  - Fuel
  - Medical Supplies,
  - Surgical Supplies, and
  - Pharmaceuticals related resources and assets

Provides hospitals and health systems with the tools needed to respond to any type of emergency; internal, locally, regionally, globally.



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Continuity of Operations Plan (COOP)

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10 Common Elements for a COOP

1. Essential Functions – The most critical functions that must be continued under all circumstances
2. Lines of Succession – An order of succession of leadership positions in your facility or system
3. Delegation of Authority – Positions that have the legal authority to carry out particular duties for your facility or system
4. Alternate Facilities or Sites – Facilities or sites other than your primary facility in which your system can carry out its essential functions

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https://www.calhospitalprepare.org/sites/main/files/file-attachments/supply_chain_disaster_preparedness_manual_20170606.pdf

10 Common Elements for a COOP

5. Vital Records, Systems, and Equipment – Records, databases, systems, and equipment needed to support your facility's or system's essential functions
6. Interoperable Communications – Communications to be used during an emergency as well as applicable contact lists, call down rosters, and logs of trainings and drills

https://www.calhospitalprepare.org/sites/main/files/file-attachments/supply_chain_disaster_preparedness_manual_20170606.pdf

10 Common Elements for a COOP

7. Human Capital Management – How employees will be trained on your facility's or systems COOP and how you will communicate with them during a COOP event as well as other programs available for home and family preparedness, if applicable
8. Testing and Exercising – How staff will be tested on the COOP and how the COOP will be evaluated

https://www.calhospitalprepare.org/sites/main/files/file-attachments/supply_chain_disaster_preparedness_manual_20170606.pdf

10 Common Elements for a COOP

9. Devolution – How your agency will deal with a catastrophic event that wipes out your primary facility and most, if not all, of your employees. This can be done through using other facilities and their staff members to carry out the essential functions of your agency, training them, exercising with them, and allowing access to the vital systems, records, databases and equipment they would need to fulfill those functions

https://www.calhospitalprepare.org/sites/main/files/file-attachments/supply_chain_disaster_preparedness_manual_20170606.pdf

10 Common Elements for a COOP

10. Restoration and Recovery – Actions and resources needed to restore essential functions; vital records, systems, and equipment; and communication systems to pre-emergency operating conditions

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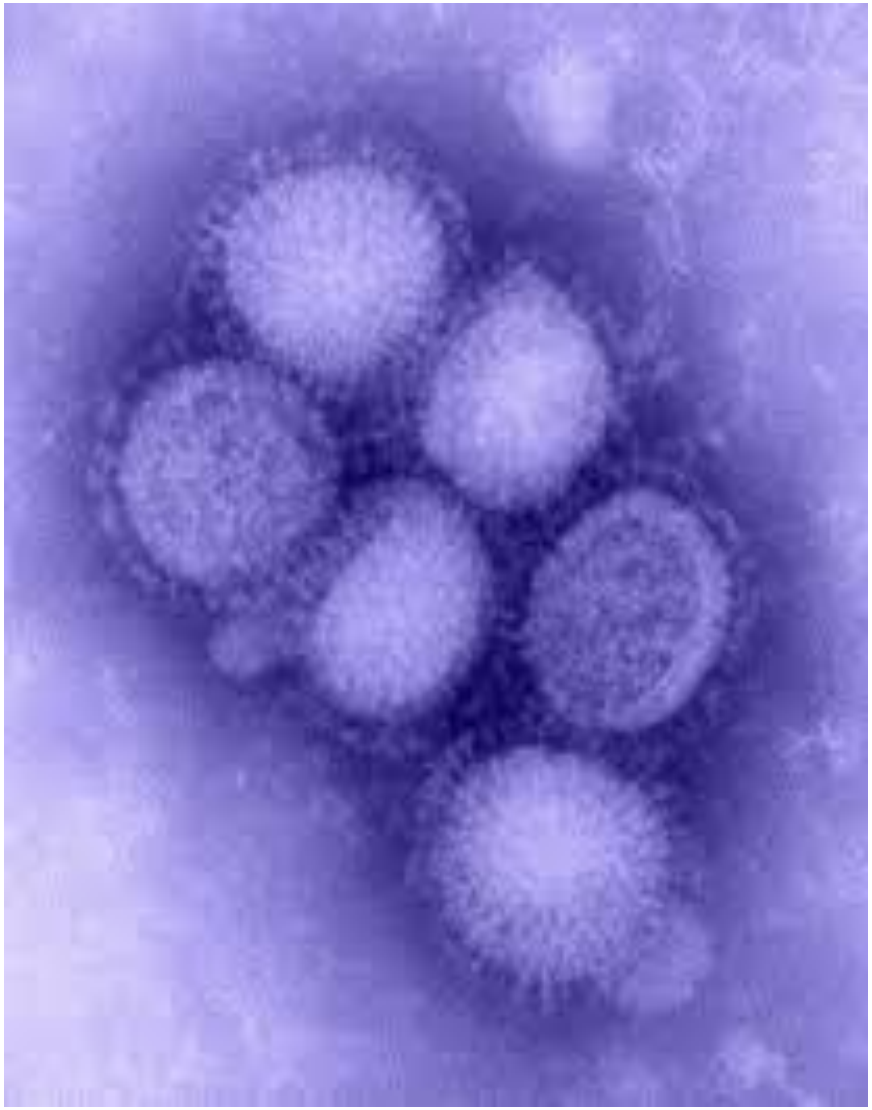
https://www.calhospitalprepare.org/sites/main/files/file-attachments/supply_chain_disaster_preparedness_manual_20170606.pdf



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Man-made and Natural Disasters

- Generally local or regional events
  - Fires, Blizzards, Tornados, Terrorist Event
- Impact could be far reaching
  - Port closures
  - Med/surg/pharma manufacturing impact
  - Distribution impact

Pandemic Preparedness

- Pandemic Preparedness is different from most man made or natural disasters
- Low use, low demand supplies immediately become high demand when WHO declares a pandemic
- Everyone, world-wide is competing for the same scare resources

Pandemics and the Connected World

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http://www.theguardian.com/world/ng-interactive/2014/aviation-100-years

The Reality of Medical Product Distribution

- Inventory has been reduced and inventory turns increased to lower “on hand” supply chain inventory cost
- Hospital customers are also reducing inventory in favor of “low unit of measure” purchasing with more frequent delivery of products
- Pricing pressure as more rapid product commoditization forces disposable products manufacturers to reduce inventories and source outside of U.S. = *longer lead times*

Distributor Order Management Event Protocol

- Distributors very quickly increase orders to manufacturers
- Manufacturers unable to satisfy demand implement allocation programs based upon historical purchasing profiles
- Distributors also implement allocation programs, ensuring product flows to accounts who have historically consumed the product
- Distributor Order Management System protects constrained inventory for higher priority customers:
  - Only generates reservations for “forecasted” items
  - Requires customer-level forecasting (CLF) of projected demand
  - Buffer stock (available inventory less reservations) remains first come, first served
  - Provides an accounts hierarchy to allow for prioritization

Current Opportunities, Best Practices

- Build on hospital tiering (proven success from Ebola)
- Utilize private sector capabilities
- Collaborate to increase supply chain elasticity
- Reactive approach to adverse events leads to potential product issues
  - First call is to distributor, not manufacturer, which requires distributors to be more informed of appropriate response
  - Hospital's investment in strategic inventory
- The real-time nature of events causes hospitals to react based on *perceived* product needs
  - Clearer direction from governmental agencies regarding products required and the level of response
  - Confusion and "singularly" focused purchasing creates supply chain havoc and disrupts product availability for where it is most needed

Supply Chain's Role

- Supply Chain's relationships internal and external to the organization
  - Vendors, GPO's, Community Resources, Governmental, etc.
  - A source for the delivery of necessary supplies before, during, and post disaster
  - List of preferred products and acceptable substitutions by type of event
- Vendor emergency contact list with alternative contact numbers
  - Print multiple hard copies (paper is not affect by power outages)
- A resource for the planning and sourcing of supplies to include in emergency planning
  - Non-perishable food supplies
  - Cots and/or air mattresses
  - Linens, flashlights, batteries
  - Fuel

Travel restrictions were imposed to ease congestion. As mass transit slowly came back online, it was extremely difficult for delivery vehicles and health care workers to get to the hospitals.

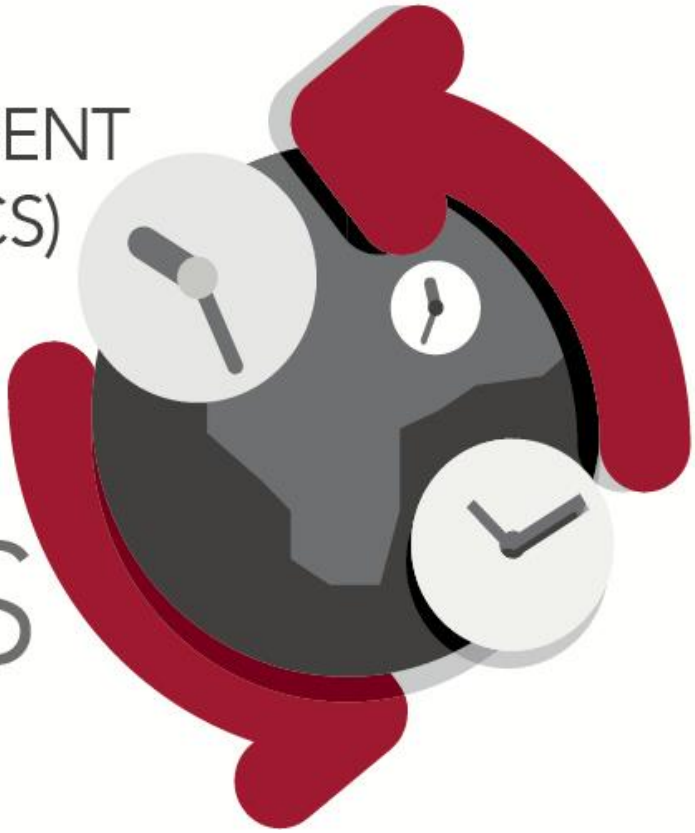
Supply Chain's Role

- Consider your GPO as a part of your first response team. The mission of delivering the right products to the right patients at the right time becomes more critical when trying to ensure continuity of care during an emergency.
  - Utilize their network of manufacturers and distributors to locate what you need, and arrange for it to be delivered as quickly as possible if your local supplier is unable to deliver due to their warehouse being compromised, or because demand for supplies increased during the emergency

Orlando Regional Medical Center Case Study: Pulse Night Club Shooting

- Sunday June 12, 2016 at 3:14 am HICS Activated
- Monday June 13, 2016 at 2:38 pm HICS Deactivated

HOSPITAL INCIDENT COMMAND (HICS)
IN EFFECT FOR
34 HRS
48 MINS



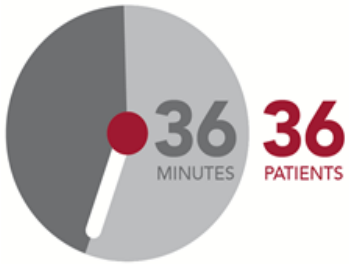
The deadliest mass shooting in modern U.S. history – 49 lives lost and countless others scarred

Preparedness / Drills

- What saves lives
  - Previous Training
  - Command Structure
  - Processes
  - Supplies
  - Review/Survey survival results
  - Monthly trauma alert drills
- Mass Casualty Incident (MCI Drills
  - First ORMC MCI drill in 2010
  - Most recent drill in March 2016
    - Community-wide drill with ORMC, FBI, local police, fire & EMS)
    - Scenario was a active shooter
    - Two waves of patients

EMERGENCY

32 STAFF IN ED INITIALLY,
ESCALATED TO 51
IN THREE HOURS



47 patients

- ORLANDO REGIONAL MEDICAL CENTER
- DOCTOR PHILLIPS HOSPITAL
- HEALTH CENTRAL HOSPITAL

17,370

SPECIALTY
SURGICAL SUPPLIES
[STAPLES, SCREWS & BOLTS]
WERE **USED IN THE OR**

15 PATIENTS
ON LIFE SUPPORT
INITIALLY

18

THERAPY DOGS
VISITED PATIENTS
& FAMILY MEMBERS

CALLS TO OUR OPERATORS ON
SUNDAY, JUNE 12

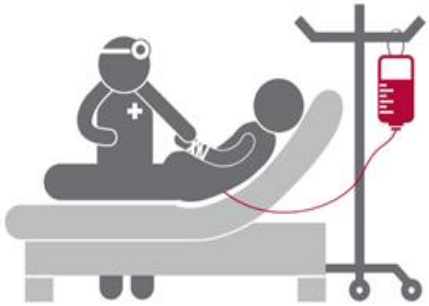
250 PEOPLE

LOOKING FOR
LOVED ONES
AT **ORMC**

IN CELL PHONE CHARGERS
PURCHASED FOR THE FAMILIES

AVERAGE USE FOR
ONE DAY IS **35 UNITS**

ORMC KEEPS
300 TOTAL
BLOOD PRODUCTS
ON-HAND EVERY-DAY



1 PATIENT
USED **200**
UNITS
OF BLOOD

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COST QUALITY OUTCOMES

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JUNE 14
PRESS EVENT
WITH 300+
MEDIA
OUTLETS
IN ATTENDANCE

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Culture and Planning Proved Beneficial

- Exceptional clinical care
- Quick activation of emergency plan and HICS
- Prior exercises and drills
- Took care of front-line staff and other team members
- Our “system-ness” allowed for shared staff
- Communication to media and team members
- Care and compassion for the families
- Central supply restocked quickly
- Seasoned clinical team
- Extensive use of social media

Lessons Learned, Things to Consider

- There was no script for this event
- Protecting privacy with multiple “John Does” and a rapidly changing situation
- Road closures had an impact on accessibility to ORMC
- Taking care of front-line staff and other team members
- Communication to media and team members
- Care and compassion for the families
- Close proximity = little to no notice
- No drill planned for all patients coming to one hospital
- Two weeks of media presence on campus/invasive press
- Security impact, during and post event

Learning Objectives revisited

- Understand the need for disaster preparedness and the potential for mass casualties.
- Understand the role of Supply Chain in a disaster.
- Understand the team work necessary across multiple disciplines to effectively respond to a disaster.

Recap

- Supply chain's role is to assure the uninterrupted, efficient movement of supplies and services to hospital customers:
  - Maintain high service levels, access to branded and alternative supplier products
  - Experts in logistics, driving out supply chain inefficiencies
  - Manage inventory to reduce hospital carrying costs for disposable medical products
- Efficiency in emergency supply chain management means allocating adequate resources to achieve the greatest aggregate benefit for as many people as possible

Recap

- Having a strong supply chain emergency preparedness plan in place before the emergency occurs is truly “half the battle.” A crucial element is the enormous amount of work that is done by dedicated teams of people who communicate year-round
  - Highlight the importance of constant communication between your facilities core team and the outside agencies and entities
  - They will be your partners during emergencies and crucial to any successful plan
  - Your preparedness plan should be regularly updated as you learn from your own experiences and the experiences of others

Recap

- Make sure your plan adheres to the 3 C's
  - Cooperation
  - Collaboration
  - Communication
- Crisis often brings out the best in people, and the health care community is no different
  - Objective is to minimize disruption to patient care
  - Accepting patients from evacuated facilities
  - Sharing precious resources without knowing when supplies will be replenished

Recap

- Possibly the most important lesson is that **not only is a back-up plan essential, but having *a back-up* to the back-up plan** will inevitably help your facility better respond during emergencies

Supply Chain Disaster Preparedness Manual

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

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http://www.ahrmm.org/resources/tools/supply-chain-disaster-preparedness-manual.pdf

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Thank You!