Key Issues in Hospital Preparedness

March 28, 2013
Agenda

- Introductions (Dara Lieberman, TFAH and Lindsay Punzenberger, Roundtable)
- Dr. David Marcozzi, MD
  - HHS National Healthcare Preparedness Programs
- Dr. Eric Toner, MD
  - Center for Biosecurity of UPMC
- Dr. Christopher McStay, MD, FACEP
  - Bellevue Hospital Center
- Q&A
Dr. David Marcozzi

- Director, National Healthcare Preparedness Programs, U.S. Department of Health and Human Services
A Thread of Preparedness Within Health Care

David Marcozzi, MD, MHS-CL, FACEP
Director, National Healthcare Preparedness Programs
Office of Preparedness and Emergency Operations
Office of the Assistant Secretary for Preparedness and Response
Our Current Situation

• The United States health care delivery system is focused on cost reduction which includes service retraction resulting in “just-in-time” (JIT) operating principles and staffing.

• While United States health system emergency preparedness and response mechanisms are established and operational, they can be fragmented and are restrained by a JIT approach.

• The United States continues to experience overcrowding in emergency departments with limited mechanisms to reallocate patients throughout the hospital or the community.

• Our day to day system does not serve us well; therefore, it is not likely to serve us well on “game day.”

Darling, M, Wise, S.  Not Your Father’s Supply Chain, MATERIALS MANAGEMENT IN HEALTH CARE, APR 2010
Hospitals Failing to Address Patient Boarding (2012) www.acpnews.com/index.php?id=514&tx_ttnews%5Btt_news%5D=1555&cHash=2125d52f1ab0ae3132812440243e7f70
Preparedness and Health Care Delivery

National Healthcare System Capacity

Coalition Preparedness

Decreasing Capacity

100% Prepared

Gap

Coalitions
Preparedness and Health Care Delivery

National Healthcare System Capacity

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Gap

Coalitions
• National Health Expenditures grew 4.0% to $2.5 trillion in 2009, or $8,086 per person, and accounted for 17.6% of Gross Domestic Product (GDP).

• 2010, hospital expenditures were $814 Billion (CMS)
  - According to the American Hospital Association, there are 5,754 hospitals in the United States
  - Average Hospital Expenditures = approx $141 million

• The Hospital Preparedness Program 2012 budget is $347 million (0.0001% of overall National Health Expenditures)
Our Current Need

• A comprehensive national preparedness and response health care system that is scalable and coordinated to meet local, State and National needs

• A dual use application to preparedness, integrating with and improving the efficiencies of daily health delivery

• A financially sustainable approach to preparedness

• A population based health delivery model for disaster response

• Defined Healthcare Preparedness Capabilities and Performance Measures
1) Health Care System Preparedness *(Health Care Coalitions)*
2) Health Care System Recovery
3) Emergency Operations Coordination
5) Fatality Management
6) Information Sharing
10) Medical Surge *(Immediate Bed Availability)*
14) Responder Safety and Health
15) Volunteer Management

Health Care Coalitions (HCC)

- Alternative Care Sites
- Behavioral Health
- Community Based Organizations
- Community Health Centers
- Dialysis Facilities
- Emergency Management
- Emergency Medical Services
- Faith Based Organizations
- Hospitals
- Long Term Care Facilities
- National Disaster Medical System
- Primary Care Providers
- Public Health
- Private Insurance
- Urgent Care Facilities
- Volunteers
The New “Medical Surge”

1. Evidence Informed
2. Operationally Tenable
3. Economically Sustainable
4. Ethically Grounded
Immediate Bed Availability (IBA)

• Goal: To quickly provide higher-level care to more serious patients during a disaster with no new space, personnel, or equipment

• HPP 2012 Medical Surge Capability Performance Measure

• Ability (of coalitions) to provide no less than 20% bed availability of staffed members’ beds, within 4 hours of a disaster
• Engages a Health Care Coalition in response
• Builds on and strengthens daily delivery of care
• Promotes an integrated local, State and national health care system to respond to disasters
• Minimizes the need to transition to Crisis Standards of Care
“Medical Surge”

Former Construct

New Construct

Additional Surge

ICU

Step Down

MED/SURG/OB

Additional Surge

ICU

Step Down

MED/SURG/OB
Immediate Bed Availability

Hospital(s)

- Stroke/MIs
- High Acuity Psychiatric patients
- ICU Patients
- Acute Surgical Patients
- Imminent OB delivery
- Convalescing
- Awaiting discharge
- Behavioral Health Issues
- Social Issues
- Acute
- Post Operative Patients
- Elective Procedures Cancelled

HCC Partners

- Long Term Care
- Community Health Centers
- Home
IOM Crisis Standards of Care Work

Source: IOM Crisis Standards of Care Report
Questions
Dr. Eric Toner

- Senior Associate with the Center for Biosecurity of UPMC
Center for Biosecurity
Presentation to
Roundtable on Critical Care Policy
Trust for America’s Health
*Key Issues in Hospital Preparedness*

Eric S. Toner, MD
March 28, 2013
WHAT SANDY TAUGHT US ABOUT HOSPITAL EVACUATION AND HEALTHCARE PREPAREDNESS
HURRICANE SANDY STORM TRACK
ATLANTIC CITY BOARDWALK
MANTOLOKING, NJ
NEW YORK HARBOR
STATEN ISLAND BEFORE AND AFTER

Center for Biosecurity
A RISING TIDE OF WEATHER-RELATED DISASTERS

CATASTROPHE COUNT
An increase in severe storms is helping to drive up the number of recorded disasters, but this cannot be conclusively attributed to climate change.

- Climatological (extreme temperature, drought, forest fire)
- Hydrological (flood, mass movement)
- Meteorological (storm)
- Geophysical (earthquake, tsunami, volcanic eruption)
- Trend

Schiermeier Q. *Nature* 2012; 481:124-125 [data from Munich Re]
WHAT DID SANDY TEACH US?
Safe large scale hospital evacuations are possible but still fraught with potential hazard.

The decision to evacuate or not is not necessarily stochastic (all or nothing). There are things that facilities can do to hedge their bet if they decide to shelter—preparing for plan B.

Despite the critical role that health departments and coalitions play in helping to coordinate patient transfers, there will always need for bilateral discussions between the sending and receiving facilities. Clinicians will always need to speak to clinicians.

The impact on surviving hospitals may be more from the prolonged closures of the evacuated hospitals than the acute evacuation surge.

Preparation for evacuations is not solely about the facility being evacuated it is also about the receiving facilities.
Regionalization of ARDS Care: A concept whose time has come?
190,600 cases per year in the US
• 59% diagnosed outside tertiary care centers
• 20-25% mortality rates → 74,000 deaths
  – 20% of deaths simply from refractory hypoxemia
STATE OF THE ART, EVIDENCE-BASED ARDS CARE

- **Mechanical Ventilation**
  - Low-tidal volume ventilation (6 mL/kg)
    - 22% mortality decrease

- **Dry volume status**
  - Increased ventilator free time and ICU-free days

- **High PEEP**
  - Relative mortality reduction of 10%

- **Paralytics**
  - Decreased mortality with P/F < 120
  - Decreased ventilator free days
“RESCUE THERAPIES”

- Prone Position Ventilation
- High Frequency Oscillating Ventilation
- Nitric Oxide
- Prostacyclin

None have shown an improvement in survival but can buy time
EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)

Like traditional cardiac bypass but venous-venous

– Rationale for use in respiratory failure
  • Give lungs time to recover, then wean off
– Standard of care in neonatal hypoxia, may be life saving in selected adults
2009 H1N1 PANDEMIC

• U.S. figures from 2 national case series
  – 61 million cases of H1N1
  – 274,000 hospitalizations
    • ~30% admitted to the ICU
  – 12,500 deaths
  – 38% of flu patients admitted to ICU developed ARDS
    • 24% died
H1N1 AND ECMO

- Southern Hemisphere, 1/3 of mechanically ventilated patients received ECMO
  - 21% mortality
- UK: 55% decrease in mortality in those referred for ECMO
  - Only 86% actually received ECMO
WILL SPECIALIZED CARE BENEFITS SEVERE ARDS PATIENTS?

• High volume centers for mechanical ventilation
  – 37% reduction in odds of death in the ICU in high volume centers (>400 year) vs. those with the lowest volume (<150 year)

• Night time intensivist staffing
  – In ICUs without a day time intensivist, adding a nighttime intensivist reduces death by 38%
REGIONALIZATION OF CARE

• Regionalization exists for:
  – Trauma
  – STEMI
  – Transplantation
  – Stroke

• Multiple studies have shown decreased mortality
• Joint Commission and 3rd party payers recognize the value
Facts about Disease-Specific Care Certification

The Joint Commission’s Disease-Specific Care Certification Program, launched in 2002, is designed to evaluate clinical programs across the continuum of care. Joint Commission accredited organizations may seek certification for virtually any chronic disease or condition. A list of certified programs includes (but is not limited to):

- Acute coronary syndrome
- Alzheimer’s disease
- Asthma (pediatric)
- Brain injury rehabilitation
- Breast cancer
- Cardiac rehabilitation
- Carotid stenosis
- Chemical dependency
- Congestive heart failure
- Depression
- Diabetes mellitus
- Eating disorders (anorexia and bulimia)
- End stage renal disease
- Epilepsy
- Hip fracture
- Hypertension
- Joint replacement
- Laminectomy
- Lung cancer
- Osteoporosis
- Peripheral vascular disease
- Pneumonia
- Sickle cell disease
- Stroke rehabilitation
- Wound care

Certification process

Certification requirements address three areas:

- Compliance with consensus-based national standards.
- Effective use of evidence-based clinical practice guidelines to manage and optimize care.
- An organized approach to performance measurement and improvement activities.

Disease-specific programs that successfully demonstrate compliance in all three areas are awarded certification for a two-year period. At the end of the first year, the organization is required to attest to its continued compliance with standards and provide evidence of performance improvement activities. To maintain certification, the cycle repeats with an on-site review conducted every two years and a bi-annual submission of an acceptable assessment of compliance by the organization.

Advanced certification

The Joint Commission has developed an advanced level of certification in five clinical areas. These programs must meet the requirements for Disease-Specific Care Certification plus additional, clinically-specific requirements and expectations. The Joint Commission offers Advanced Certification for the following conditions and procedures:

- Chronic kidney disease
- Chronic obstructive pulmonary disease
- Heart failure
- Inpatient diabetes
- Primary stroke center

CMS national coverage decisions

Certification by The Joint Commission is required by the Centers for Medicare & Medicaid Services (CMS) for hospitals seeking reimbursement for these services:

- Lung volume reduction surgery
- Ventricular assist device
HOW WOULD IT WORK?

FIGURE 1

- Patient Presents to Hospital A
- Diagnosis of Severe ARDS
- Application of Triage Tool
- Telemedicine consultation with intensivist
- RECS for Local Care
- Routine Care
- Transfer

- Meets threshold
- Does not meet threshold
NEXT STEPS

• Professional society buy-in
• Measurable outcomes that Joint Commission can use to accredit
  – ELSO Center’s of Excellence
• Third-party payer recognition of value
• Avoidance of over-expansion of these centers
• Transportation issues
Dr. Christopher McStay

- Chief of Service, Bellevue Hospital Center Emergency Department and Assistant Professor of Emergency Medicine, NYU/Bellevue Department of Emergency Medicine
Lessons Learned from Sandy

Chris McStay, MD, FACEP
Chief of Service, Bellevue Hospital Center Emergency Department
Assistant Professor of Emergency Medicine

Department of Emergency Medicine, NYULMC School of Medicine
Bellevue Hospital Center

• Opened in 1736
• 828 beds
• 120k ED visits
• 14k Psychiatric ED visits
• 2,800 ambulances a month
• 400k outpatient visits
Map of hospital evacuations in Manhattan during Hurricane Sandy:

- **New York University Langone Medical Center**: Evacuation date: Monday, October 29
- **Bellevue Hospital**: Evacuation date: Wednesday, October 31
- **Manhattan VA Medical Center**: Evacuation date: Sunday, October 28
- **Beth Israel Medical Center**: Remained open
- **New York Downtown Hospital**: Evacuation date: Sunday, October 28

Legend:
- Blue: Closed hospital or medical center
- Green: Open hospital or medical center
- Red: Closed dialysis centers
- Orange: Beth Israel dialysis center set up after the storm
- Pink: Highest risk of flooding from hurricane's surge (Zone A)
The Day of the Storm

• New York Downtown and VA evacuated

• Many lessons learned from Irene preparation

• 733 inpatients

• 40 ED patients
Monday October 29th

• 182,000 square foot basement
  – FDR to 1st Avenue

• 10-17 million gallons of water

• Bucket Brigade
Tuesday Oct 30th

• ED fully evacuated and closed

• Hospital building on generator power

• Ambulatory Care and ED without power

• Many systems impacted and failing
Wednesday to Thursday

• 269 patients discharged
• 464 patients transferred

• All patients accounted for
  – Family contacted
  – Follow-up handoffs for clinicians

• Outpatient visits redirected
Reopening

- 11/19  Primary Care and 24/7 Urgent Care
- 11/26  12 specialty clinics
- 12/3   10 additional specialty clinics
- 12/10  ED reoccupied (Urgent Care)
- 12/17  Adult Psychiatry
- 12/24  Freestanding ED (EMS receiving)
- 2/7    Full reopening
Freestanding ED

• Commitment to our community

• EMS and partner hospital planning

• 7,000 visits in January

• Many transfers to inpatient units
KEPT CALM AND CARRIED ON
BELLEVUE HOSPITAL CENTER
N.Y.C.

Bellevue
Unsinkable
Since 1736
Questions?

- Please type your question into the “Questions” box on the right side of your screen.