



United States Department of

Health & Human Services

Office of the Assistant Secretary for Preparedness and Response



Immediate Bed Availability: Surge Capacity for Today's Healthcare System

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2013 Preparedness, Emergency Response and Recovery Consortium and Exposition

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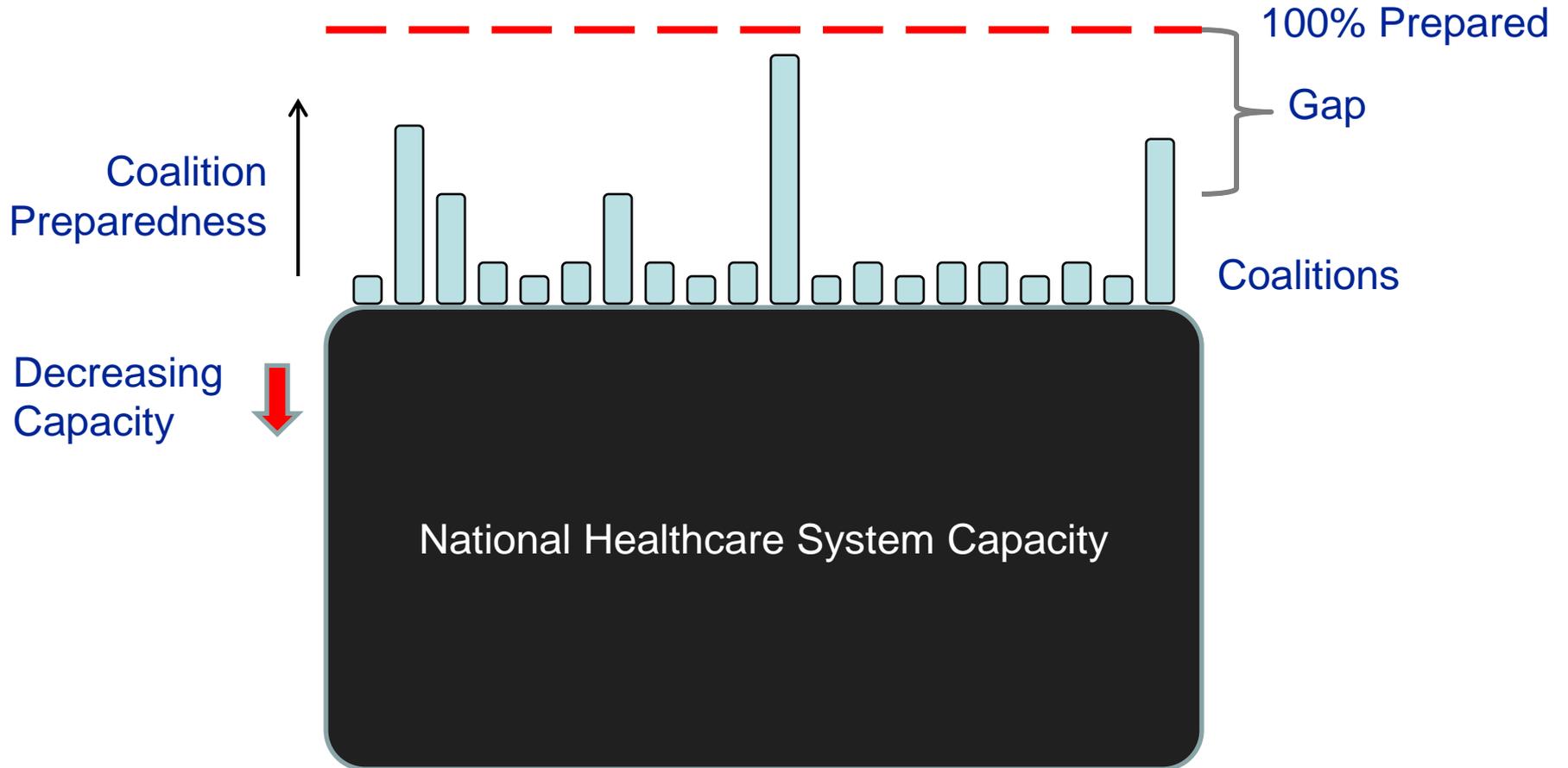


Our Current Situation



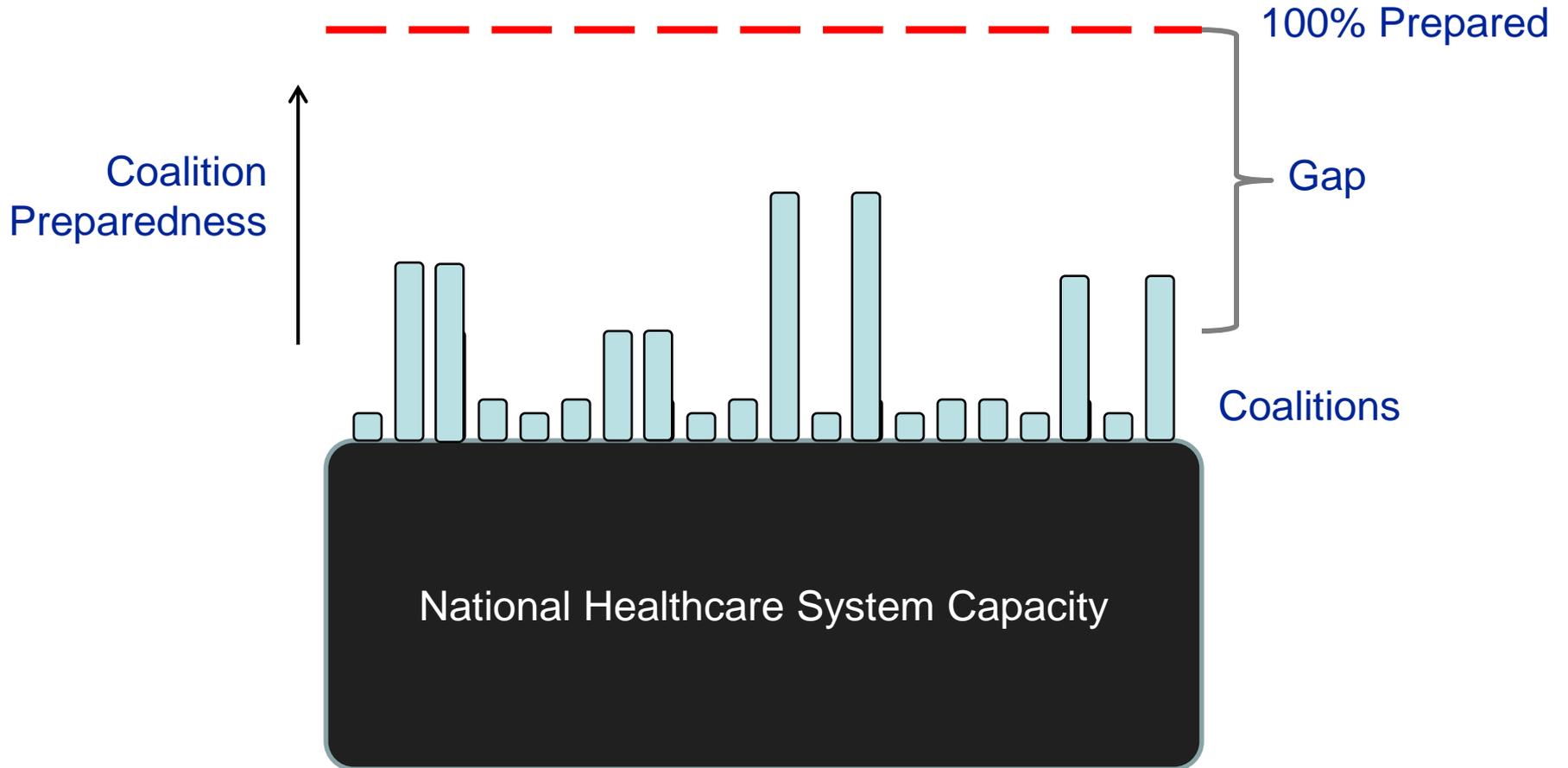
- The United States health care delivery system is focused on cost reduction which includes service retraction resulting in “just-in-time” (JIT) operating principles and staffing.
- While United States health system emergency preparedness and response mechanisms are established and operational, they 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.”

Preparedness and Health Care Delivery





Preparedness and Health Care Delivery





Health Care & Preparedness Financials



- 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)**

Sources: Darling, "Not Your Father's Supply Chain," [Materials Management in Healthcare](#), April 2010.
The Future of Emergency Care in the United States (2006) www.iom.edu/Activities/Quality/emergencycare.aspx
Hospitals Failing to Address Patient Boarding, 2012,
www.acepnews.com/index.php?id=514&tx_ttnews%5Btt_news%5D=1555&cHash=2125d52f1ab0ae31328f2440243e7f70



Our Current Need



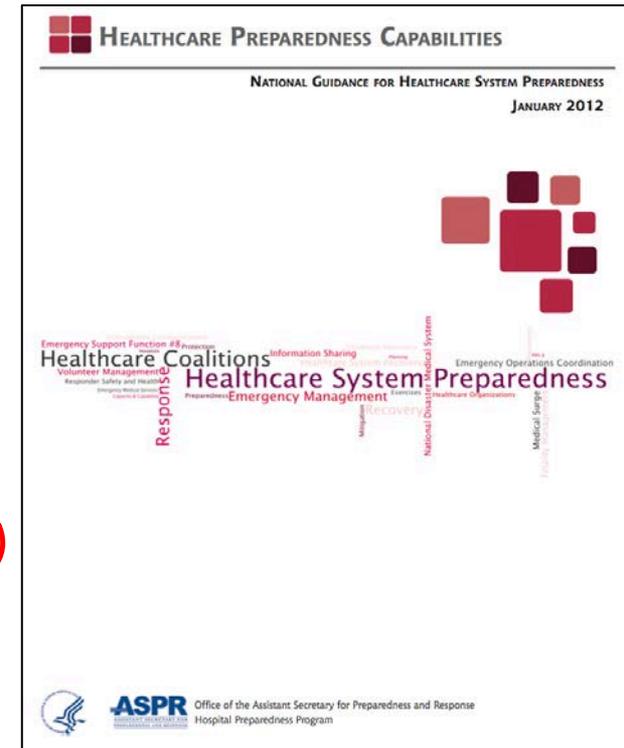
- A comprehensive national preparedness and response health care system that is scalable and coordinated to meet local, state and national needs
- A dual use application to preparedness, integrating and improving the efficiencies of daily health delivery
- A financially sustainable approach to preparedness
- A population based health delivery model for disaster response
- Defined Healthcare Preparedness Capabilities and Performance Measures



National Healthcare Preparedness Capabilities

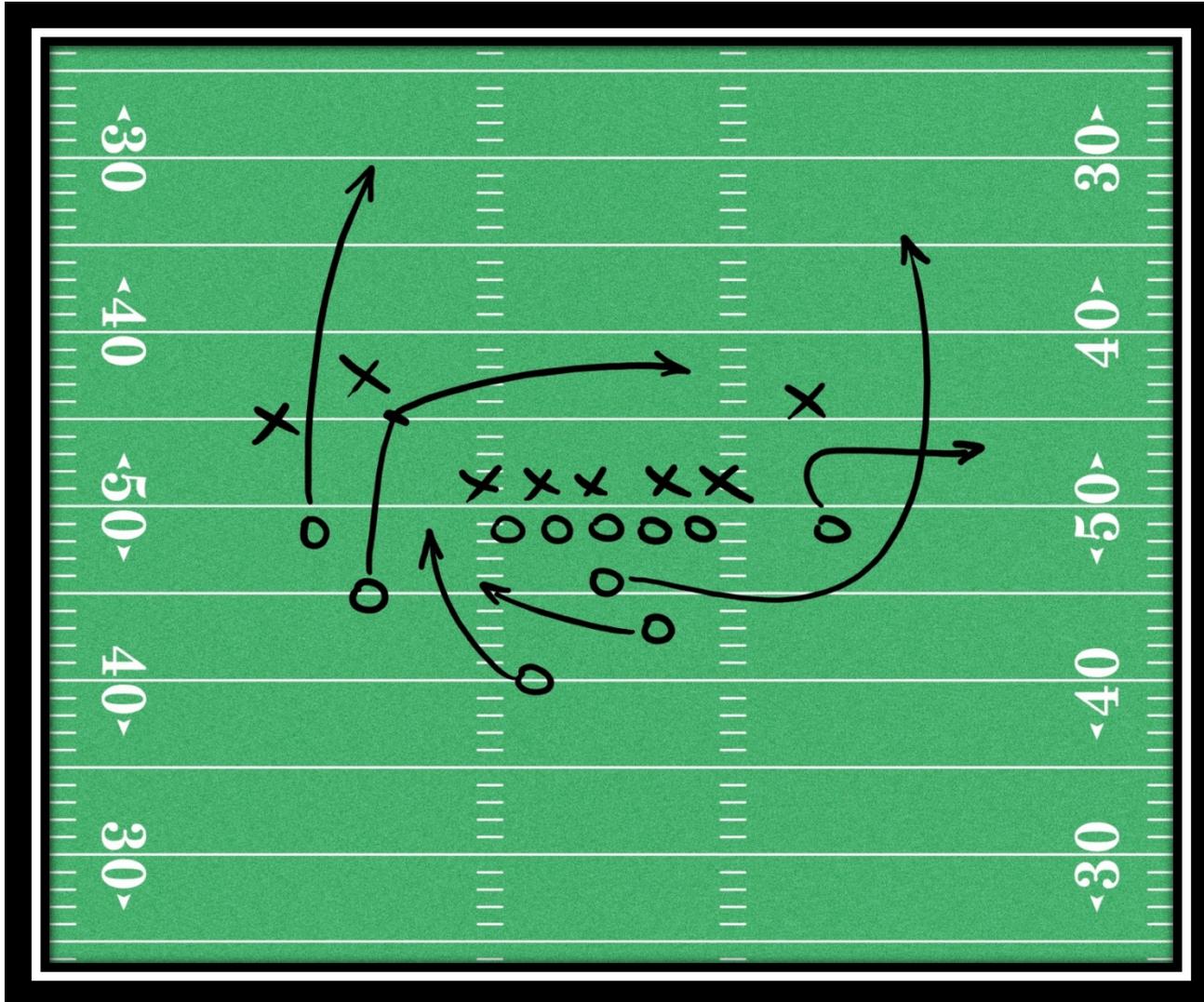


- 1) Health Care System Preparedness (*Health Care Coalitions*)
- 2) Health Care System Recovery
- 3) Emergency Operations Coordination
- 5) Fatality Management
- 6) Information Sharing
- 10) Medical Surge (*Immediate Bed Availability*)
- 14) Responder Safety and Health
- 15) Volunteer Management



Download here: <http://www.phe.gov/preparedness/planning/hpp/reports/documents/capabilities.pdf>

Capabilities: Offense, Defense, Special Teams

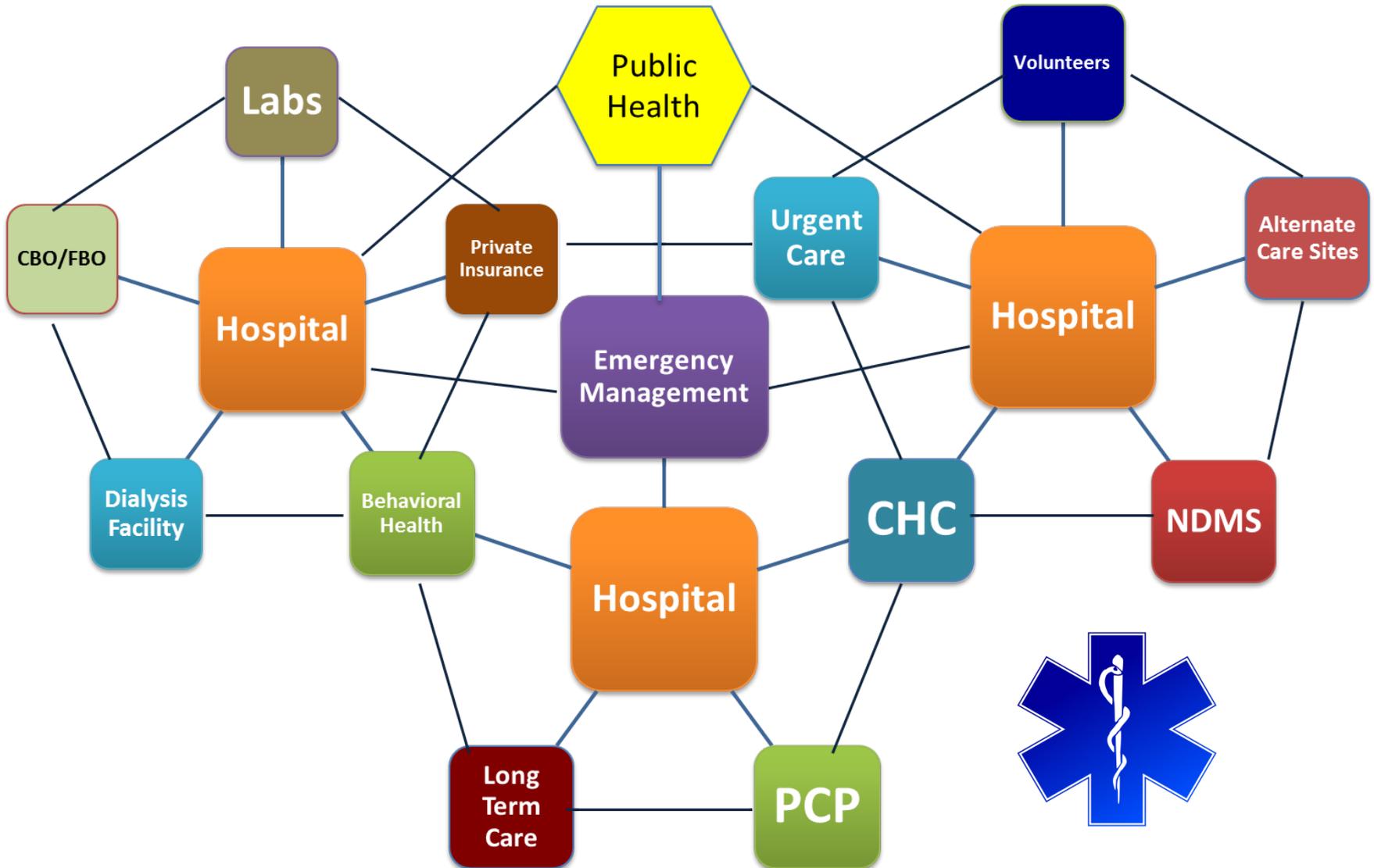


Healthcare Coalitions: A Strong Foundation



Healthcare System Preparedness (Health Care Coalitions)

Health Care Coalition (HCC)

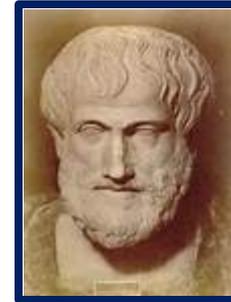




Health Care Coalitions (HCC)



“The whole is greater than the sum of its parts.”



Aristotle



Medical Surge



“Of particular concern are questions about the ability of health care systems to ‘surge ‘, - that is, to have the staff and resources in place to adequately care for increased numbers of affected individuals or individuals with unusual or highly specialized needs.”

GAO Report, March 2013

National Preparedness: Improvements Needed for Measuring Awardee Performance in Meeting Medical and Public Health Preparedness Goals

Medical Surge

- Medical surge: An Achilles' Heel
- A fault or weakness that causes or could cause someone or something to fail





The New “Medical Surge”: 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*



The New “Medical Surge”



- Evidence Informed
- Operationally Tenable
- Economically Sustainable
- Ethically Grounded



IBA: Evidence Informed Reverse Triage



Reverse Triage: Inpatients at low risk for untoward events would be discharged or transferred back to the community

Reverse Triage Study (Maryland: Kelen)

- Study: 3 hospitals, 19 week monitoring, 1,632 total beds
- Hospitals achieved a net surge capacity of 66-81% after accounting for non-disaster emergencies
- Majority of surge would have been available 24-48 hours after disaster



IBA: Operationally Tenable: Space



- **Every day, approximately 20% of hospital patients are discharged**
- **Every day, even more patients may be available for discharge**
- Clinically stable patients with few parenteral medications may be appropriate for early discharge
- Strategies to expedite discharge:
 - Discharge holding lounge
 - Convert private rooms to double rooms
 - Reopen closed areas
 - Utilize hallways
 - Convert patient areas to critical care areas
 - Temporary external structures for patient holding
 - “Flat space” (e.g. lobbies, waiting rooms, hallways) can open 10% operating bed capacity



IBA: Operationally Tenable: Staff



Staffing is likely to be the key restriction on the number of patients that facilities and coalitions can accommodate

HCCs should consider:

- Protocols for revision of staff work hours
- Callback of off-duty personnel
- Use of non-clinical staff
- Local Medical Reserve Corps
- Untraditional patient care providers (e.g. family members, nonprofessional personnel such as city employees)
- Surge plans for home care agencies and clinics
- Fewer, larger staffed off-site facilities will benefit from economies of scale



IBA: Economically Sustainable



Building disaster preparedness into existing healthcare systems makes the process economically sustainable

- Allows for surge capacity without extra “staff, space, or stuff”

Private partners and insurance companies need to be involved

- Billing will be an issue but can be mitigated through stakeholder buy in



IBA: Ethically Grounded



During overwhelming disasters:

- **Decisions must be made as to who can best be served**
- **Medical ethics grounded in: autonomy, beneficence, non-maleficence, and justice**

Consent to “be triaged” is implicit in consent to give medical care:

- **Applied in routine clinical care, military operations, public health, or population level emergencies**
- **Utilitarian vs. egalitarian, proportionality of care**
- **Victims of disaster treated equally to existing patients**

IBA: Performance Measure





Medical Surge Measures



Percent of healthcare coalitions (HCCs) that have a coordinated mechanism established that supports their members' ability both to deliver appropriate levels of care to all patients (including pre-existing patients [both inpatient and outpatient], non-disaster-related patients, and disaster-specific patients), as well as to provide no less than 20% bed availability of staffed members' beds, within 4 hours of a disaster.



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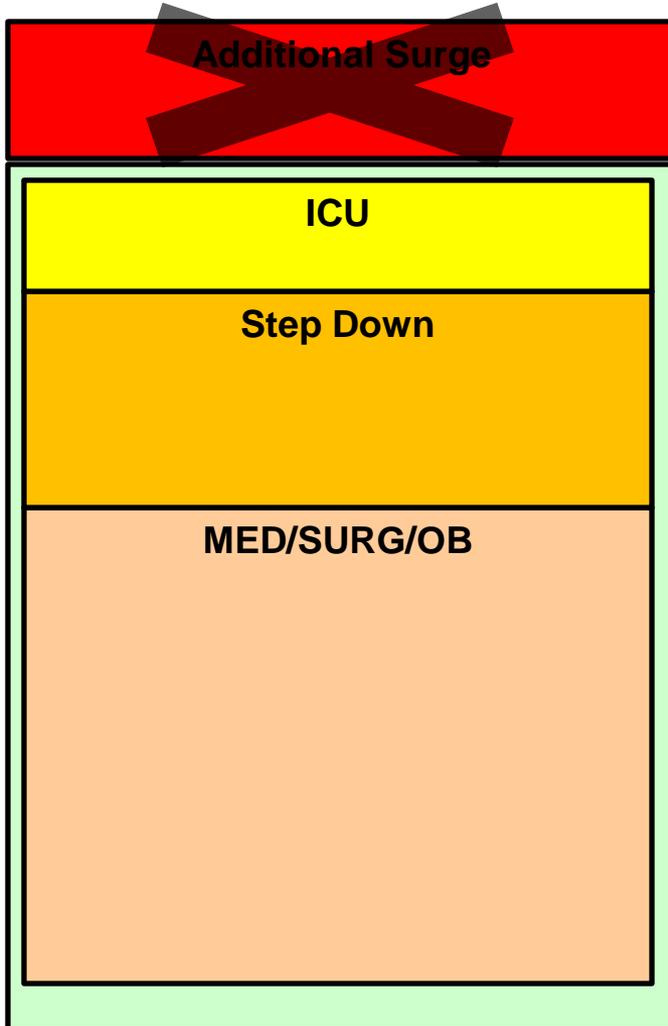
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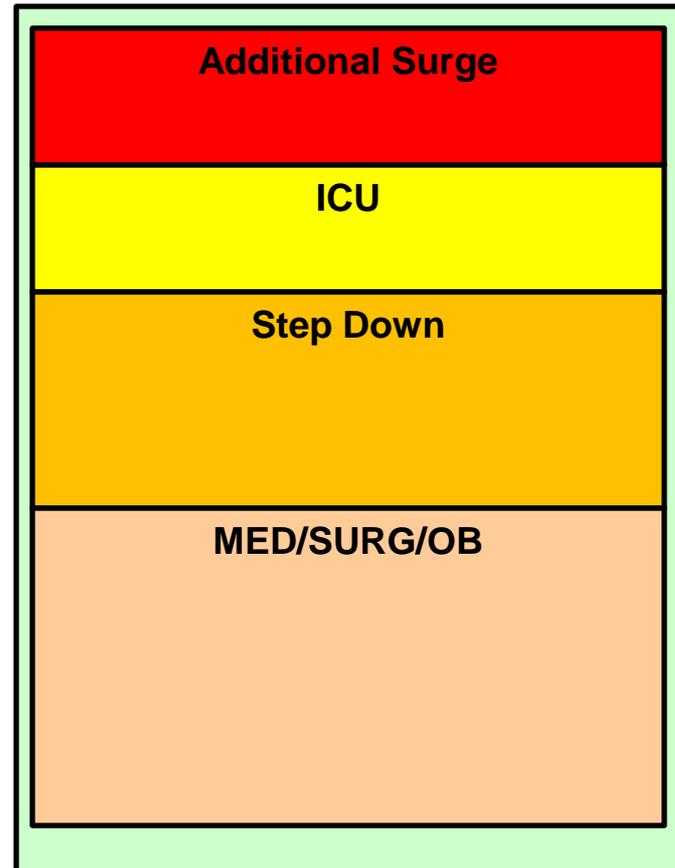
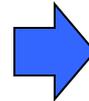
Sustainable “Medical Surge”

Surge within the System

“Medical Surge”



Former Construct



New Construct



IBA Concept



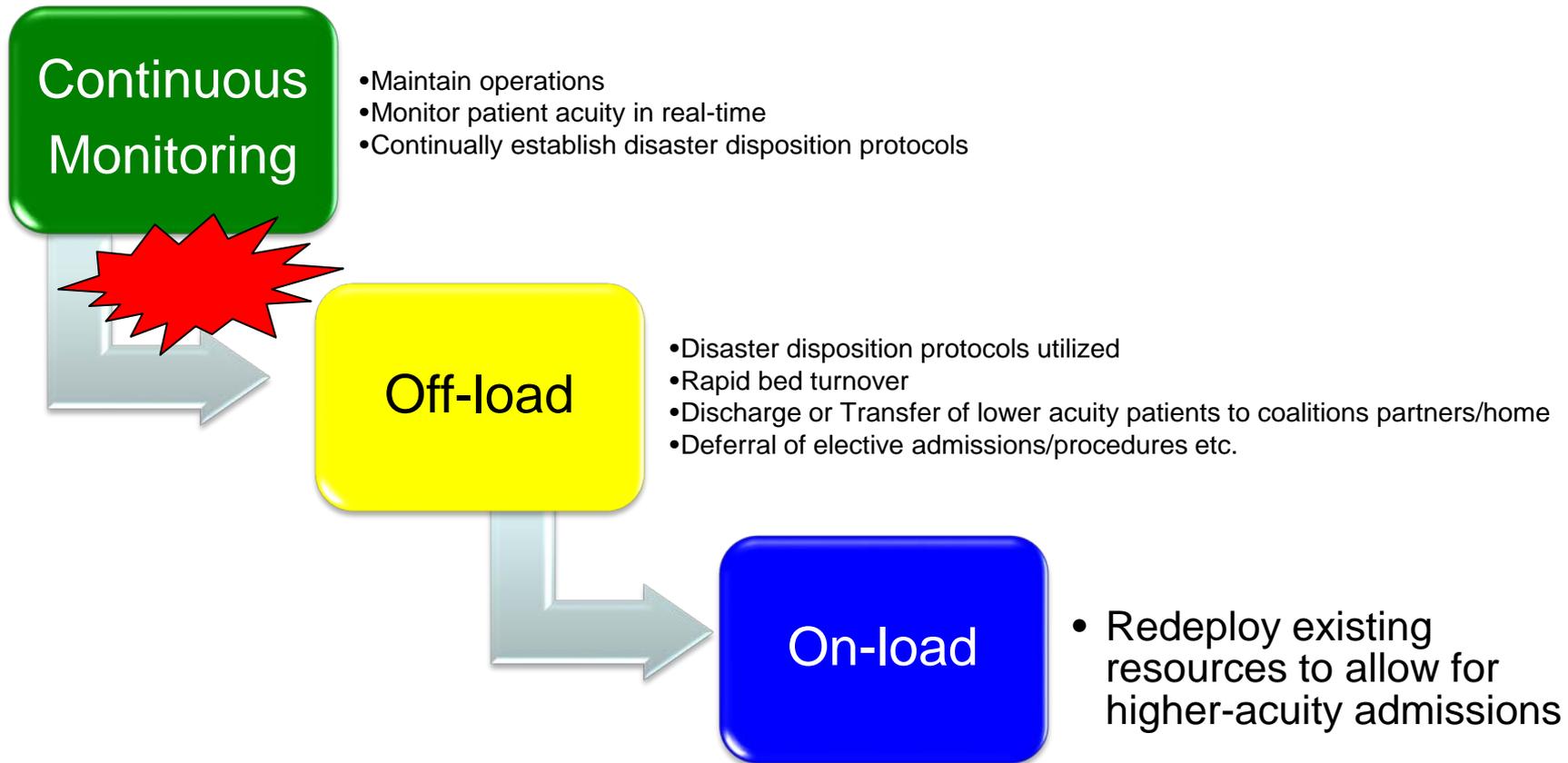
HCC Hospital(s)

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

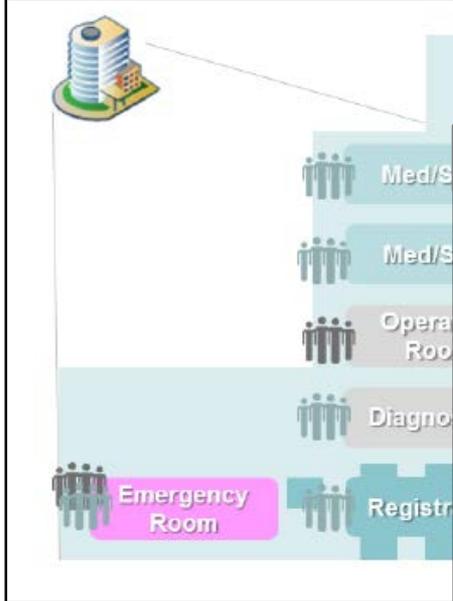
HCC Partner(s)

- Long Term Care
- Community Health Centers
- Home

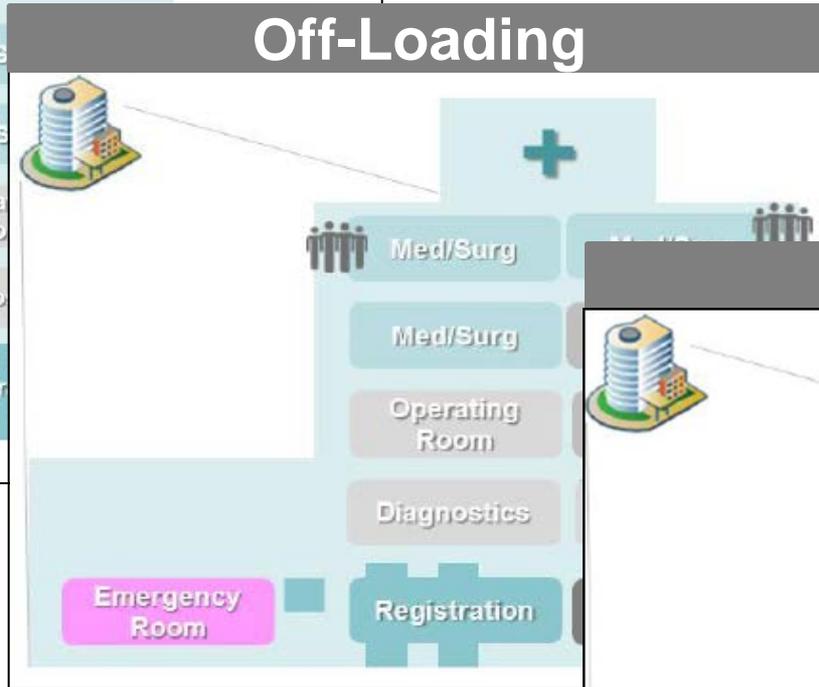
20%



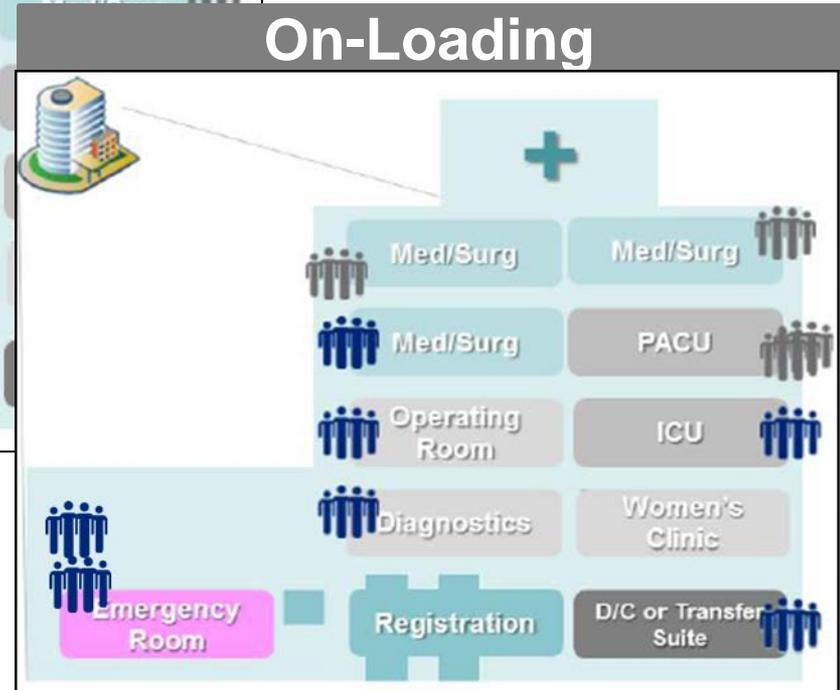
Normal Day



Off-Loading



On-Loading





IBA: Real World Experiences



- Continuous monitoring
- Off-loading
- On-loading
- Why this matters



IBA: Real World Experiences Continuous Monitoring



- 82% of Healthcare Coalitions use electronic data and information sharing systems
- Examples of systems: WebEOC, Health Alert Networks (HAN), and bed tracking systems
- 70% of Healthcare Coalitions have tested communication systems protocols internally and with relevant stakeholders
- Communication between coalitions is less prevalent

IBA Real World Experience: Off-loading: Ashmore Reef Explosion, 2009

Reverse Triage in Practice (Royal Darwin Hospital: 2009)

- Event: Boat explosion injured 30 asylum seekers
- Royal Darwin Hospital was full with ED backlog
- Disaster Response Team activated reverse triage
- Elective procedures cancelled, multidisciplinary teams assessed patients, increased use of community care (nursing facilities), discharged patients
- In 4 hours, 56 beds were available (16% of capacity)
- Only one patient returned for further treatment



IBA: Real World Experiences

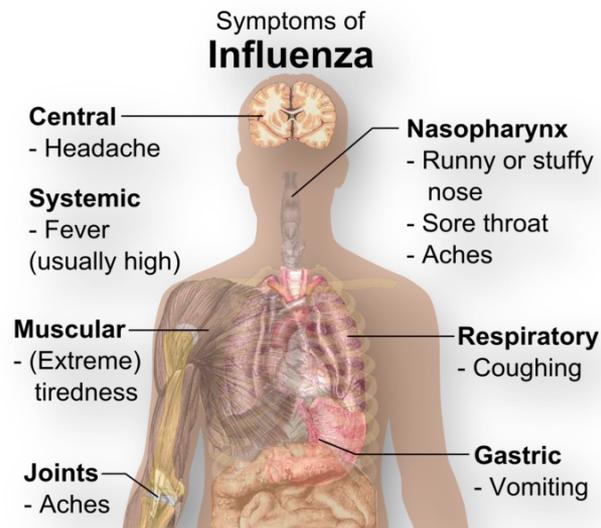
Off-loading: Hurricane Sandy, 2012

- “Where possible, investments should be coordinated across multiple institutions, using health care coalitions to ensure resiliency.”
- Improved Situational awareness
- Drilled evacuation (IBA off-load)
 - “Measured success” in Sandy with transport
- Improved clarity of criteria and triggers for evacuation



Strategies used during January 2013 seasonal influenza:

- Expedited patient case management (discharge planning techniques)
- Decompressed inpatient wards
- Isolated hospitals cancelled elective admissions and procedures





IBA: Real World Experience

Off-loading: Daily Bump List and Timely Transfer



- Implementation of 24/7 open trauma bed protocol to facilitate rapid admission from ED
- Required maintenance of **daily bump list and timely transfer of patients**
- Hypothesis: ED LOS + mortality would decrease after admission
- Results:
 - Decreased ED LOS in all patients and lower mortality rates in the most severely injured patients.
 - Improved throughput was achieved without an increase in unplanned readmissions to SIC



IBA Real World Experience: Off-loading: Rashid Hospital

Rashid Hospital, Dubai, UAE

- 500 bed tertiary care hospital
- Constantly over bed capacity
- Disaster activation 10 times in 3 years
- Disaster response challenges: lack of bed space, congested ORs, uncoordinated medical management



IBA: Real World Experiences

Off-loading, Rashid Hospital

Rashid Hospital, Dubai, UAE

- Root cause analysis
- Physicians continuing with “normal business” (e.g. ward rounds, patient assessments) in spite of disaster status
- No system or recognition for need for reverse triage
- ORs continue with routine cases with lack of leadership in this area





IBA: Real World Experience

Off-loading, Rashid Hospital



- Reverse triage based on “lifeboat ethics”
- Transfer to other facilities if specialist interventions not required within 24 hours
- Increasing bed capacity and routinely clear patients
 - Hospitalists
 - Extended discharge lounge facilities
 - Liaison with construction companies regarding expatriate patients’ “transport home”
 - Liaison with local police to allow access





IBA: Real World Experiences

“Minicard:” Rashid Hospital

Medical Team Member Guidelines during 3333 and 4444 Disasters

Any problems or concerns during a Disaster? Call the Disaster Control Centre. 1189

Specific Medical Team Member's Responsibilities

- Attendance at units and wards where you have patients.
- Assessment of all patients under your care for possible discharge.

[Reverse Triage]

(This should take place as the priority of every team member).

- Writing of discharge orders and discharge summaries.
- Prescribing of medications to take away.
- Liaison with Nursing Staff for efficient patient discharge
- Identification of patients who cannot be discharged but may be suitable for transfer to other facilities or to the Primary Healthcare Clinics.
- Reduction of routine patient flow through areas such as OT, CT, and X-Ray in order to free up these areas for the admission of emergency patients.



IBA: Real World Experience

On-loading



- On-loading takes place in ED everyday, and will continue to take place regardless of challenges of space, staff, stuff
- The continuous monitoring and off-loading of IBA allows on-loading to take place in an efficient manner that does not compromise patient care



IBA: Real World Experience

On-loading





Real World Experience: On-loading: Madrid Terrorist Bombing, 2004



On March 11, 2004, 10 terrorist explosions occurred almost simultaneously on commuter trains in Madrid killing 177 people instantly and injuring more than 2,000.



That day, 966 patients were taken to 15 public community hospitals. More than 270 patients arrived at the closest facility between 0800 and 1030 hours.

IBA: Real World Experiences

On-loading: Madrid Terrorist Bombing, 2004



Pre-hospital

- Multiple, simultaneous attacks
- Enormous casualty numbers
- Triage = “alive” versus “dead”
- TM ruptures = difficult communication





IBA: Real World Experiences

On-loading: Madrid Terrorist Bombing, 2004



Hospital

- Nonexistent EMS-to-hospital communications
- Misdistribution of patients (e.g. 2 of 15 hospitals receiving ~60% of casualties)
- Enormous numbers of medical personnel required
- Damage control at every point of care (not just surgery!)



International Lessons Observed, *Every Time*

Injured and dead
will arrive at closest
hospital

Closest hospital is
unable to meet the
demand = *functional*
"collapse"

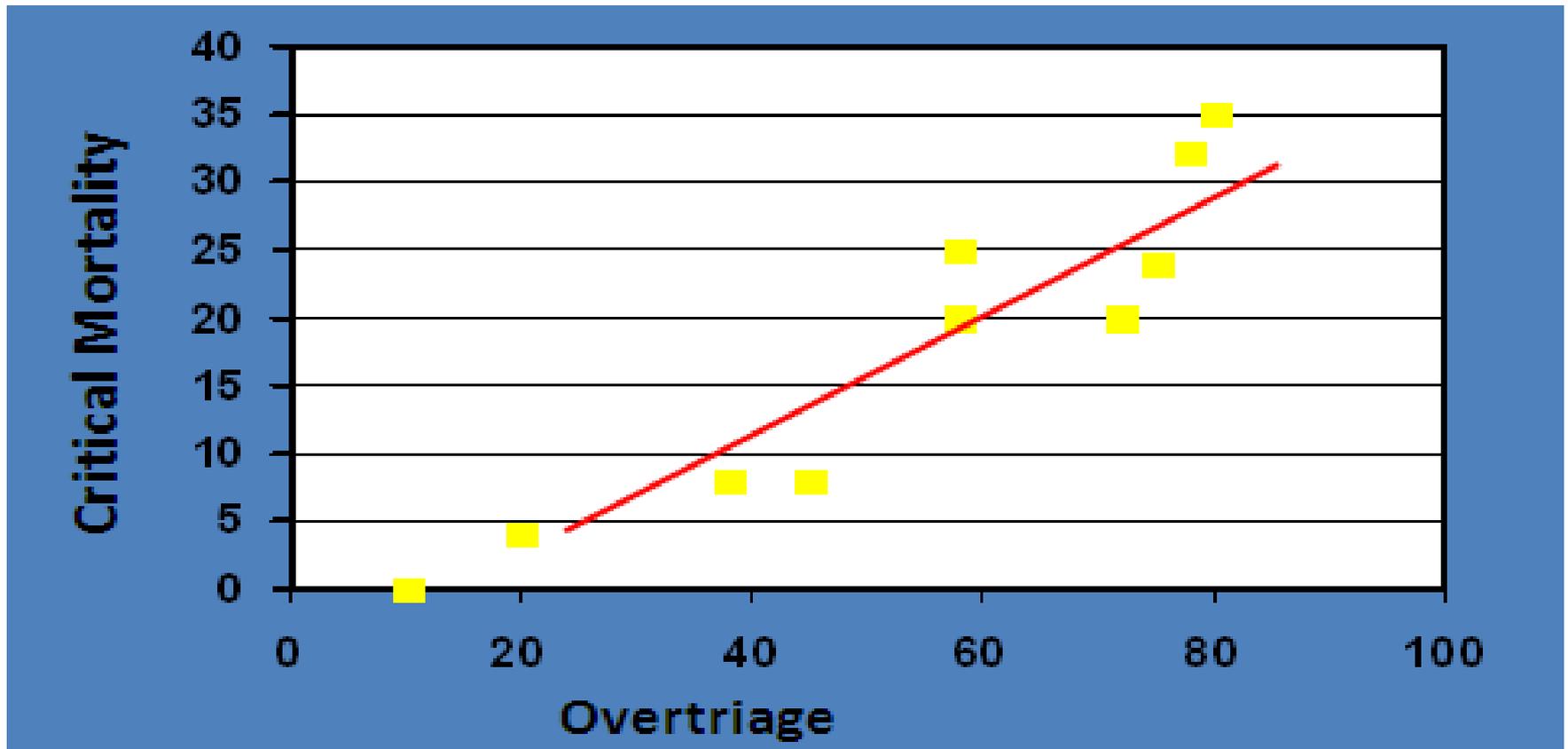
Compelling need
to distribute
patients

How do you take care of 272 patients in 2.5 hours?



How would you respond today?

Overtriage and Critical Mortality





Immediate Bed Availability



- *Everyday preparedness for game day*
- *Weaving a thread of preparedness into the daily delivery of care*



Questions

