Medical Emergency Preparedness in New York City

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Medical Director
Bioterrorism Hospital Preparedness Program
New York City Department of Health and Mental Hygiene
World Trade Center Bombing, 1993
Minimal Public Health Emergency Response

6 persons dead, 1000 injured
NYC DOHMH Transition To A First Responder Agency, 1998

Human West Nile Virus Cases: 62 cases, 7 deaths, 6 counties
Public Health’s Role Further Defined in 2001

• Disease surveillance / Epi Investigation
• Health information: Public and medical providers
• Laboratory support
• Mass vaccinations/antibiotic prophylaxis
• Coordinate hospital resources & patient care
• Environmental health risk assessment and response
• Mental health resources
NYC’s Health Care System

- NYC population: 8.1 million
- 68 acute care hospitals (29 fiscal networks)
- 22,000 licensed hospital beds
  - 16,000 staffed beds (83% occupancy)
- 163,000 full-time hospital employees
- 27,000 licensed physicians
- 68,000 licensed nurses (RN, LPN)

Sources: 2000 U.S. Census; NYC DOHMH 11/2001 Hospital Survey; Greater New York Hospital Association; NYS Department of Education
The NYC Bioterrorism Hospital Preparedness Program, Constituents, 2002-2007

- Hospitals / Acute Care Facilities (68)
- Outpatient Centers (400)
- Emergency Medical Services/First Responders (73)
- Public Health Agencies, Medical Society

Integrated Regional Emergency Response
Integrating Diverse Mandates

**National Priorities**
- Mass Antibiotic Distribution
- Pandemic Influenza Planning
- Coastal Storm Planning

**HRSA Priorities**
- Medical Volunteer Database
- Competency-Based Training
  - Targeted Capabilities
  - Regional Response

**Current Events**
- SARS
- Blackout of 2004
- Republican National Convention - 2004
- Mass Transit strike of 2005
- Avian Influenza Preparedness
- Influenza Vaccination Shortage

**Local Priorities**
- Surge Capacity
- HERDS – bed tracking
- Radiation Preparedness
- Burn Disaster Planning
- Pediatric MCI
- Flood Event Evacuation
HRSA EP Funding Allocations for NYC
2002–2006 (N = $59.6 million)

Primary Care Centers 7%
DOHMH 12%
Key Planning Partners 22%
Hospitals 59%

1 Hospitals received $35.6 million as direct awards
2 Includes the Greater New York Hospital Association, NYC Office of the Chief Medical Examiner, Long term care planning, Emergency Medical Services, NYC Poison Control Center, NYC Public Health Laboratory, and technical assistance contracts to hospitals
BHPP  Emergency Preparedness Planning Principles

• **SUPPORT ESSENTIAL EP ACTIVITIES:**
  Developing and funding hospitals’ essential preparedness activities

• **INVOLVE LOCAL PROVIDERS:**
  Engaging local healthcare providers in citywide EP planning

• **DRAW ON A CITY OF HEALTHCARE EXPERTS:**
  Utilizing expertise of hospital coalitions; creating working groups and advisory committees

• **ENHANCE COMMUNICATION & COORDINATION BETWEEN DOHMH and HOSPITALS:**
  Establishing an EP Coordinator at each hospital

• **EXPAND EP PLANNING ACROSS NYC HEALTHCARE:**
  Integrating outpatient centers and emergency medical services into hospital and citywide disaster plans
Building A Coordinated Response

Hospitals and Healthcare Facilities

Patient-Centered and Incident Command System focused Hazard Vulnerability Analysis

Healthcare Coalitions

Develop linkages among unaffiliated medical facilities and NYC agencies

INTEGRATION into CITY’S RESPONSE

Coordinated Planning and Resource Development

INCORPORATION into REGIONAL RESPONSE

Planning
Education
Drills
Equipment
### Meeting EP Critical Benchmarks

- Bed Capacity
- Isolation Capacity
- Personal Protective Equipment
- Health Care Personnel
- Trauma and Burn Care
- Communications and IT
- Decontamination
- Equipment and Pharmaceutical Capacity
- Mental Health
- Education
- Drills and Exercises
- Surveillance
BHPP’s PROGRAM STRATEGY:
A Preparedness Through Partnership Approach

- **Facilitate Revision of programs & Incorporation into ERPs**
- **ERP Assessment and Gap Analysis**
- **Hospital Input**
  - Advise DOHMH/BHPP on new project development to address identified gaps
- **New Project Development & Dissemination**
- **Testing Drills, Exercises**
- **Implementation Support**
  - Equipment Purchase, Training, Education
- **Operationalization of generic programs and protocols**
- **Incorporate Changes**
  - After-Action Report & Implementation Timeline
- **Healthcare Emergency Response Plan (ERPs)**
- **Implementation**
  - of Facility-specific Program (FSPI)
- **BHPP**

**Healthcare = BHPP =**

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Program Strategy at work: The Hospital BT Response Plan — Screening/Isolation (S/I) Protocols Initiative

- Year 1: DOHMH requires revision of BT Plans with S/I recommendations
- Year 2: DOHMH sponsored S/I ‘train-the-trainer’
- Year 2: DOHMH develops & distributes S/I Protocols
- Year 3: DOHMH develops hospital S/I drill protocol
- Year 3: DOHMH develops hospital S/I drill protocol
- Year 3: DOHMH requires revision of BT Plans with S/I recommendations

S/I protocols in hospital emergency departments

Hospital’s Planning Committees Review S/I Protocols
Result: Hospital-specific S/I Protocols

Hospital’s Planning Committees Review S/I Protocols
Result: Hospital-specific S/I Protocols

Increasing bioterrorism response capability by creating rapid screening and isolation protocol

- Hospitals conduct S/I drills
Result: After-Action reports with S/I recommendations

- Hospitals train staff
Result: 90% of Hospital Staff (all titles) trained in S/I protocols

- 30 hospitals had site visits
S/I protocols solicited from hospital’s EDs
Result: direct input into S/I protocol development

Healthcare = DOHMH/BHPP = NYC Health
# Developing Citywide Response:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (2005) Estimate Shortfalls in NYC Critical Care Capacity</td>
<td>Conducted NYC Hospital Survey; Linked Results to CDC Planning Models</td>
<td>Shortfall of 256 – 8379* ventilators</td>
</tr>
<tr>
<td>2. (2006) Make Informed Ventilator Purchase</td>
<td>Evaluated Ventilators With Respiratory Therapy Input; Conducted Initial Purchase</td>
<td>Purchased 72 ventilators</td>
</tr>
</tbody>
</table>

*based on 1957/68 and 1918 estimates
Next Steps: Implementation

Ventilator Evaluation Pilot Project

- Purchased 72 ventilators (3 per hospital)
- Project runs from October 2006 – August 2007
- 24 hospitals participating
- Convened Advisory Committee of Local Respiratory Therapists
  - guiding evaluation
  - assisting with tailoring training materials
Next Steps: Implementation

Ventilator Evaluation Pilot Project (con’t)

- Evaluation will examine ventilator use
  - in transport; ICU; chronic care settings
  - pediatric; adult; chronic care populations

- Hospitals will provide feedback on equipment and training
  - evaluation collects 2,000 patient-hours of ventilator use

- Results will help decide future purchases
  - for local hospitals and citywide EP equipment cache
Radiation Equipment and Training, NYC, 2005 - 2007

• Survey reveals hospital EDs do not have radiation detection equipment

• Equipment: 59 of 67 hospitals participated
  • Area monitors
  • Personal Dosimeters
  • Survey Meters with Probes

• Training: 490 healthcare workers trained

• Drills: scheduled for 2007 - 2008
Creating a Regional Surge Capacity Response

**Tiers**

6 | FEDERAL
---
5 | INTERSTATE COORDINATION
4 | STATE RESPONSE
3 | JURISDICTIONAL RESPONSE
2 | HEALTHCARE COALITIONS
1 | HEALTHCARE FACILITY

* GNYHA – Greater New York Hospital Association
  HHC – New York City Health and Hospitals Corporation
  FDNY – New York City Fire Department
  OEM – New York City Office of Emergency Management
Regional Response for a Burn Disaster
New York City’s Burn Disaster Response Plan

- Connecticut
- New Jersey
- New York
- New Jersey
- Connecticut

New York City EOC / CIMS
- Manage and deploy city-wide assets (e.g., city-wide cache)
- Arrange transfer to regional burn center
- Coordinate inter-hospital transport
- Track patients and bed availability

Healthcare Coalition
CENTRAL BURN TRIAGE COORDINATION TEAM
Virtual Burn Consultation Center (VBCC)
- Categorize patients according to burn severity
- Provide guidance to hospitals on patient care

HOSPITAL
- Accepts and treats victims
- Transfer pts if necessary

EMERGENCY MEDICAL SERVICES
- Pre-hospital care
- Transport to hospitals

New York SEMO
- Martial state-wide transportation resources

Mutual Aid Agreements (MAAs)
Medical Emergency Preparedness in NYC

Summary 2002-2007

- Build Infrastructure
- Spread education and drill
- Define potential roles
- Conduct drills and exercises
- Review mutual aid protocols
- Integrate outpatient center and hospital response
- INCORPORATION into REGIONAL RESPONSE
- INTEGRATION into CITY’S RESPONSE
- HOSPITALS and HEALTHCARE FACILITIES
- HEALTHCARE COALITIONS
NYC Medical Emergency Preparedness, 2002 - 2007

### THEN
- Management of individual healthcare assets
  - Bioterrorism focus
  - Collect and process information - HERDS
  - Develop emergency response plans
  - Manage decisions around surge capacity
  - Address the internal management of individual health care systems
  - Quantitative measures, critical benchmarking, sentinel reports
  - HRSA funding

### NOW
- Cooperative planning and integration of medical and health care assets
  - All hazards, regional approach
  - Resource allocation
  - Interdisciplinary coordination
  - Provide a systematic approach to organize and coordinate available health and medical resources
  - Performance measures
  - Coordination of available funding streams to enhance city capability
Lessons Learned:

Medical Emergency Preparedness
in 2007
## Lessons Learned:

**Surge Capacity Costs Money**

Estimated Ventilator Shortfalls and Associated Costs

<table>
<thead>
<tr>
<th></th>
<th>1957/68 Scenario</th>
<th>1918 Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum necessary NYC hospital-based full Featured ventilators (2005)</td>
<td>2,688</td>
<td>2,688</td>
</tr>
<tr>
<td>Current number of available ventilators for pandemic patients (60% in use by non-pandemic pts)</td>
<td>1,075</td>
<td>1,075</td>
</tr>
<tr>
<td>Number of ventilators needed for pandemic influenza patients</td>
<td>1,331</td>
<td>9,454</td>
</tr>
<tr>
<td>Estimated Shortfall</td>
<td>-256</td>
<td>-8,379</td>
</tr>
<tr>
<td>Estimated Costs to Address Shortfall (vent+durable med. equip. = $8,400)</td>
<td>$2.2 million</td>
<td>$70.4 million</td>
</tr>
</tbody>
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25% of flu patients require ICU care; 50% of ICU patients require ventilation.
Surge capacity challenges for health care facilities

- Dedicated emergency preparedness coordinator
- State-of-the-art sophisticated upgrades needed in hospitals
- Automated tracking systems for beds, supplies, pharmaceutical
- Automated security and identification systems
- Operational and regional planning requires centralized organization; funding is needed to support this leadership

Estimated cost is 2.0 million per hospital X 68 hospital

= 136,000,000
Lessons Learned

• **BUILDING HEALTHCARE COALITIONS REQUIRES RESOURCES**
  
  More DOHMH administrative time and monies are needed for building health care coalitions

• **PROVIDER+EXPERT WORKGROUPS ALONE DO NOT CREATE CITYWIDE EP PLANS**
  
  Citywide planning requires considerable time from DOHMH in planning, administrative oversight, providing technical contents, adaptation and editing
Lessons Learned

• **REGIONAL PLANNING DEMANDS CENTRALIZED ORGANIZATION**
  Operational and regional planning requires centralized organization and funding to support this leadership

• **TO MAINTAIN SUSTAINABILITY, PRACTICE IT EVERY DAY**
  Sustaining EP activities means building them into every day activities
Finally.....

Public Health’s Role in Emergency Preparedness in NYC

- Systematic analyses of shortfalls and gaps
- Develops protocols, exercises and training
- Coordinates purchases
- Directs, creates and tests healthcare response and integrates into regional plans

Healthcare Emergency Preparedness Programs
Challenges

• Limited Federal funding requires more intensive Federal guidance – For example one policy or system for each:
  – volunteer medical system,
  – Policy for relaxation of hospital regulations during emergency,
  – approach to resource allocation when resources are scarce

• Sustaining EP efforts requires senior leadership in healthcare facilities

• Building surge capacity is not a priority in healthcare systems where hospitals are closing or down-sizing

• Staffing – need incentives for increasing nurses, respiratory therapists, and strategies for staff retention during bio-emergency
Questions?

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