Preparing for the Zombie Apocalypse

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Learning Objective

- Implement effective surge protocol training when an outbreak approaches
The Preparedness Cycle

- Plan
- Organize/Equip
- Train
- Exercise
- Evaluate/Improve

Preparedness Cycle

Chain-of-Events Planning

- The PDC developed a fully comprehensive pediatric disaster plan for NYC from the onset of the event and first response through pediatric hospital and intensive care surge
Why We May Need to Suuuuuurge

- Acute event (e.g., weather, blast/mass shooting, vehicle pile-up)
- Extended event (e.g., ID outbreak/pandemic)
- Longer-time course and scope
  - Where do resources come from when everyone is affected?
  - Issues of sustainability
  - Resource allocation
    - Ethics
    - Planning
    - Oversight
- Planning and learning from previous mistakes is essential
- SPACE & STAFF & STUFF

Deep Dive—Surge Capacity

- Not just “certified” beds—this is during disaster/emergency conditions
- What does surge capacity mean at your institution?
- Do you have capability (e.g., staff, stuff)?
- How would you increase staff numbers (e.g., physicians, nurses, respiratory therapy)?
- Consider—what other units could take PICU patients?
  - Adult ICU
  - Recovery room
- How many beds would that open up, and how would care be managed?
Who Is Involved in Building a Plan?

- Representatives from:
  - Emergency management
  - Emergency medicine
  - Safety
  - EMS
  - Exercise planning committee
  - NICU/PICU clinical unit of choice
  - Social work
  - Security
  - Facilities

Surge/PICU Planning: Related Plans and Documents to Review

- General Surge Plan
  - Incident command EOC
  - Pre-event census, ongoing census
  - Triage, patient distribution (RPD), tracking
  - ED (Acute/nonacute patient care areas)
  - Radiology/imaging
  - OR
  - “Walking well”
  - Psychosocial (ASR, family reunification)
  - Communications (staff, agencies, public, press)
  - Patient transfer to other institutions (rank of severity, subspecialty need)

- PICU Surge Plan
  - ED response
  - Rapid patient disposition
  - Space, staff, stuff
  - Adult/surgical ICU interaction
Checklist for Preparing the Pediatric Critical Care Surge Plan

- Determine levels of surge plan
- Determine involvement of critical care in the ED and elsewhere (e.g., transport, HICS)
- Develop a plan to rapidly enlist critical care providers during off-hours
- Develop a plan to ensure intensivists’ coverage 24/7
- Develop guidelines for changing standards of care (N/P ratio)
- Develop patient rapid discharge/transfer tool for the PICU
- Develop a plan to increase the number of beds in the PICU
- Develop a plan to add PICU beds in a different hospital location
- Optimize victim management by ensuring expertise availability
- Develop a plan to self-sustain for 72 hours and longer
- Obtain current knowledge about the management of CBRNE victims and ensure that the PICU will have adequate pharmacy support, equipment, and supplies
- Ensure laboratory support for PICU management

Discussion-Based vs Operations-Based Exercises

- **Discussion-based exercises** familiarize participants with current plans, policies, agreements, and procedures or may be used to develop new plans, policies, agreements, and procedures
- **Operations-based exercises** validate plans, policies, agreements, and procedures, clarify roles and responsibilities, and identify resource gaps in an operational environment
Planning Team Members

- Emergency preparedness coordinator – trusted agent
- PICU or NICU (depends on the department being exercised)
- ED (if the event will involve them)
- Respiratory therapy
- Admitting/bed management
- Security
- Hospital administration
- Facilities/engineering
- Social work
- Safety officer

HSEEP’S Progressive Planning Approach

- Discussion-Based
- Operations-Based
- Functional Exercises
- Drills
- Games
- Tabletops
- Workshops
- Seminars

Planning/Training ➤ Capability ➤ FSEs
## Key Planning Documents

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Key Features</th>
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<tbody>
<tr>
<td>Exercise Evaluation Guide</td>
<td>Helps evaluators assess performance of capabilities, tasks, and objectives during an exercise</td>
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<tr>
<td>Controller and Evaluator Handbook</td>
<td>Supplements exercise plan with exercise administration information and scenario details</td>
</tr>
<tr>
<td>Exercise Plan</td>
<td>Includes general exercise information but does not contain scenario details; enables players to understand their roles and responsibilities in the exercise</td>
</tr>
<tr>
<td>Master Scenario Events List</td>
<td>A chronological listing of the events and injects that drive exercise play; produced in both short (quick reference) and long (all-encompassing) formats</td>
</tr>
<tr>
<td>After-Action Report</td>
<td>Summarizes key information related to the evaluation of disaster preparedness exercises</td>
</tr>
<tr>
<td>Improvement Plan</td>
<td>Includes key recommendations and corrective actions identified throughout the exercise</td>
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Adapted from IAFC. www.iafc.org/files/downloads/MASTF/mtlAid_HSEEPvolumeII.pdf#page=26&zoom=auto,-22,155.

## Gaps in Pediatric Preparedness: Will It Be Surge or Scramble?

- Everyday pediatric readiness inadequate
- Primary care inadequate
- Everyday mental health system in crisis
- Funds not appropriated for specific pediatric preparedness of hospitals and child health facilities ($0.01 out of every $10)
- Few hospitals or communities have scalable plans for response (eg, surge, isolation)
**Influenza Pandemics in the 20th Century**

- 1918: “Spanish Flu”
  - 50 million deaths
- 1957: “Asian Flu”
  - 1-4 million deaths
- 1968: “Hong Kong Flu”
  - 1-4 million deaths

**US ID Mortality:**
**The Impact of Influenza and AIDS**

An Influenza Ward During the 1918 “Spanish Flu”

- Avian strain of influenza virus
- Virus was similar to current “bird flu” virus
- Spread around the globe in 4-6 months
- Infected 25%-30% of the world population
- Killed 40-100 million worldwide
- Majority of deaths occurred in persons 18-40 years old
Children and Pandemics

- Influenza/SARS/smallpox/EVD ad infinitum
- Unclear resource allocation
  - Ventilators
  - Home care
- Addressing unique pediatric problems
  - Toddlers won’t wear masks, are not great at washing their hands, won’t promise to not pick their noses
- “Man in the High Castle”
- Impact on modern society of large numbers of pediatric mortalities
  - More than we could bear
- Palliative care
Children in Disasters: Biologic Vulnerability

- Prone to infection due to frequent exposure to pathogens in crowded environments
- Age-dependent immune function
- Lack of immunity from previous outbreaks, pandemics
- Lack of pediatric-specific research on vaccines and treatments
- 30% at or below the poverty level
- Dependent on adults

Size Matters
What Is the NYC Pediatric Disaster Coalition?

- Established in 2008 to prepare NYC for a catastrophic pediatric mass casualty event
- Funded by DHS ASPR federal grants
- The PDC includes:
  - NYC pediatric general and specialty hospitals
  - Community healthcare providers
  - NYC Fire Department EMS
  - NYC Office of Emergency Management
  - NYC Department of Health and Mental Hygiene

Goals and What We Do

- Guidelines and planning for surge and evacuation including pediatric hospitals, PICU, NICU, OB/newborn, and long-term care facilities
- Operationalizing pediatric disaster plans through exercises
- Increasing pediatric critical care providers through hosting PFCCS course training
- Providing pediatric SME and training on disaster preparedness
- Citywide planning with DOHMH, Office of Emergency Management, Fire Department, and coalitions for pediatric disasters
- Responding to real-time events and providing lessons learned
Coalition Coordination & SME in Response to EVD

- PDC activities with multiple coalitions and organizations
- NY workgroup on pediatrics, obstetrics, and EVD
  - PDC was the primary pediatric SME in this working group lead by NYS DOH, whose goal was to work together in collaboration to achieve adequate capacity to care for confirmed EVD patients who are children, infants, or pregnant women or pediatric PUIs with a low likelihood of EVD
  - Other members included hospitals—Bellevue, Mt. Sinai, NS-LIJ, NYP, Montefiore—and government agencies—NYS DOH, NYC DOHMH, HHC, GNYHA, NYC OEM
- Working group on EVD guidance/risk communication for children, parents, and school staff
  - Partners included NYS and NYC DOH and DOE
  - Created a fact sheet on EVD for parents and children, addressing concerns about the disease, travel, disease transmission, and how parents should speak to children about EVD

Future Challenges

- Hazard vulnerability analysis to accurately predict future events (eg, EVD)
- Gap analysis based on past events
- Planning, exercises, and response to severe pandemic with high penetrance and significant morbidity and mortality
- Pre-identification of space, staff, and stuff that adequately responds to the magnitude of the event
- Define standards of care
Future Challenges (cont.)

- Address disaster mental health issues (patients, related family members and friends, non-affected population)
- Address risk communications (e.g., coordination with all agencies, ID)
- Moral and ethical standards for prioritization of patient care, resource utilization
- Planning for special population needs
- Matching resources to needs to produce the best outcomes
- Where do coalitions fit in?

Final Thoughts

- Public health for catastrophes
  - We need to prepare as if we were in wartime England
  - Society must be brave
  - As a nation we need to make the correct though difficult choices
  - We must protect assets and our way of life
- Need to over focus on children
NYC PDC Web Site
www.pediatricdisastercoalition.org

- Find tools, templates, and guidelines
- Resources including:
  - NYC Pediatric Resource Directory
  - NYC NICU Resource Directory
  - NYC DOHMH Pediatric Preparedness Guidelines
  - Obstetric Services Evacuation Template Plan
  - PICU Surge Template Plan
  - Template NICU Evacuation Plan
  - Template NICU Surge Plan
  - Obstetric Services Surge Template
ABBREVIATIONS/ACRONYMS
Preparing for the Zombie Apocalypse

ASPR = Assistant Secretary for Preparedness and Response
ASR = acute stress reduction
CBRNE = chemical, biological, radiological, nuclear, and explosive
CDC = Centers for Disease Control and Prevention
DHS = Department of Homeland Security
DNR = do not resuscitate
DOE = Department of Education
DOH = Department of Health
DOHMH = Department of Health and Mental Hygiene
ED = emergency department
EMS = emergency medical services
EOC = emergency operations center
EVD = Ebola virus disease
FSE = full-scale exercise
HICS = Hospital Incident Command System
HPP = Hospital Preparedness Program
HSEEP = Homeland Security Exercise and Evaluation Program
ICU = intensive care unit
ID = infectious disease
NICU = neonatal intensive care unit
NYC = New York City
NYS = New York State
OB = obstetrics
OR = operating room
PDC = Pediatric Disaster Coalition
PFCCS = Pediatric Fundamental Critical Care Support
PICU = pediatric intensive care unit
PPE = personal protective equipment
PUI = patient under investigation
RPD = rapid patient discharge
SARS = severe acute respiratory syndrome
SME = subject matter expert