Developing a Regional Pediatric Disaster Response Plan

Partners in Emergency Preparedness Conference 2012
Kay Koelemay, MD, MPH
Public Health – Seattle & King County
with Vicki Sakata, MD
Mary Bridge Children’s Hospital
WON'T SOMEBODY PLEASE THINK OF THE CHILDREN!?
Learning Objectives

- All hospitals with an ED must be prepared to care for pediatric patients in a disaster.
- Children have unique vulnerabilities in a disaster situation.
- Special considerations impact hospital planning for pediatric victims of an MCI.
- Strategies or tools can be developed that support implementation of a regional pediatric disaster response plan.
### US Census QuickFacts 2010

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[http://quickfacts.census.gov](http://quickfacts.census.gov)
Resources


- King County/ Healthcare Coalition website: Pediatric resources http://www.kingcountyhealthcarecoalition.org/
Children: Not “Small Adults”

- Anatomical/physiological differences
- Vital signs vary with age
- Smaller, shorter stature
  - lower “breathing zones”
- Higher minute volume
- Less intravascular volume reserve
Uniquely Vulnerable

- Greater body surface area to weight ratio
- Increased skin permeability
- More pliable skeleton
- Weight is critical in determination of:
  - drug dosages
  - fluid requirements
  - equipment sizes
Decontamination of Children

- Must be done with high-volume, low-pressure, heated water systems
- Must be designed for decontamination of all ages and types of children
- All protocols and guidance must address:
  - Water temperature and pressure
  - Nonambulatory children
  - Children with special health care needs
  - Clothing for after decontamination
Decon Shower-child

Decon Shower-infants & nonambulatory kids

Pediatric Disaster Toolkit:
Hospital Guidelines for Pediatrics in Disasters
From a Child’s Perspective?
Preverbal children cannot describe symptoms or relate identifying information

Dependent on others for food, clothing, shelter

Motor skills may deter escape from site of incident

Cognitive development may limit abilities:
  - How to flee from danger
  - How to follow directions
  - How to recognize a threat
Hurricane Katrina: Biloxi - 2005
Mental Health Issues

- Issues are developmentally dependent
- Short- and long-term manifestations
  - PTSD, fear, depression, sleep disturbances, social or behavioral difficulties, anxiety, changes in school performance
- Related to parental reaction
  - Family-centered approach recommended
- Certain children may be more vulnerable
  - Children with pre-existing mental health problems
  - Low income and racial or ethnic minorities
Pediatric Patients in MCI

- Critically ill or injured children may present to *any* and *all* hospitals
  - Accessibility issues for emergency responders
  - Transfer to specialized hospital may be impossible
    - Unstable patient
    - Shortage of vehicles
    - Impassable roads or bridges
    - Specialized hospital cannot accommodate
Oklahoma City Bombing - 1995
Injuries by Age Group

School Bus MCI

- 23.5 million kids ride to and from school
- Annual average: 10 bus crash deaths
- 8500-12000 bus crash injuries annually
  - 96% minor injuries: bumps, bruises, scrapes
  - Based on police reports
  - “Not all go to the emergency department”

National Conference of State Legislators, 2002.
Switzerland Bus Crash – March, 2012

22 children and 6 adults killed; 24 children injured (1 in critical condition)
Pediatric Preparedness in US Emergency Departments

- 89% of pediatric visits: non-children’s hospitals
- 50% EDs: see < 10 pediatric patients per day
- 6%: have recommended equipment & supplies
- 43% hospitals have no pediatric ward
- 89% admit pediatric patients
- 10% without PICU admit critically injured kids

Gausche-Hill et al, [www.pediatrics.org/cgi/content/full/120/6/1229](http://www.pediatrics.org/cgi/content/full/120/6/1229)
“More prepared hospitals…”

- Urban
- Higher volumes of pediatric patients
- Separate care area for pediatric patients
- Physician and nursing coordinators for peds
- Awareness of the AAP/ACEP* guidelines
- Interest in guideline implementation

*American Academy of Pediatrics/ American College of Emergency Physicians

Gausche-Hill et al, [www.pediatrics.org/cgi/content/full/120/6/1229](http://www.pediatrics.org/cgi/content/full/120/6/1229)
Hospitals in King County, Washington by Emergency Coordination Zones 1, 3, 5
Pediatric Resources by Emergency Response Zone

2007 survey by Mary King, MD, MPH
Prehospital and Disaster Medicine, 2010

Initial Assessment

- Hazard Identification & Vulnerability Assessment (HIVA)
- Study (King et al) re: pediatric inpatient beds, staff, supplies, equipment
- Regional evacuation planning workshop
- Facility surge capacity evaluations
Pediatric Evacuation Planning

- KC hospitals with peds inpatient beds
  - PICU, NICU, Med/Surg, Behavioral Health
- Summary of high census bed capacity and patient care levels in each facility
- Surge capacity determination
  - Within 2-4 hours with no outside support
  - Within 12-24 hours using internal supplies, equipment and staffing
  - Within 12-24 hours, adding external resources
Evacuation Planning: ConOps

“Designated Pediatric Surge Hospitals”

- Hospitals to receive entire units of patients
  - Allows preplanning by receiving hospital
  - Limits requirements for movement staff, equipment & supplies
  - Supports efficiency of reassigning staff with defined privileges
  - May allow caching of supplies in receiving hospital or in nearby locations
  - Limits locations for Family Reunification Centers
  - Presets large component of regional evacuation decisions
  - May facilitate a system for pre-credentialing & privileging pediatric providers

- Children’s, UW, HMC, Swedish, Evergreen, Valley
King County Healthcare Coalition
Pediatric Planning...since 11/07

- Steering Committee
- Task Forces
  - Mental Health
  - Triage & Critical Care
  - Perinatal
- Toolkit Implementation Workgroup
- Clinical Coordinator Committee
Length-based Resuscitation Tape Survey of Emergency Departments

Purpose: To assess the degree of current usage of an established decision-making tool by prehospital emergency responders and emergency department personnel in clinical management of pediatric patients.

The results of this brief survey will serve to inform Task Force recommendations to the Pediatric Workgroup in its planning for optimal management of infants and children in large-scale medical emergencies.

1. Identifying information:
   - Name of agency:
   - Completed by:
   - Title:
   - Phone number:

For purposes of this survey:
* "unit" refers to the emergency department, outpatient clinic, inpatient ward or prehospital aid agency for which you are completing this survey;
* "pediatric" refers to children up to age 12 or up to 40 kg (the population for whom the Broselow tape was designed)

2. Does your unit own 1 or more copies of the Broselow Pediatric Emergency Tape (or equivalent)?
   - Yes
   - No

If "No," please skip to questions 16 and 17 now.

3. Which edition(s) of the Broselow Tape do you have?
Perinatal Survey

1. Introduction

Survey requested by: The Perinatal Task Force of the King County Healthcare Coalition Pediatric Workgroup

Purpose: To assess the current state of regional planning for response to the essential healthcare needs of pregnant women, new mothers, fragile newborns and healthy infants in a large-scale medical emergency.

Response requested by FRIDAY, OCT 24, if possible.

QUESTIONS OR PROBLEMS RELATED TO THE SURVEY? ...contact Kay Koelemay, MD, @ kathryn.koelemay@kingcounty.gov or 206-263-8188.

1. Identifying information:

Name of agency: 
Completed by: 
Title: 
Phone number: 

2. Does your facility have an emergency preparedness plan for continuity of childbirth services and newborn care in a disaster?

☐ Yes
☐ No
“Pediatric Toolkit”

Guidelines for:
• Staffing and training
• Equipment and supplies
• Pharmaceutical planning
• Dietary planning
• Transportation
• Inpatient bed planning
• Security and psychosocial support
• Decontamination of children
• Hospital-based triage

Adapted by: Healthcare Coalition Pediatric Workgroup Triage Task Force

Children in Disasters

Hospital Guidelines for Pediatric Preparedness

144 pages

Hospital Guidelines for Management of Pediatric Patients in Disasters

42 pages

Created by: Centers for Disasters Preparedness Program Pediatric/Triage Task Force
NYC DOHMH Pediatric Disaster Advisory Group
NYC DOHMH Healthcare Emergency Preparedness Program
Contents

- Staffing and training
- Equipment and supplies
- Pharmaceutical planning
- Dietary planning
- Transportation
- Inpatient bed planning
- Security and psychosocial support
- Decontamination of children
- Hospital-based triage
- Infection control guidance
- Family Information and Support Center
- Psychological First Aid (PFA)
- Pediatric transport issues
- Pediatric surge strategies
- Tracking protocol
- Job action sheets
- Pediatric Safe Area checklist
- Sample menu
Important Steps

Create pediatric leadership positions

- Physician Coordinator
- Nursing Coordinator

"...Guidelines for Care of Children in the Emergency Department"
2009 joint policy statement of committees of
American Academy of Pediatrics
American College of Emergency Physicians
& the Emergency Nurses Association

http://pediatrics.aappublications.org/cgi/reprint/124/4/1233
Color-Coding Kids

- Length-based resuscitation tape
  - Color zones to estimate child’s weight
- Pediatric disaster carts/drawer for color-coded supplies
- Color-coded bags of appropriate-sized supplies and equipment
- Color-coded imaging protocols, emergency medication sheets, etc.
Why “Every Kid Every Time”

- Pediatric resuscitations cause significant cognitive stress for care providers
  - High potential for error
- Standardized process
  - Reduces cognitive stress
  - Allows clinician to focus on assessment, prioritization and interventions
- “Color coding” has been shown to decrease errors in care
Regional Implementation Project

- Identify training “package”
  - “Every Kid Every Time” CD-ROM
  - Just-in-time training materials
  - Team training resources

- Communication plan
  - Pediatric bed tracking
  - Situational awareness

- Surveys to track progress

- Exercise: “Operation Red Rover”
# Pediatric Planning Mid-Project Survey

## King County Regional Pediatric Disaster Response Plan
**Survey Results**
**January 2011**

### Pediatric Planning Implementation

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<tr>
<th>Survey Response Rate</th>
<th>Ability to Activate a Pediatric Response Team to Staff a 72-hr Period</th>
<th>Training Plan for Pediatric Response Team</th>
<th>Color-coding System to Estimate Weight of Pediatric Patients</th>
<th>Hospital-based Triage System to Provide Medical Management</th>
<th>Designated Pediatric Safe Area/Dependent Care Area</th>
<th>Estimated Pediatric Surge Capacity</th>
<th>Equipment Supply Meets Estimated Pediatric Surge Capacity</th>
<th>Pharmaceutical Supply Meets Estimated Pediatric Surge Capacity</th>
<th>Planning to Provide Basic Pediatric Services to Meet Estimated Surge Capacity</th>
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### Staffing for Pediatric Disaster Response Planning

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<th>Nursing Coordinator</th>
<th>Pediatric Safe Area/Dependent Care Unit Coordinator</th>
<th>Pediatric Logistics Coordinator/Planning Lead</th>
<th>Pediatric Services Coordinator/Planning Lead</th>
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### How would you describe the leadership support at your facility?

- Significant Challenges: 23%
- Minor Challenges: 8%
- Somewhat Supportive: 8%
- Extremely Supportive: 61%
Drill: 3/31/11
“Operation Red Rover”

- Simulated evacuation of Swedish First Hill pediatric patients
  - 76 NICU, 6 PICU, 28 Med/Surg, 4 Psych patients
- Simulated transport via EMS (assets assessment)
  - Medic One, AMR, Rural Metro
- Simulated receipt of distributed patients at KC hospitals

Objectives:
- Test pediatric response and surge capacity
- Patient tracking
- Communication
- Security and crowd control
Progress in Regional Planning

- ASPR monies applied to purchase of pediatric equipment/supplies
- Concurrent pediatric planning in Pierce County
  - Pilot project: an interregional pediatric chat room for communication and collaboration
- Pediatric Disaster Response Workshop
  - Pediatric triage and color-coding
  - Pediatric disaster transport & equipment training
Girl is struggling to breathe with circulatory syncope. She cannot answer any questions.
Identify Resources

- Hospital survey
  - Providers
  - Space
    - PICU, NICU (levels), Nursery, ER, OR, Med/Surg
  - Supplies/ equipment

- Community survey
  - Providers
  - Alternate care sites
## Pierce County Pediatric Bed Space
### HMAP 2009

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Identify a Pediatric Taskforce

- Develop a Pediatric Taskforce
  - Public Health
  - Healthcare Coalition
  - Community based advocate
  - Hospital based advocate
  - Prehospital advocate
  - Emergency Management

- Review available documents; revise as needed.

- Engage the healthcare community in exercises and CME.
Recommendations for Success

- Identify pediatric “champions.”
- Involve the community providers as well as the hospitals.
- Consider “Alternate Care” facilities.
  - Keep the hospitals available for the sickest and most injured
- Make pediatric learning a “standard practice” with CME, on-line modules, mock codes, as well as disaster drills.
Expect Challenges

- Hospital participation
- Costs
  - Planning/training, pediatric supplies and equipment
- Staff time/ prioritization
- Reallocation of facility space
- Leadership “buy-in” and support
- Surge planning estimates
- Hospital control decision planning
Goal: A Regional Pediatric Disaster Response Network...Why?

- Consistent approach across the region
- Communication and collaboration network
  - WATrac Command Center and Knowledgebase
  - Ops for efficiencies in training, exercises and planning
- Coordination with pre-hospital emergency responders and emergency management agencies
- Increased pediatric capability and capacity
- Redefined role of pediatric specialty hospitals and ambulatory care pediatricians in a disaster
  - Telemedicine
  - Pre-privileged pediatric-trained responders
  - Triage and treatment referral decisions
Questions? Comments?

Thanks for your participation!

Kathryn.Koelemay@kingcounty.gov