Pediatric Evacuation: You don’t get to go home but you can’t stay here

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Integrated Public Health and Healthcare System Preparedness Summit

Objectives

- Provide an introduction to state initiatives related to pediatric evacuation
- Identify at least two situations when hospitalized pediatric patients would need to be evacuated
- Explain the role of nurses and hospital staff during a pediatric evacuation event
- Describe at least one possible route of evacuation
- Select appropriate evacuation equipment for pediatric patients of varying ages/conditions

Illinois Emergency Medical Services for Children

Collaborative Program established in 1994

- Illinois Department of Public Health – Division of EMS & Highway Safety
- Illinois Department of Human Services – Office of Family Wellness
- Loyola University Chicago – Department of Emergency Medicine

Federal EMS for Children (EMSC) Program

- Established in 1984 by Maternal & Child Health Bureau through federal legislation
- Identified gap that U.S. emergency care systems were not adequately prepared to meet the needs of children
- Research findings identified that children had higher mortality rates than adults in certain similar emergency situations
- Charge states with enhancing the pediatric component of their Emergency Medical Services (EMS) System

Hospital Pediatric Preparedness Checklist

- Overall Emergency Operations Planning
- Surge Capacity
- Decontamination
- Reunification/Patient Tracking
- Security
- Evacuation
  - Mass Casualty Triage JumpSTART
  - Children with Special Health Care Needs/Children with Functional Access Needs
  - Pharmaceutical Preparedness
  - Recovery
  - Exercises/Drills

Illinois EMS for Children Areas of Priority

- Healthcare Professional Pediatric Education and Training
- Pediatric Practice and Care Standards/Guidelines/Resources
- Pediatric Data Surveillance System
- Pediatric Injury Prevention initiatives
- Pediatric Facility Recognition program – designation of hospitals throughout the state that meet pediatric emergency and critical care requirements
  - Pediatric Critical Care Center (PCCC)
  - Emergency Department Approved for Pediatrics (EDAP)
  - Standby Emergency Department for Pediatrics (SEDP)
- Pediatric Disaster Preparedness
  - Illinois Pediatric Preparedness Workgroup oversees and guides preparedness activities

National Commission on Children and Disasters

- Convened by President and Congress in 2008
- Conduct first ever comprehensive review of Federal disaster-related laws, regulations, programs
- Assess responsiveness to needs of children
- Final Report released October 2010
- Characterizes “benign neglect” of children in disaster planning

Areas of focus

- Disaster management and recovery
- Mental health
- Child physical health and trauma
- Emergency medical services and pediatric transport
- Disaster case management
- Child care
- Elementary and secondary education
- Child welfare and juvenile justice
- Sheltering standards, services and supplies
- Housing
- Evacuation

http://www.childrenanddisasters.acf.hhs.gov/
Illinois EMSC Evacuation Project

- Lack of Nursery and Neonatal Intensive Care Unit (NICU) integration/involvement in hospital emergency planning
  - Medically fragile population
  - High-risk
- Perinatal network – strong infrastructure
- EMSC convened NICU Evacuation Planning Ad-Hoc Committee (2008)
  - Developed NICU Evacuation Guidelines (2009)
  - Conducted 3 large-scale tabletop exercises (2009 – 2011)
  - Developed NICU/Nursery Evacuation Tabletop Exercise Toolkit (2013)
  - Documents available at www.luhs.org/emsc

Evacuation Needs

- Ensure all staff are familiar with
  - Evacuation procedures
  - Designated evacuation routes
- Adequate supplies and equipment for evacuation
  - Pediatric unit
  - Nursery
  - Med/Surg unit that admits children
- Disaster plan/policy addresses planned vs immediate evacuation

Evacuation Needs (cont’d)

- Predesignate evacuation staging areas
  - Secured access
  - Stockpiled (or ready access to) supplies and appropriate resuscitation equipment
- Prepare unit specific evacuation plans for pediatric areas, i.e. ED, Newborn nursery, Pediatric Unit, Med/Surg unit that admits children
- Conduct unit specific evacuation exercises/drills/training ………
  Practice!! Practice!! Practice!!

How Pediatric Prepared are Hospitals in Illinois?

2013 National Pediatric Readiness Survey Project

- National online survey to measure Emergency Department (ED) pediatric readiness
- Conducted by National EMSC Program in collaboration with:
  - American Academy of Pediatrics (AAP)
  - American College of Emergency Physicians (ACEP)
  - Emergency Nurses Association (ENA)
- Assessment of hospitals based on AAP, ACEP, ENA Joint Policy Statement: Guidelines for the Care of Children in the Emergency Department
- National Hospital Participation (with EDs) = 4,143
  - Median Score = 69
- Illinois Hospital Participation = 97.8%
  - Median Score = 83 (all hospitals)
  - Median Score = 89 (PCCC/EDAP/SEDP hospitals)
  - Median Score = 65 (non-recognized hospitals)

2013 National Pediatric Readiness Survey Question:

Hospital disaster plan addresses issues specific to the care of children

National Median Score = 47
Illinois Median Score = 79

Illinois scores based on Facility Recognition Level:

<table>
<thead>
<tr>
<th>Facility Recognition Level</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDAP (77)</td>
<td>7%</td>
<td>93%</td>
</tr>
<tr>
<td>EDAP (13)</td>
<td>8%</td>
<td>92%</td>
</tr>
<tr>
<td>PCCC/EDAP/SEDP (75)</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Not Recognized (75)</td>
<td>42%</td>
<td>58%</td>
</tr>
</tbody>
</table>

How Pediatric Prepared are Hospitals in Illinois?

2013 National Pediatric Readiness Survey: The Great Neonate Escape

Jodi Hoskins, RNC, MSN
Perinatal Network Administrator
Task Force Development

• Task Force comprised of NICU:
  RNs and Transport RNs
  Charge RNs
  Physician
  HUCs (unit secretary)
  Nurse Manager
  Transport Coordinator
  Care Coordinator
  Respiratory Therapy
  Ancillary Departments

Mock drill/SWOT Analysis

Broad Goals/Vital Issues

**Broad Goals**

1. The development of bedside evacuation kits
2. To develop or define the specific categories of evacuations (Types)
3. To develop an educational tool for staff and new residents
4. To develop a method of evacuation triage specific to the NICU population

**Vital Issues**

- Communication
- Airway management
- Thermoregulation
- Emergency lighting
- Supplies

Vulnerabilities

- Natural disasters
- Nuclear incidents
- Utility failure
- Terrorism
- Fires
- Medical surge

Common vulnerable populations include children and the elderly
- Basic anatomic and physiological differences
- Less fluid reserves
- Sensitive to body temp changes

Image retrieved 1/24/13 from footage.shutterstock.com

Neonatal Vulnerabilities

- Medical support
- Census
- Helpless
Immediate Evacuation

Defined:
An emergency condition that requires the immediate evacuation of the patient population in the immediate infant care area.

(Sr. Vice President of Hospital & Administrative Affairs, 2012, p.17, Annex S)

Planned/Controlled Evacuation

Defined:
An urgent condition that allows a planned and organized evacuation due to the potential lack of resources or imminent threat or danger to staff or infant safety.

(Sr. Vice President of Hospital & Administrative Affairs, 2012, p. 18, Annex S)

Evacuation Priorities/Acuities

<table>
<thead>
<tr>
<th>Acuities</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acuity 1</td>
<td>Minimal Care, Feeder growers</td>
</tr>
<tr>
<td>Acuity 2</td>
<td>Moderate Care, Nasal cannula, BCPAP</td>
</tr>
<tr>
<td>Acuity 3</td>
<td>Intensive Care, Ventilators, drips, chest tubes</td>
</tr>
</tbody>
</table>

Immediate Evacuation Algorithm

Immediate Evacuation Order Given

- Acuity 1 Infants
- Acuity 1 & 2 Infants
- Acuity 2 Infants
- Acuity 3 Infants
- Evacuate to area of refuge or receiving facility
Planned/controlled Evacuation Algorithm

Sr. Vice President of Hospital & Administrative Affairs (2012)

Planned/Controlled Evacuation Order Given

- Acuity 3 Infants
- Acuity 2 Infants
- Acuity 1 & 2 Infants
- Acuity 1 Infants
- Evacuate to receiving facility

Equipment

- Syringe pumps (consider battery life)
- Chemical mattress
- Portable O2
- Nasal cannula/high flow

Evacuation Kits

1 thermal blanket
Head lamp
Package of OBs
5 pairs med. gloves
Diapers
Plastic bag for garbage
Click with second hand
Notepad and pen
Suction catheters (8 fr)
Tegaderm for identification/patient sticker
NG feeding bag
Syringe bag
IV bag

Add at time of evacuation: (If time allows)
Pt. meds/bag D10W or D5W
Ambu bag/mask
IV flush
Thermometer
Stethoscope
Intubation supplies
Pt. ID stickers
Emergency med sheet
ID bands
Diaper wipes
Formula/breast milk

Evacuation Kits-Storage

- Stored in a cabinet in each POD of the NICU
- Secured with tamper resistant tag
- Content outdates to be reviewed annually

Evacuation Devices

- WeeVac
**Evacub Baby Evac Chair**

http://teamsolutions.us/store/all-evacuation-products/evacub-baby-evac-chair/

**Evacuation Apron**

*Caution*
Avoid using the back pockets for transporting babies

**Ethical/Legal**

- Nurses feel an ethical obligation to put the patients before themselves—what about the nurse that is in danger?

- How can the nurse provide care in a disaster situation that is of the same standards as what is provided daily in the NICU?

- What if resources become limited, or run out?

*Image retrieved November 30, 2012 from: SafeBabiesAprons.com*

**Lessons Learned/Mock Drill**

- Education for staff
  - Multifaceted

  Mock Drill

*Image retrieved 1/20/13 from: nursingworld.com*

**Lessons Learned (Main Points)**

- Staff did not:
  - Difficult for staff to take drill seriously
  - Adhere to the policy/execute policy correctly
  - Difficult to take direction from Charge Nurse
  - Caused Charge Nurse to ‘shut-down’

- Had to stop for care
- Lost the physician
- Did not use the paperwork

*G. Brochtrup (personal communication, 2/24/2012)*
Lessons Learned

- Education
  - Goal: what is to be accomplished
  - Small ‘bites’
    - Break into manageable pieces
  - Run full drill

Disclaimers and Disclosures

- Conflicts of Interest
- Products
- Content

A Brief History of Evacuations

- 1989 - San Francisco - Earthquake
- 1994 - Northridge - Earthquake
- 1997 - Helena Regional Medical Center - Chemical Plant Fire
- 1999 - Galion Community Hospital - Bomb Threat
- 2001 - Memorial Hermann Children’s Hospital - Electrical Outage due to Tropical Storm Allison
- 2005 - Hurricanes Katrina and Rita
- 2007 - San Diego - Wild Fires
- 2008 - Saint Anthony's Medical Center - Chemical Contamination
- 2011 - Joplin - Tornado
- 2012 - Super Storm Sandy
- 2013 - Morris Hospital - Flood
- 2014 - Resurrection Hospital - Fire
- 2015 - Holy Cross Hospital - Chemical Contamination
- 2016 - Northern Lights Regional Medical Center - Wildfires

Closing Time

- Conditions that might result in evacuation
  - Fire
  - Flood
  - Tornado/Hurricane
  - Storms – wind, snow, etc.
  - Earthquake
  - CBRNE/Hazmat
  - Terrorism/bomb threat/shooter/civil unrest
  - Significant structural damage
  - Prolonged lack of resources (actual or potential)
    - Power, water, equipment, etc.

That Won’t Happen Here … Right?

- Illinois
  - 83 Tornado events from 2/1/2015 to 2/29/2016
  - 93 earthquakes above 1.5M in the last year
- Advocate Children’s Hospital – Oak Lawn
  - NICU ceiling tile failure/flooding
  - ED fire
  - Basement flooding/elevator unavailability
- Hazard Vulnerability Analysis (HVA)
Evacuation Considerations

- Do we have to go?
- Fast
- Slow
- Small
- Large
- Horizontal
- Vertical
- Near
- Far

We’ve Got to Get Out of Here

- When to evacuate
  - Immediate risk to patients or staff
  - When sheltering in place safely is not possible
  - As directed by the incident management team

Are We There Yet?

- Horizontal evacuation
- Vertical evacuation
- Meeting points
- Off site

All for One and One for All

- Staff Responsibilities – pre evacuation
  - Be familiar with the hospital/unit evacuation plan
  - Know how to operate evacuation equipment
  - Prepare supplies and documents as appropriate

- Nursing Responsibilities – pre-evacuation
  - Account for patients/families/staff
  - Anticipate routes for evacuation
  - Decide how patients will be moved
  - Assist in determining order of movement
  - Assist with minimizing needed equipment

Who’s on First?

- Reducing admitted patient volume
  - Discharging
  - Transferring

- Triaging
  - TRAIN
  - Reverse Triage

- Difficult moves and ethical dilemmas

Special Considerations

- Surge Capacity
- Needed Equipment/Medications
- Special Precautions
- Patient Shepherds
- Child Safe Areas
There is no I in Team

- Nursing Responsibilities – during evacuation
  - Establish evacuation route
  - Move patients safely to evacuation point
  - Indicate that patients have been evacuated from room/area

- Staff Responsibilities – during evacuation
  - Identify hazards
  - Assist with patient movement
  - Transport necessary supplies

Moving Out

- Non Equipment Options
  - Child ambulates or is carried

- Staff required
  - 1:1 or 1: many

- Benefits
  - Rapid
  - May send groups together
  - Stairs are ok!

- Limitations
  - Must be able to ambulate or be light enough to carry in arms
  - Limited ability to transport equipment
  - Risk of falls/drops

- Staff Required
  - 1 per vest

- Benefits
  - Able to move at least two babies at a time

- Limitations
  - Difficult to access infants
  - Unable to view infants in back
  - May cause airway occlusion

Moving Out

- Infant Vests/Aprons
  - Safe Babies

- Staff Required
  - 1 per vest

- Benefits
  - Able to move at least two babies at a time

- Limitations
  - Difficult to access infants
  - Unable to view infants in back
  - May cause airway occlusion

Moving Out

- Evac Baskets/Trays
  - Med Sled Evac Basket
  - Buscot Babe Evac

- Staff Required
  - 1 per basket/tray

- Benefits
  - Secured to staff/tray
  - Infant is easily accessible

- Limitations
  - Meant to carry only one infant
  - Risk for falls

Moving Out

- Wheeled conveyances
  - Wheelchairs
  - Strollers
  - Wagons

- Staff required
  - 1:1

- Benefits
  - Easily accessible
  - May carry more than one child

- Limitations
  - Needs elevator or no stairs
  - Must sit up for wheelchair
  - May not have securement devices

Moving Out

- Evacuation Chairs
  - Stryker
  - Evacu-B

- Staff required
  - 1 or 2 depending on patient weight

- Benefits
  - Significant mechanical advantage

- Limitations
  - Must be able to sit up
  - Not sized for small children
  - Must be carried if going up
Moving Out

- **Sheets**
  - Sheets/blankets/mattresses
  - Skis
  - Slings
- **Staff required**
  - At least 2 if not 4 or more
- **Benefits**
  - Linen readily available
  - Can be stored under mattress
- **Limitations**
  - No securement devices
  - Multiple providers required
  - Limited mechanical advantage

Staff required

- **At least 2 if not 4 or more**

Benefits

- Linen readily available
- Can be stored under mattress

Limitations

- No securement devices
- Multiple providers required
- Limited mechanical advantage

**Moving Out**

- **Beds**
  - Isolettes/bassinettes
  - Cribs
  - Beds
  - Stretchers
- **Staff required**
  - At least 2 per crib/bed
- **Benefits**
  - May put multiple children together
  - No need to transfer
- **Limitations**
  - Needs elevator or no stairs

Staff required

- **At least 2 per crib/bed**

Benefits

- May put multiple children together
- No need to transfer

Limitations

- Needs elevator or no stairs

Moving Out

- **Backboards**
- **Staff Required**
  - At least 2 if not 4 or more
- **Benefits**
  - Patients very secure
  - Stairs are ok!
- **Limitations**
  - Not one size fits all
  - Risk for drops
  - Limited mechanical advantage

Staff Required

- **At least 2 if not 4 or more**

Benefits

- Patients very secure
- Stairs are ok!

Limitations

- Not one size fits all
- Risk for drops
- Limited mechanical advantage

Moving Out

- **WEEVAC**
- **Staff Required**
  - At least 2
- **Benefits**
  - Holds up to six infants
  - Pocket size adjusts
  - Heat reflective pocket lining
  - Stairs are ok!
- **Limitations**
  - Risk for drops

WEEVAC

- **At least 2**

Benefits

- Holds up to six infants
- Pocket size adjusts
- Heat reflective pocket lining
- Stairs are ok!

Limitations

- Risk for drops

Moving Out

- **Sled devices**
  - Paraslyde
  - Med Sled
  - Evacuslider
- **Staff Required**
  - 2 preferred
- **Benefits**
  - Infant/child inserts available
  - May hold more than one child
  - Can also secure equipment
  - Some mechanical advantage
- **Limitations**
  - Risk for drops

Sled devices

- **Paraslyde**
- **Med Sled**
- **Evacuslider**

Staff Required

- **2 preferred**

Benefits

- Infant/child inserts available
- May hold more than one child
- Can also secure equipment
- Some mechanical advantage

Limitations

- Risk for drops

Moving Out

- **Nursing Responsibilities** — post evacuation
  - Account for patients/families/staff post move
  - Reestablish care at the evacuation site
- **Additional responsibilities if patients are leaving the hospital**
  - Complete transfer documents/handoff to receiving facilities
  - Notify families of patient status/destination

Nursing Responsibilities — post evacuation

- Account for patients/families/staff post move
- Reestablish care at the evacuation site

Additional responsibilities if patients are leaving the hospital

- Complete transfer documents/handoff to receiving facilities
- Notify families of patient status/destination
Out of Sight. Out of Mind?

• Finding accepting hospitals
• Transporting off campus
• Communications
• Patient Tracking

Resources

• AHRQ Evacuation Decision Guide
  http://archive.ahrq.gov/prep/hospevacguide/

Questions?

Thank You!!

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