

Emergency Preparedness in the NICU

Children's Hospitals and Preparedness Webinar
Friday, May 12, 2017, at 1:30pm ET/12:30pm CT

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



OBJECTIVES

1. Identify and describe the vulnerabilities of infants in the NICU in different kinds of disasters and emergencies
2. Recognize existing resources and planning tools to use in disaster preparedness planning for the NICU and patients
3. Compare strategies for developing and maintaining a NICU emergency preparedness plan

TECHNICAL SUPPORT

- Type issue into the chat feature
- Call 1-800-843-9166
- Email support@readytalk.com

Q & A

- Submit Questions at any time through the chat box
- Over the phone, call 888-337-8199, ID # 330971. Dial *1 on your phone to ask a live question.

PRA CREDITS STATEMENT

- The American Academy of Pediatrics (AAP) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.
- The AAP designates this live activity for a maximum of 1.0 *AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
- This activity is acceptable for a maximum of 1.0 AAP credits. These credits can be applied toward the AAP CME/CPD Award available to Fellows and Candidate Members of the American Academy of Pediatrics.
- The American Academy of Physician Assistants (AAPA) accepts certificates of participation for educational activities certified for *AMA PRA Category 1 Credit*[™] from organizations accredited by ACCME. Physician assistants may receive a maximum of 1.0 hours of Category 1 credit for completing this program.
- This program is accredited for 1.0 NAPNAP CE contact hours of which 0 contain pharmacology (Rx) content, (0 related to psychopharmacology) (0 related to controlled substances), per the National Association of Pediatric Nurse Practitioners (NAPNAP) Continuing Education Guidelines.
- Successful completion of this CME activity, which includes participation in the activity, with individual assessments of the participant and feedback to the participant, enables the participant to earn 1 MOC points in the American Board of Pediatrics' (ABP) Maintenance of Certification (MOC) program. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of granting ABP MOC credit.



FACULTY



Steven E. Krug, MD, FAAP
Head, Division of Emergency Medicine
Ann & Robert H. Lurie Children's Hospital of Chicago

Chairperson, American Academy of Pediatrics
Disaster Preparedness Advisory Council

FACULTY



Rear Admiral Wanda Barfield, MD, MPH, FAAP
Director, Division of Reproductive Health
National Center for Chronic Disease Prevention and
Health Promotion
Centers for Disease Control and Prevention

CDC Liaison to the AAP Committee on Fetus and
Newborn

FACULTY



Douglas Carbine, MD, FAAP
Vice President, California Association of Neonatologists

**Lead author, California Perinatal Quality Care
Collaborative Toolkit for NICU Disaster Preparedness,**

Disaster Preparedness Task Force
Neonatologist, Naval Medical Center San Diego

DISCLOSURES

- The presenters have no relevant financial relationships with the manufacturers(s) of any commercial products(s) and/or provider of commercial services discussed in this activity.
- The presenters do not intend to discuss an unapproved/investigative use of a commercial product/device in this presentation.

Welcome Remarks

Steven E. Krug, MD, FAAP

Head, Division of Emergency Medicine

Ann & Robert H. Lurie Children's Hospital of Chicago

Chairperson, American Academy of Pediatrics Disaster

Preparedness Advisory Council

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



DISASTER PREPAREDNESS IN NEONATAL INTENSIVE CARE UNITS *PEDIATRICS*, VOL 135, # 5, MAY 2017

CLINICAL REPORT Guidance for the Clinician in Rendering Pediatric Care

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

Disaster Preparedness in Neonatal Intensive Care Units

Wanda D. Barfield, MD, MPH, FAAP, RADM, MSPHS,¹ Steven E. Krug, MD, FAAP,^{2,3} COMMITTEE
ON FETUS AND NEWBORN, DISASTER PREPAREDNESS ADVISORY COUNCIL

Disasters disproportionately affect vulnerable, technology-dependent people, including preterm and critically ill newborn infants. It is important for health care providers to be aware of and prepared for the potential consequences of disasters for the NICU. Neonatal intensive care personnel can provide specialized expertise for their hospital, community, and regional emergency preparedness plans and can help develop institutional surge capacity for mass critical care, including equipment, medications, personnel, and facility resources.

abstract

FREE

¹Centers for Disease Control and Prevention, Atlanta, Georgia;
²Northwestern University Feinberg School of Medicine, Evanston,
Illinois; and ³Department of Pediatric Emergency Medicine, Ann and
Robert H. Lurie Children's Hospital, Chicago, Illinois

Drs Barfield and Krug were each responsible for all aspects of writing
and editing the document and responding to questions and
comments from reviewers and the Board of Directors.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



Disaster Preparedness in the NICU



RADM Wanda D. Barfield, MD, MPH, FAAP
Director, CDC Division of Reproductive Health
AAP Children's Hospitals and Preparedness Webinar Series
May 12, 2017

Today's Discussion

- Why we need this report
- What's in the report
- Definitions
- Examples of disaster effects on NICU populations
- Role of NICU providers in emergency planning
- Resources
- Considerations when creating an emergency plan
- Key recommendations



Why We Need this Report

- Disasters disproportionately affect vulnerable, technology-dependent people –NICU patients are especially technology-dependent
- Vital for NICU providers to be aware of and prepared for potential consequences of disaster for NICUs
- NICU personnel can provide specialized expertise for their hospital, community, and regional emergency preparedness plans and help develop institutional surge capacity for mass critical care

What's in the Report?

Objective: To help neonatologists and other NICU providers and administrative leaders understand organizing concepts and develop response plans within their units, hospital institutions, and geographic regions

What's in the Report?

Report Includes:

- Review of disasters that have impacted NICUs in the US
- Examination of how organizing concepts of mass critical care in pediatrics can be applied to the NICU
- Concrete information to help NICU providers and administrative leaders construct a plan
- Key recommendations

Definitions Used in this Report

Disaster – A sudden, calamitous event, natural or manmade, that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources

Sources:

1. International Federation of Red Cross and Red Crescent Societies: <http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/>
2. Devereaux AV, Dichter JR, Christian MD, et al. Task Force for Mass Critical Care. *Chest*. 2008; 133(5 Suppl):S51-S66

Definitions Used in this Report

Emergency Mass Critical Care (EMCC) – The immediate need for critical care resources, including staff, medical equipment, supplies, medications, and intensive care unit space to provide timely, effective care to a large population surge of critically ill victims during a disaster

Sources:

1. International Federation of Red Cross and Red Crescent Societies: <http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/>
2. Devereaux AV, Dichter JR, Christian MD, et al. Task Force for Mass Critical Care. *Chest*. 2008; 133(5 Suppl):S51-S66

Examples of Disaster Effects on NICU Populations

Disaster Type	General Examples	Potential Effects to NICU Patients
Natural Disaster	Hurricane Katrina Superstorm Sandy	• Loss of electrical power & life-sustaining equipment • Particulate matter or droplets from debris that can affect skin/airways • Increased risk of infection or injury during transfer or evacuation • Exposure to temperature extremes • Constraints on adequate nutrition • Limited medication doses available • Increased risk of neonatal conditions related to maternal stress • Loss of clean water • Possible carbon monoxide poisoning from generators
Industrial Disaster	Radiologic disasters Chemical spills	• Disruption of fetus/infant's growing organ systems • Radiation/carcinogen exposure that may lead to long-term effects • Contamination of water sources

Examples of Disaster Effects on NICU Populations

Disaster Type	General Examples	Potential Effects to NICU Patients
Pandemic Infectious Diseases	H1N1 Influenza Ebola virus disease Zika virus	• Infection control & medical countermeasure challenges • Need for patient isolation • Increased maternal illness, preterm birth, or birth defects • Risk to first responders, hospital staff, & caregivers
Bioterrorist Event	2001 Anthrax attacks Aerosol release of Smallpox 1995 Sarin attack in Tokyo Subway	• Non-specific syndromic symptoms • Limited access to post-exposure vaccination • Selection criteria for administering vaccine • Jeopardized safety of first response team

Role of NICU Providers in Emergency Planning

- Develop and maintain an emergency preparedness plan
- Participate in the larger plan of hospital emergency preparedness – and be involved within hospitals, communities, states, and regions
- Include specific advance plans for NICU patients' acute care, stabilization, triage, transfer, and evacuation



Resources for NICU Providers

1. Emergency Medical Services for Children Innovation and Improvement Center
2. California Hospital Association's Hospital Readiness Program
3. Pediatric Preparedness Resource Kit of the AAP
4. New York City Pediatric Disaster Coalition's Customizable Neonatal Critical Care Surge Capacity Plan

U.S. Department of Health & Human Services
Office of the Assistant Secretary for Preparedness and Response

Preparedness Emergency About ASPR

 **Public Health Emergency**
Public Health and Medical Emergency Support for a Nation Prepared

PHE Home > Preparedness > Planning > Legal Authority and Other Guidance > NHSS > Community Health Resilience in Action

Search

Community Health Resilience in Action

National Health Security

Resources for NICU Providers

5. Technical Resources, Assistance Center, and Information Exchange (TRACIE)
6. National Library of Medicine Disaster Information Management Research Center
7. Centers for Disease Control and Prevention (CDC)



Making an Emergency Plan: Considerations

- Staffing support for safe and effective operations during a disaster
- Family care during disasters
- Transfer/Evacuation
- Sharing resources with the hospital and community
- Medical countermeasures
- Nutrition and human milk
- Ethical considerations
- Recovery from prolonged disaster events



Making an Emergency Plan: Ethical Considerations



- Hospital ethics committees should assist with planning
- Altered Standards of Care – Decisions made because of limited resources may result in the death or disability of critically ill infants who might have otherwise survived under normal circumstances

Key Recommendations

1. Preparation prior to a disaster event is critical to optimizing outcomes of NICU patients during public health emergencies and disasters.
2. It's important for NICU teams to participate fully in the emergency and disaster planning activities at their facility, health care system, or regional, state, and local emergency management agency.
3. Neonatal care systems can develop appropriate staffing support for safe and effective operations during disasters.
 - ID surge capacity for 3x baseline critical care resources and sustain for 10 days during a major public health disaster.

Key Recommendations

4. During a disaster, neonatal care providers can maintain situational awareness for decision making, including patient volume and severity of illness, available equipment, medication, and staffing, transport, evacuation, recovery, and crisis standards of care.
5. In addition to needs of patients, NICU providers may need to consider the medical and psychological needs of postpartum mothers and families.
6. NICU providers should continue to research best practices, neonatal modifications and dosing, and the effects of altered states of care in disasters.

Thank you!

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



CPQCC NICU Disaster Preparedness Tool Kit

Douglas Carbine, MD
Vice President, California Association of
Neonatologists
CAN Disaster Preparedness Task Force

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



NICU PERSPECTIVES AND DISASTER PREPAREDNESS MISCONCEPTIONS

- Disaster planning occurs at the Hospital's Executive Level and NICU leaders have little to contribute
- NICUs do not deal in mass casualties therefore have no role in disaster planning
- Disaster drills rarely if ever involve the NICU, and little is gained from participation
- During a disaster, someone will tell me what to do
- Redundant systems and evacuation equipment are costly and will (likely) never be used
- NICU Disaster Preparedness = Evacuation Planning



CAN TASK FORCE ON NICU DISASTER PREPAREDNESS TIME LINE

- 2011
 - CAN and the AAP District IX Section on Neonatal Perinatal Medicine endorse TRAIN
 - Grass routes attempts at regional implementation of TRAIN
- 2012
 - CAN Task Force on NICU Disaster Preparedness formed
- 2013 and 2014
 - Disaster preparedness presentations during the 2013 and 2014 annual CAN Conferences
- 2014
 - CPQCC Tool Kit completed
- 2015
 - Disaster Preparedness presentation given at the 2015 California NICU Directors Meeting



CAN TOOLKIT

- Go to CPQCC home page
- Click “QI Toolkits” from tool bar on top
 - At the bottom of Toolkit Menu, click “QI toolkits from outside resources”
 - Click “CAN Neonatal Disaster Preparedness Toolkit” from menu
 - Click blue text, “CAN Neonatal Disaster Preparedness Toolkit”, and you are in!

<http://www.chawisconsin.org/documents/EC4NICUToolkit.pdf>

MISSION STATEMENT

Neonatal-Perinatal patients have unique needs that distinguish themselves from most other hospitalized patients:

- NICU patients are highly dependent on hospital staff for all aspects of their care.
- Many are critically ill and are heavily dependent on advanced technology for their survival.
- Any number of disasters has the potential to impact on a NICU's ability to care for patients.

Intent of the Tool Kit: provide guidance to NICU leaders in developing comprehensive disaster response plans that are:

- In compliance with Joint Commission Standards
- Based on community best practice models

CAN TOOLKIT GOALS

- Introduce the Hospital Incident Command System (HICS) and basic principles of disaster response
- Introduce the Hazard Vulnerability Analysis (HVA)
 - Conduct modified HVA to identify major hazards faced by NICUs in California
- Provide suggested mitigation and response strategies for items identified in modified HVA
- Provide sample check lists, job action sheets, and information transfer sheets for specific hazards, as well as references for further training in a series of appendices

MODIFIED CAN HAZARD VULNERABILITY ANALYSIS (HVA)

- Natural Hazards

- Earthquakes
- Wild fires
- Dam/levee breach
- Extreme temperature
- Floods
- Tsunami
- Drought

- Human Hazards

- Active shooter
- Pandemic
- Bio-terrorism
- Terrorism
- Bomb Scare
- Region-wide bed shortages
- Violent visitor
- Infant abduction
- Labor dispute

MODIFIED CAN HVA

- Infrastructure Failure:
 - Computer failure
 - Power outage
 - Med gas outage
 - Plumbing breach
 - Water outage
 - HVAC failure
 - Wall suction outage
- HAZMAT accidents:
 - Industrial Spill
 - Chemical fire
 - Nuclear accident or radioactive material exposure

HVA SIMPLIFIED

- Stand alone capability
- Back up systems for critical aspects of patient care
- Shelter in place
- Surge capacity
- Evacuation



TRAIN

(TRIAGE BY RESOURCE ALLOCATION FOR IN-PATIENTS)

<i>Transport</i>	<i>Car</i>	<i>BLS</i>	<i>ALS</i>	<i>CCT</i>	<i>Specialized</i>
Life Support	Stable	Stable	Minimal	Moderate	Maximal
Mobility	Car/Carseat	Wheelchair or Stretcher	Wheelchair or Stretcher	Transport Rig	Immobile
Nutrition	All PO	Intermittent Enteral	Continuous Enteral or Partial Parenteral	Complete TPN	NPO & TPN
Pharmacy	PO Meds	IV Lock	IV Fluids	IV Drip x1	IV Drip ≥ 2

Life Support	Minimal =	Hood or Low Flow Cannula O2, chest tube, etc.
	Moderate =	CPAP/BiPAP/Hi-Flow, Conventional Ventilator, Peritoneal Dialysis, Externally paced, wt ≤ 3 kg, continuous nebulizer treatments, etc.
	Maximal =	Highly specialized equipt., e.g., HFOV, ECMO, iNO, CVVH, Berlin Heart, wt ≤ 1.5 kg, etc.
Mobility	Car/Carseat =	Able to ride in automobile with age-appropriate restraints
	Transport rig =	Age-appropriate rig with equipment for connecting to ambulance
	Immobile =	Unsafe to move without special equipment e.g., neurosurgical/bariatric

AAP NICU LEVELS

- **Level I**
 - Well Newborn Nursery
- **Level II**
 - GA > 32 weeks
 - Weight > 1500 grams
 - Brief ventilation (< 24 hrs)
- **Level III**
 - < 32 weeks, < 1500 grams
 - Ready access to pediatric and pediatric surgical subspecialties
 - Full range of respiratory support
 - Advanced imaging
- **Level IV**
 - Level III capability plus ECMO, Cardiac repair

WHERE DO WE GO FROM HERE?



- Now >5 years of NICU community education
- Toolkit on line since 2014
- Statewide NICU preparedness is still very uneven
- Move to add preparedness to individual NICU CPQCC score card



Final Remarks

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



CLAIMING CME/MOC CREDIT

CME credit:

- To receive credit participants must successfully complete the post activity survey.

MOC Part 2:

- Participants will need to fill out an attestation document that will be send out to all participants following the webinar.

AAP staff will email each person claiming CME/MOC 2 credit with their certificate of completion. Email DisasterReady@aap.org with any questions.

QUESTIONS?

- Dial *1 on your phone to ask a live question.
- Phone: 888-337-8199
- Conference ID: 330971
- You may also ask a question through the chat box in the lower left hand corner. The AAP staff or presenters will address unanswered questions via e-mail after the call.
- Please e-mail DisasterReady@aap.org to follow-up as needed.



THANK YOU!

This webinar is supported by cooperative agreement number 5U38OT000167-04, funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the US Department of Health and Human Services.

