Integration of Maternal and Child Health into Disaster Preparedness and Response: Federal Public Health and Medical Efforts

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[Diagram of organizational structure]
Presentation Outline

1. Introductions
2. Reproductive Health Issues & Resources
3. Pediatric & Mental Health Capabilities
4. Integration in Medical Countermeasures
5. Discussion
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Reproductive Health Issues and Resources for Emergency Medical Response

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National Center for Chronic Disease Prevention and Health Promotion
Division of Reproductive Health
Outline

- Describe how emergency events may affect reproductive health
- Share preparedness and response tools and resources for local, state and tribal use
- Highlight communication activities with partners and disaster-affected women
Pregnant Women and Catastrophic Events

- Classified as ‘at-risk individuals’
- Disproportionate burden in some infectious diseases
- Disaster exposure associated with:
  - Preterm birth or having low birth weight infants
  - Increases in maternal risk factors
  - Increase in psychological stress
  - Separation from family and support systems
  - Exposure to environmental contaminants
  - Lack of access to health care and medications
- Lack of surveillance
Postpartum Women and Catastrophic Events

- Lack of access to contraception and reproductive health care
- Lack of access to well-child and acute care
- Effects on infant feeding
  - Exposure to contaminants can affect breastfeeding
  - Lack of access to potable water may affect formula feeding
- Loss of infant care supplies
- Increase in psychological stress
- Separation from family and support systems
Disaster and Women of Reproductive Age (WRA)

- Inconsistent changes in birth rate after disaster
  - Increases after Hurricane Hugo and OK City bombing
  - Decreases after Hurricane Katrina and 1997 ND Red River Flood

- Little known about disaster effects on WRA in US
  - No routine surveillance of disaster-affected WRA
  - Inconsistent reports of intimate partner violence
  - Inadequate studies on contraceptive use, access to medical and social services, risk behaviors, etc.
Purpose: Prepare DRH to respond to reproductive health needs of the US population after natural or man-made catastrophic events by:

- Gathering epidemiologic/surveillance data to guide action
- Developing recommendations and tools to guide public health response specific to pregnant and lactating women and newborns
- Developing a plan to reduce fertility risks, infertility, or inadequate contraception
- Developing a plan to communicate with clinical, public health and government partners and pregnant women regarding preparedness and response
- Developing a human resources preparedness plan for DRH
RHAD Toolkit

- Reproductive Health Assessment After Disaster (RHAD) Toolkit

http://cphp.sph.unc.edu/reproductivehealth/
What is Included in the RHAD Toolkit

- **Pre-tested questionnaires**
  - Pregnant and Postpartum Women
  - Women of Reproductive Age
  - Topics include safe motherhood, infant care, family planning, family stressors and service needs, health and risk behaviors, and gender-based violence.

- **Variable codebooks**

- **Sampling instructions for 2 stage cluster sampling with referral**

- **Interviewing training resources**

- **Resources for data collection and analysis**
Pregnancy Estimator

- When There is an Emergency: Estimating the Number of Pregnant Women in a Geographic Area

  Provides estimation tool for a jurisdiction

  Calculates number of pregnant women at a point in time

  Uses pregnancy rates
Post-disaster Indicators for Pregnant and Postpartum Women and Infants

- **Purpose:** To develop/select a list of common epidemiologic indicators for pregnant and postpartum (P/PP) women and infants affected by disaster
  - To identify salient conditions and outcomes to be monitored via surveillance or post-disaster data collection
  - To promote use of consistent measures across post-disaster studies
  - To build scientific knowledge regarding disaster effects on P/PP women and infants
Preparedness Activity for Post-Disaster Surveillance

- Adapting the Pregnancy Risk Assessment Monitoring System (PRAMS) methodology for surveillance after a catastrophic event
Contraceptive Availability During an Emergency Response in the United States

- Importance of contraception in a disaster setting
  - Difficulty accessing contraception after a disaster
  - Importance of continued contraceptive coverage
  - Crucial for providers and women to understand instructions for use

- Manuscript outlining the evidence for
  - Contraceptive need to prevent unintended pregnancy during and after emergencies
  - The most appropriate types of contraceptive availability in such situations
Anthrax Bioterrorism Preparedness Activity

- CDC Multi-center Anthrax project
  - Purpose: Identify vaccination and treatment issues related to Anthrax in pregnant/postpartum/lactating women and newborns
  - FY 2012: National expert meeting to inform development of guidance and communication
  - FY 2013: Dissemination of guidance
Emergency Preparedness and Response: Pregnant Women and Newborns

The United States has averaged 58 major federally declared disasters annually in the past 15 years. In this time period, each state and U.S. territory has experienced a disaster. Nearly 850,000 people in the United States are affected by natural disaster yearly. However, that number does not include those affected by man-made events or pandemic diseases such as influenza.

Disasters disrupt people’s lives, families, and communities. Disasters can affect access to needed medical and social services, increase stress, intensify physical work, and expand caregiving duties. Any of these effects may result in poor health outcomes among women of reproductive age, especially pregnant women.

Pregnant women are classified as “at-risk individuals” in the 2006 Pandemic and All-Hazards Preparedness Act. The needs of pregnant women are also stressed by Department of Health and Human Services (DHHS) programs emergency preparedness and response activities in the Special Medical Needs: Definitions and Related Terms [PDF - 85KB].

Research studies conducted after disasters in the United States have shown that pregnant women may have increased medical risks such as blood pressure disorders or anemia. Also, their infants may experience health issues such as low birth weight, shorter length, preterm birth, or smaller head size.

CDC’s Division of Reproductive Health (DRH) has a history of preparing for and responding to the needs of women and infants before, during, and after disaster events. This includes working...
Intra- and Inter-Agency Collaborative Activities

- Development of CDC Public Health Emergency Preparedness (PHEP) cooperative agreements
- Capacity building activities with CDC Office of Public Health Preparedness and Response (OPHPR)
- Addressing other MCH issues with other CDC centers and offices
- Preparedness planning with other federal agencies
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.
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NDMS: Collaborating in the Response to a Catastrophic Incident

Andrew Garrett, MD, MPH
NDMS Overview

• What is the NDMS?
  — Collaborative partnership between federal agencies
    • Medical Response
    • Patient Evacuation
    • Definitive Care
  — Purpose
    • Supplement state/local resources
    • Assist with surge of military casualties
Overview of Federal ESF-8 under the National Response Framework

- National Response Framework (NRF) informs a coordinated response

- Catastrophic incidents will require a national not just a federal effort

- HHS is the lead ESF-8 agency with many partners, response is coordinated by ASPR

ESF-8 includes:
- Public Health Assessment
- Surveillance
- Medical care and supplies
- Patient Evacuation
- Patient and Animal Care
- Drug Safety and Security
- Blood and Related Products
- Food Safety and Security
- Agricultural Safety and Security
- Behavioral Health
- Vector Control
- Water and Wastewater
- Mass Fatality Support
- Definitive Care
• Personnel
  — 24 Headquarters staff
  — Over 7000 Intermittent Personnel organized into support and response teams
    • Medical Care (DMAT and IMSURF)
    • Mortuary Care (DMORT)
    • Specialty (NVRT, MSET, IRCT, MAC-ST, JPATS)
  — Responders are *Intermittent* Federal Employees
  — Coverage includes FTCA, Workers Comp, USERRA
  — Clinical personnel are credentialed by NDMS (~5000 personnel)
NDMS as part of a Collaborative Response after a Disaster

• Delivery of Care in the Field upon Approved Request
  – Medical or mortuary facility and/or staff supplementation
  – DMAT, NVRT, DMORT, IRCT

• Patient Movement out of Affected Area
  – Medical care at staging facility (MAC-ST, DMAT)
  – DoD coordinates the air transport and en route care
  – Tracking via JPATS
  – Patients received at Federal Coordinating Centers

• Definitive Care
  – Network of over 1500 hospitals under agreement
  – SAT Teams (USPHS) and Repatriation (HHS)
The Whole Community Approach

- Moving away from “government-centric” management
- Focus on communities as a sum of their parts
- Children and pregnant women are integral to every community, yet have been traditionally marginalized throughout the disaster lifecycle:
Response

• NDMS is a response asset
• Describing the challenges of “all hazard” strategy in planning response work
  — Type of personnel
  — Training
  — Equipment
  — Agility / Response Time
  — Compare to the “specific hazards” strategy (pandemic, nuclear, earthquake, etc.)
• Describing NDMS pediatric specialty team natural history
• Defining expectations of care of children and other at-risk population by NDMS during disasters
• Probably the most fertile area for effecting purposeful change
• Whole community = equity in preparedness
• Embracing the functional needs framework
• Achieving this goal:
  — Better identifying gaps (research, communication)
  — Improving prevalence of preparedness
  — Understanding how under-preparedness for children and other at-risk individuals can hamstring overall response
  — Educational goals across the medical and response community (competencies)
  — Leveraging at-risk communities in the solution
Summary

• Tremendous research and advocacy opportunities exist to advance the health security of those in at-risk communities
Addressing Children’s Needs

• Hard-wired into ASPR’s programs and policies:
  — Subject matter expertise
  — Training for responders
  — Stakeholder outreach
  — Development of medical countermeasures

• ASPR and ACF co-lead the Children’s HHS Interagency Leadership on Disasters (CHILD) Working Group to coordinate departmental efforts and develop recommendations for addressing the disaster health and human services needs of children.

• Completed a Disaster Behavioral Health Concept of Operations, available at www.phe.gov/abc.
• Children’s behavioral health is part of every response and recovery.
• Provided support in response to Superstorm Sandy and the Sandy Hook Tragedy.
• Joplin, Missouri Response – SAMHSA & FEMA administered “Healing Joplin After the Storm,” which sent crisis counselors trained in psychological support into the community and schools to work with children.
• Crisis Counseling Assistance and Training Program (CCP)
• National Child Traumatic Stress Network (www.nctsnet.org)
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Integration in Medical Countermeasures

Richard L. Gorman, MD, FAAP
Chair, PedsOB IPT
ASPR/PHEMCE
If it takes a village to raise a child, how many government agencies does it take to protect the village and the child?
• What does the federal government “do” about disasters?
  — The same thing we recommend for individuals and families to do.
  — We plan, prepare, and stay informed.

• With this integration in Medical Countermeasures, this group is attempting to put into place an essential part of the nation’s emergency kit: The first aid kit.
What natural and man made threats are we facing?

Natural:
- Earthquake
- Hurricane
- Tornado
- Flood
- Drought
- Fires

Man Made:
- Violence
- Power Failures
- Chemical
- Biological
- Radiological
- Nuclear
Organisms/Biological Agents in Category A:

- Anthrax
- Botulism
- Plague
- Small Pox
- Tularemia
- Viral Hemorrhagic Fevers
  - Arenaviruses (LCM, Junin Virus, Lassa Fever)
  - Flaviviruses (Dengue)
  - Filoviruses (Ebola, Marburg)
Category A agents pose a risk to national security

- Easily disseminated or transmitted from person to person
- Result in high mortality rates and have the potential for major public health impact
- Might cause public panic and social disruption
- Require special action for public health preparedness
• Unique Pediatric Vulnerabilities

— Close to the ground
  • Anthrax, Viral hemorrhagic fever
— Higher respiratory rate
  • Anthrax, Plague, Small pox
— Smaller size
  • Botulism
— Hand to mouth behavior
  • Botulism, Small Pox
— Curiosity
  • Plague, Tularemia, Viral Hemorrhagic fever
— Less fluid reserve
  • Plague
Anthrax

Organism type: Bacteria, spores

Transmission: Inhalation of spores

Untreated mortality: 75%

Cause of death: Pneumonia
Botulism

Organism type: Bacteria, spores, toxins

Transmission: Through food sources

Untreated mortality: Unknown

Cause of death: Suffocation, muscle paralysis
Plague *Black Death*

**Organism type:** Bacteria

**Transmission:** Person to person, fleas

**Untreated mortality:** 40-90%

**Cause of death:** Pneumonia, shock, sepsis
Small Pox

Organism type: Virus

Transmission: Person to person through respiratory droplets

Untreated mortality: 30%

Cause of death: Pneumonia, skin and throat infections
Tularemia  
*Rabbit Skinner’s disease*

**Organism type:** Bacteria

**Transmission:** Via fleas, ticks, animal bites

**Untreated mortality:** <1%

**Cause of death:** Infection, pneumonia
Viral Hemorrhagic Fever

**Organism type:** Multiple organisms

**Transmission:** Mosquitoes, ticks, rodents

**Untreated mortality:** Varies

**Cause of death:** Bleeding
Address medical countermeasure gaps for all sectors of the American civilian population.

- **Objective 4.1** – Develop medical consequence and public health response assessments and requirements setting for at-risk individuals.
- **Objective 4.2** – Support medical countermeasure advanced development and procurement for at-risk individuals.
- **Objective 4.3** – Develop and implement strategies, policies, and guidance to support the appropriate use of medical countermeasures in all civilian populations during an emergency.
The Pediatric and Obstetric Integrated Program Team (PedsOB IPT) is established by the Public Health Emergency Medical Counter Measures Enterprise (PHEMCE) to support and assist threat-based PHEMCE IPTs with strategies for identifying, developing, acquiring, deploying, and using high priority medical countermeasures for children and pregnant women in public health emergencies.
Established in October of 2011.

Advises the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) with strategies for identifying, developing, acquiring, deploying, and using high priority medical countermeasures for children and pregnant women in public health emergencies.

Agencies represented: ASPR (BARDA, NDMS, Policy), CDC, DHS, FDA, NIH, NVPO, and VA.
The PedsOB IPT accomplishes its purpose by:

- Supporting the threat-based PHEMCE IPTs
- Prioritizing issues and recommending solutions for identified MCM gaps for obstetric and pediatric populations
- Providing input on requirements setting, research needs, the Annual Review of the Strategic National Stockpile (SNS), and other matters determined by the PHEMCE
- Engaging stakeholder feedback as needed and appropriate
The IPT has met 13 times since its inception and has prepared and/or considered 17 presentations or requests; some examples:

1. Review of NBSB pediatric anthrax study recommendations
2. Considerations for MCM development in children (AAP)
3. Dysphagia: data and implications for the SNS
4. Auto-injectors for children; 2-PAM and midazolam
5. Review of pediatric ancillary supplies for the SNS
6. Ventilator requirements for the pediatric population
7. Analysis of regulatory gaps for pediatric/OB MCMs in the SNS
8. Discussion of inclusion of uterotonic medications in the SNS
• Responded to the Anthrax IPT request to review the requirement for anthrax antimicrobial PEP for young children.

• Responded to the Rad-Nuc IPT request to make formulation recommendations on the supply of tablet and liquid KI in the SNS.

• Participated in the 2012 SNS Annual Review.
  — Prioritized and made recommendations around 13 MCMs using five criteria: criticality, flexibility, performance, sustainability, usability.
The Children’s HHS Interagency Leadership on Disasters (CHILD) Working Group, co-chaired by ASPR and ACF, prioritized three additional areas of focus for 2012:

1. Children with special health care needs and other sub-populations of children traditionally under-represented in planning efforts
2. Pregnant/breastfeeding women and neonates (including sub-section specific to medical countermeasures)
3. Enhancing interdepartmental and NGO collaboration

• BARDA includes options for studies to support development of pediatric and geriatric indications and formulations of MCMs in all late-stage development and procurement contracts.

— BARDA is supporting the development of safe and effective pediatric formulations of Radiogardase (Prussian Blue) for children less than two years of age for treatment after radiation poisoning (i.e., radioactive cesium and/or radioactive or non-radioactive thallium).
• The National Biodefense Science Board (NBSB) benefits from five members with expertise in pediatric emergency medicine, infectious disease, epidemiology, and child psychiatry.

• The FDA established a Pediatric and Maternal Public Health and Security Action Team through its Medical Countermeasures Initiative (MCMi).
  — Among its activities, this group worked with CDC to complete an inventory of the SNS to identify data gaps that could inhibit the effective use of stockpiled MCMs in children and other at-risk populations.
FDA and NICHD manage the implementation of the **Best Pharmaceuticals for Children Act (BPCA)** and the **Pediatric Research Equity Act (PREA)**, which:

- Address obstacles that hinder the adequate study and labeling of drugs and devices for the pediatric population.
- Identify and prioritize drugs needing study, and develop study requests in collaboration with NIH and FDA.
- Offer an additional six months of patent exclusivity for on-patent drugs being tested for pediatric use.
- As a result, more than 425 drug labels have been revised with important pediatric information.
• CDC’s Children’s Preparedness Initiative champions the needs of children in disaster planning and response efforts through cultivating and collaborating with partners, building technical expertise, integrating children’s needs, and increasing awareness. Examples include:

— Working with the American Academy of Pediatrics to formalize clinical guidance for the treatment and prophylaxis of children against anthrax.

— Developing an instructional video in English and Spanish about pill crushing (e.g., doxycycline) for in-home use.
• **NICHD: Pediatric Trials Network (PTN)**
  – Established in 2010 to create an infrastructure to study critical drugs and diagnostic devices in children to improve labeling for pediatric use.
  – Plans to conduct 16 trials over the next five years that might enhance pediatric labeling.

• **NIAID**
  – Vaccine trials in special populations for pandemic and seasonal influenza.
  – Therapeutic trials for antivirals for multiple special populations
    o Neonates, solid tumor transplant patients, immunosuppressed.
  – Approval through the Animal Rule of therapeutic modalities for all populations.
• The Goal of all these efforts:

• To plan for both high and low risk scenarios
• To plan for both high and low impact scenarios
• To create the “right” disaster kit for the nation
• **Facilitate appropriate dosing and utilization of pediatric and obstetric medical countermeasures.**
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