Protecting Pregnant Women and Babies during Public Health Emergencies

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Outline

• Public Health Emergencies: Impacts on Pregnant Women and Infants
• Experiences from Recent Public Health Emergencies
  • H1N1 response
  • Zika response
• Tips and Resources
Public Health Emergencies: Impacts on Pregnant Women and Infants
Public Health Emergencies

- **Large scale natural disasters**
  - Hurricanes, earthquakes, wildfires, etc.
  - Fukushima

- **Manmade disasters – Chemical, Biologic, Radiologic, Nuclear or Explosive**
  - September 11th
  - 2001 Anthrax attacks
  - Flint water crisis

- **Significant infectious disease outbreaks**
  - H1N1, Ebola, Zika
Pregnant Women and Public Health Emergencies

- Populations with special clinical needs*
- Disproportionate burden for some infectious diseases
- Disaster exposure may be associated with:
  - Preterm birth or low birth weight infants
  - Increases in pregnancy complications
  - Increase in psychological stress
  - Separation from family and support systems
  - Exposure to environmental contaminants
  - Lack of access to health care
- Lack of surveillance

*Pandemic and All-Hazards Preparedness Reauthorization Act of 2013. Sect. 304.
Postpartum Women and Public Health Emergencies

- Lack of access to contraception and reproductive health care for women of reproductive age
- 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
Possible Impacts of Exposures During Pregnancy

- **Infants:**
  - Birth defects
  - Small for gestational age/ low birth weight
  - Preterm birth
  - Neonatal complications
  - Prolonged hospital stay
  - Infant morbidity/mortality

- **Children:**
  - Cognitive impairment
  - Motor delay
  - Behavioral issues
  - Educational attainment
Experiences from Recent Public Health Emergencies
CDC Emergency Response

Level 1 Activations:
- Hurricane Katrina
- H1N1 (Pandemic Flu)
- Ebola
- Zika
Experiences from Recent Emergencies

2009
H1N1 Influenza

2014
Ebola

2016
Zika

What did we learn?

Discovered pregnant women and infants can be more vulnerable

Identified need to guide frontline healthcare providers in infection control or treatment

Needed to collect data rapidly to inform response efforts
Pandemic influenza: Special considerations for pregnant women

- Meeting of experts and key partners convened by CDC, April 3-4, 2008
- To develop public health recommendations specific to pregnant women in the event of an influenza pandemic
CDC’s Maternal Health Team

- CDC Emergency Operations Center (EOC) activated April 22, 2009
  - Maternal Health desk activated April 27, 2009 to address issues specific to pregnant and postpartum women
    - The 2nd documented death in the U.S. from H1N1 was a healthy pregnant woman
- First time a maternal health desk established in CDC EOC during a national public health emergency response

Admission Rates for Pregnant Women and General Population with Pandemic (H1N1) 2009 Influenza United States, April 15 to May 18, 2009

<table>
<thead>
<tr>
<th>Population</th>
<th>Admission Rate per 100,000 (95% CI)</th>
</tr>
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<tbody>
<tr>
<td>Pregnant women</td>
<td>0.32 (0.13-0.52)</td>
</tr>
<tr>
<td>General Population</td>
<td>0.076 (0.07-0.09)</td>
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</tbody>
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*Risk Ratio 4.3, 95% CI 2.3-7.8*

*Jamieson DJ et al., Lancet 374:451-8, 2009*
Through December 31, 2009, 280 pregnant women in US admitted to an ICU; 56 deaths

5% of all reported H1N1 deaths were among pregnant women (1% of general population)

Only 1 death occurred in pregnant patient who received treatment within 2 days of symptom onset
CDC’s 2009–2011 Pregnancy Flu Line

- First national influenza surveillance system among pregnant women
- Short-term, targeted program to monitor pandemic and seasonal influenza in pregnant and postpartum women
- Consisted of
  - 24-hour consultation phone line for clinicians and health departments
  - Enhanced passive surveillance system for severe influenza in pregnant/postpartum women
- Operational for two years from October 2009—September 2011
  - No longer in existence
Lessons Learned About Influenza & Pregnancy

- Clear and consistent evidence documenting importance of treatment with influenza antiviral medications in pregnancy
- Justification for treatment of postpartum women for up to 2 weeks following delivery
- Increased influenza vaccination rates among pregnant women – model for other vaccines?
- Renewed scientific interest in wide variety of pregnancy topics – e.g. immunology, infectious diseases, critical care
2016 Zika
CDC’s Response to Zika

PREGNANCY & BIRTH DEFECTS TASK FORCE

Collect critical information about Zika virus infection in pregnancy through surveillance

- USZPR
- ZAPSS
- BDS
- VEZ

Provide clinical consultations about Zika and pregnancy

- 24/7

Provide technical assistance domestically and internationally

Educate audiences about Zika prevention and CDC’s activities

Conduct research to understand Zika virus infection in pregnancy

- Persistent viremia protocol
- Whole blood Epi-aid

Prevent Zika-related birth defects by preventing unintended pregnancy

Engage and share information with partner organizations

Understand knowledge and behaviors about Zika prevention

- Contraception: Assessment for Puerto Rico Zika (CAPRZ)
- PRAMS-Zika Postpartum Emergency Response (PRAMS-ZPER)

Reduce the risk and impact of Zika virus infection in pregnant women, infants, and children
Collecting Data to Protect Mothers and Babies

Surveillance of Pregnant Women, Fetuses, & Infants

- **US Zika Pregnancy Registry**
- **Zika Active Pregnancy Surveillance System (Puerto Rico)**
- **Proyecto Vigilancia de Embarazadas con Zika (Colombia)**
- **US Zika-Related Birth Defects Surveillance**
US Zika Pregnancy & Infant Registry and Zika Birth Defects Surveillance Complement Each Other

US Zika Pregnancy and Infant Registry
- Pregnant women and infants with laboratory evidence of possible Zika virus infection

Zika Birth Defects Surveillance
- All infants with Zika related birth defects, with and without congenital Zika exposure

Infant & Child Follow-up for prenatal Zika exposure
- Referral to Services – Infants with birth defects
What Have We Learned about Zika During Pregnancy?

Established that **Zika is a cause** of serious brain abnormalities, microcephaly, and potentially other birth defects.

Recognized pattern of birth defects associated with Zika virus infection called **congenital Zika syndrome**.

Provided clues toward the **level of risk** from congenital Zika virus infection.

Identified that Zika infections during the **all trimesters** have been associated with birth defects.
Data Informed Updates to Clinical Guidance

- Expanded definition of fetal abnormalities that might be consistent with Zika virus disease beyond microcephaly
- Informed recommendation to cease testing of asymptomatic pregnant women
- Expanded window for nucleic acid testing (NAT)
- Informed updated recommendation related to prolonged IgM
Lessons Learned: Data for Action

- Rapidly identify emerging threats to mothers and babies
- Consistently collect information about impact of threat on pregnancy, birth defects, and infant health
- Transform data into action through development of clinical guidance

Provide support to and collaborate with state and local health departments
Tips and Resources: Pregnant Women and Infants
Tips and Resources

• Strategies to reach target audiences
• Post-disaster Indicators for Pregnant Women, Postpartum Women, and Infants
• Pregnancy Estimation Tool
• Leveraging the Pregnancy Risk Assessment Monitoring System (PRAMS)
• Online Training
Who Are You Talking To?  
Importance of Considering Your Target Audience

**Pregnant Women**

**Key Messages:**
- Prevention

**Channels:**
What To Expect, Mommy Bloggers, Media

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**Affected Families**

**Key Messages:**
- Affected infants need care and services

**Channels:**
Healthcare providers, WIC, Early intervention

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**Healthcare providers**

**Key Messages:**
- Prevention
  - Clinical care

**Channels:**
Professional organizations, MMWR, COCA, Medscape
Reaching Pregnant Women and Infants

- Share information at events where women and families might be present
- Supply communications materials to healthcare provider groups (e.g., managed care organizations, doctors’ offices, HMOs, and clinics, especially Federally Qualified Health Clinics)
Reaching Healthcare Providers

- Health Alerts/Advisories
- Dissemination of guidance through local chapters of professional organizations (e.g., ACOG, AAP)
- Tools to help implement guidance and educate patients
Post-disaster Indicators for Pregnant and Postpartum (P/PP) Women and Infants

• List of common epidemiologic indicators for P/PP women and infants affected by disaster
  • Identify salient conditions and outcomes to be monitored via surveillance or post-disaster data collection
  • Promote use of consistent measures across post-disaster studies
  • Build scientific knowledge regarding disaster effects on P/PP women and infants

• Final Product: 25 Final Indicators with their 90 measures

Collecting Supplemental Info on Pregnant Women When Conducting Post-Disaster Morbidity Surveillance

- Sample protocol shows how Post-Disaster Health Indicators can be used when conducting other post-disaster surveillance

- Interviewer could ask:
  - How damaged was your home by the disaster?
  - Did you experience the following? (illness, loss of power, loss of loved one)
  - Since the disaster, have you had prenatal visits?
  - Would you accept the following help? (financial, medical, etc.)

http://www.cdc.gov/reproductivehealth/Emergency
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

http://www.cdc.gov/reproductivehealth/Emergency
Pregnancy Risk Assessment Monitoring System

- Population-based surveillance system of women who recently delivered a live infant
  - 51 sites representing 83% of all U.S. live births
- Since 2009, PRAMS has been used to collect emergency preparedness data in several states
- PRAMS has also been leveraged for post-disaster data collection
  - H1N1
  - Zika
  - 2017 Hurricane Season
Pregnancy and Infant Surveillance

1. Pregnancy and Infant Registry

2. Adapted Birth Defects Surveillance

3. Local Health Department Surge Capacity
Online Training: Reproductive Health in Emergency Preparedness and Response

• **Goal:** Help learners to effectively respond to the needs of women of reproductive age during and after a disaster.

• **Target Audience:**
  - Health care professionals
  - State and local epidemiologists
  - Emergency preparedness personnel
  - Other public health staff
How to Access Online Training

- **Course Structure**: Each section of this course is designed to be completed in consecutive order. Supplemental learning materials are provided throughout the course.
- **Required Time**: 60 minutes approximately.
- **Access**: Offered through CDC TRAIN, a comprehensive catalog of public health learning products.
- **Available at** [https://www.cdc.gov/reproductivehealth/emergency/course-content/course.html](https://www.cdc.gov/reproductivehealth/emergency/course-content/course.html)
- **Continuing Education Credits**: CMEs, CNEs, and CEUs available
Future Threats are Unpredictable

The spread of disease can be fast and unpredictable.

Pregnant women and fetuses/infants have been shown to be uniquely susceptible to disease threats.
Thank you!

Questions?

For more information, contact CDC
1-800-CDC-INFO (232-4636)

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.