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CDC Online Course: Reproductive Health in Emergency Preparedness and Response

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Abstract

In an emergency, the needs of women of reproductive age, particularly pregnant and postpartum women, introduce unique challenges for public health and clinical care. Incorporating reproductive health issues and considerations into emergency preparedness and response is a relatively new field. In recent years, several resources and tools specific to reproductive health have been developed. However, there is still a need for training about the effects of emergencies on women of reproductive age. In an effort to train medical and public health professionals about these topics, the CDC Division of Reproductive Health developed *Reproductive Health in Emergency Preparedness and Response*, an online course that is available across the United States.

PUBLIC HEALTH EMERGENCIES encompass natural disasters, man-made events, and outbreaks of infectious diseases. During the past 10 years, the United States has averaged 64 major federally declared disasters annually,¹ and each state and U.S. territory has experienced a disaster. Nearly 850,000 U.S. people are affected by natural disasters yearly. However, that number does not include those affected by man-made events, or pandemic or emerging infectious diseases. The Centers for Disease Control and Prevention (CDC) has conducted major responses to outbreaks of infectious diseases such as H1N1 Pandemic Influenza in the United States (2009–2010), and domestic and international responses to Ebola virus disease (EVD) (2014–2015) and Zika virus (2016). Public health emergencies such as these disrupt people's lives, families, and communities, and women of reproductive age (age 15–44), especially pregnant and postpartum women, may experience unique effects. The 2013 Pandemic and All-Hazards Preparedness Reauthorization Act names pregnant women as a population with special clinical needs.²

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Author Disclosure Statement

The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the CDC.

Evolution of the Field of Reproductive Health in Public Health Emergencies in the United States

The field of reproductive health in public health emergencies in the United States has evolved since 2000 as a result of studies about the impact of disasters and outbreaks of infectious disease on pregnancy and birth outcomes, and postdisaster fertility.³ After Hurricane Katrina, high-risk pregnant and postpartum women reported increased stress, physical work, and caregiving duties, as well as difficulties in accessing needed medical and social services.⁴ Other 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,⁵ and an increased risk of low-birth-weight infants (<2500 g) and/or preterm births (<37 weeks gestation).^{3,5,6} Disasters may also affect access to contraception among women of reproductive age.⁷ In addition, when a disaster is associated with adverse pregnancy outcome, such as the Zika virus outbreak, pre-existing barriers to and low uptake of effective contraception can result in increased adverse outcomes and exacerbate the response to the disaster.⁸

Moreover, infectious diseases, such as pandemic influenza, anthrax, Ebola virus, and Zika virus, may disproportionately affect pregnant and postpartum women and their infants. For example, 2009 Pandemic H1N1 Influenza was associated with higher risk for hospitalization and death among pregnant women than the general population.⁹ Infants born to women who were severely ill with complications of H1N1 influenza during pregnancy were at higher risk for preterm birth or being small for gestational age. A review of worldwide cases of *Bacillus anthracis* (anthrax) in pregnant and postpartum women revealed high rates of maternal and fetal death among infected women.¹⁰ There is limited evidence about the impact of Ebola in pregnancy, but available information suggests that pregnant women with EVD are at increased risk of severe illness and death than the general population.¹¹ Pregnant women with EVD also seem to be at increased risk for spontaneous abortion and pregnancy-related hemorrhage than pregnant women who are not infected with EVD, and survival rates of infants born to women with EVD are very poor.

Lastly, the current Zika virus outbreak exemplifies the importance of addressing the needs of pregnant women and women of reproductive age before and during an outbreak. Zika virus infection during pregnancy is a cause of microcephaly and other severe brain anomalies in fetuses and infants, and may also be associated with other poor pregnancy outcomes.¹² Since there is currently no vaccine or medication that can prevent or treat Zika virus infection, prevention strategies have focused primarily on vector (mosquito) control. However, effective contraception for women who do not want to be pregnant is also a key strategy to prevent unintended pregnancy and poor infant outcomes due to Zika virus infection during pregnancy. This is especially important considering that nearly half of pregnancies in the United States are unintended.¹³ Due to the risks associated with Zika virus infection in pregnancy, CDC recommends that healthcare providers discuss pregnancy intentions with women of reproductive age traveling to or residing in areas with active Zika virus transmission.^{8,14}

Tools and Resources for Reproductive Health in Public Health Emergencies in the United States

As the field of reproductive health in public health emergencies has evolved, the CDC Division of Reproductive Health (DRH) has created scientific tools and resources to assist local, state, and federal medical and public health partners as they prepare for and respond to emergencies among women of reproductive age (Table 1). These tools and resources are available *via* the DRH Emergency Preparedness and Response webpage (www.cdc.gov/reproductivehealth/Emergency). The Reproductive Health Assessment After Disaster (RHAD) Toolkit was developed to assist public health professionals and emergency responders in assessing the reproductive health needs of women 15–44 years of age affected by natural and man-made disasters.¹⁶ RHAD was pilot tested after tornadoes or flood in North Carolina and Georgia^{15,16} and has been implemented by the Tulane University School of Public Health and Tropical Medicine after Hurricane Ike¹⁷ and by the Graham School of Nursing in Illinois after an outbreak of tornadoes.¹⁸ A nationwide group of medical and public health professionals collaborated with DRH to create the postdisaster health indicators.¹⁹ Additional scientific documents and communications are posted as new disasters, situations, or emerging infections occur. Although DRH occasionally receives inquiries about our tools, we do not currently have a systematic mechanism to track use of the RHAD, pregnancy estimation document, the availability of contraceptives in emergency response, or use of the postdisaster health indicators.

In addition to tools and resources, medical and public health professionals need training to prepare for and respond to emergencies.^{20–22} In written evaluations at conference and online presentations, participants have reported a need for more training about the effects of disasters and selected infectious diseases on women of reproductive age and strategies for surveillance of reproductive health in emergencies. Because there was no known comprehensive training accessible for public health and health professionals in the community pertaining to these topics, DRH created an online course that is available to medical and public health professionals *via* CDC TRAIN (<https://cdc.train.org/DesktopShell.aspx>).

Development of Online Course

The online course, Reproductive Health in Emergency Preparedness and Response, was designed to improve emergency preparedness and response related to reproductive health by providing training about the effects of disasters and selected infectious diseases on women of reproductive age, with special emphasis on the needs of pregnant and postpartum women (Fig. 1). The course also highlights preparedness and response resources and tools specific to reproductive health (including exercises in using them), describes challenges in surveillance of this population, and includes information on links to CDC resources about prophylaxis and treatment of pregnant and postpartum women for selected infectious diseases.

The course content was developed collaboratively by CDC subject matter experts in reproductive health, emergency preparedness and response, and selected infectious diseases.

The course was reviewed for continuing education and pilot tested by five nurses, five physicians, and five public health professionals. Each provided feedback about the entire training, including instructions, objectives, self-instruction, case studies, and examination questions. Each pilot tester also completed the course examination to test his/her acquisition of knowledge. The course was also reviewed by nurse, physician, and public health course planners to ensure the content was appropriate for continuing education in each respective professional group. Final changes were made to the course and to the post-test based on comments from pilot testers and course planners. The last step was the review for continuing education. The course was released in late August 2016 and introduced at the September 2016 CityMatCH/Maternal and Child Health Epidemiology Conference in Philadelphia, PN. The link to the course on CDC TRAIN is on the DRH Emergency Preparedness and Response webpage (www.cdc.gov/reproductivehealth/Emergency).

Conclusion

In an emergency, the needs of women of reproductive age, particularly pregnant and postpartum women, introduce unique challenges for public health and clinical care. The development of preparedness and response resources and tools specific to women of reproductive age is a relatively new field. In an effort to train medical and public health professionals about these topics, DRH developed Reproductive Health in Emergency Preparedness and Response, an online course that is available across the United States. We invite you to explore the course and become more equipped to meet the needs of women of reproductive age in an emergency. If you have specific comments or questions about the course, please contact us at (drhinfo@cdc.gov).


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References

1. FEMA declared disasters by year or state. FEMA Website. Accessed February 9, 2016.
2. Pandemic and All-Hazards Preparedness Reauthorization Act of 2013. Sect. 304.
3. Zotti ME, Williams AM, Robertson M, Horney J, Hsia J. Post-disaster reproductive health outcomes. *Matern Child Health J* 2012;17:783–796.
4. Zotti ME, Tong VT, Kieltyka L, Brown-Bryant R Making evacuation decisions: The case of high risk pregnant and postpartum women. *The Women of Katrina: How Gender, Race, and Class Matter in an American Disaster* 2012;90–104.
5. Tong VT, Zott ME, Hsia J. Impact of the 1997 red river catastrophic flood on women giving birth in North Dakota. *Matern Child Health J* 2010;15:281–288.
6. Callaghan WM, Rasmussen SA, Jamieson DJ, et al. Health concerns of women and infants in times of natural disasters: Lessons learned from Hurricane Katrina. *Matern Child Health J* 2007;11:307–311. [PubMed: 17253147]
7. Ellington SR, Kourtis AP, Curtis KM, et al. Contraceptive availability during an emergency response in the United States. *J Womens Health* 2013;22:189–193.
8. Tepper NK, Goldberg HI, Bernal MI, et al. Estimating contraceptive needs and increasing access to contraception in response to the Zika Virus disease outbreak—Puerto Rico, 2016. *MMWR Morb Mortal Wkly Rep* 2016;65: 311–314. [PubMed: 27031817]

9. Rasmussen SA, Jamieson DJ. 2009 H1N1 Influenza and pregnancy—5 years later. *N Engl J Med* 2014;371:1373–1375. [PubMed: 25295498]
10. Meaney-Delman D, Zotti ME, Rasmussen SA, et al. Anthrax cases in pregnant and postpartum women: A systematic review. *Obstet Gynecol* 2012;120:1439–1449. [PubMed: 23168771]
11. Jamieson DJ, Uyeki TM, Callaghan WM, Meaney-Delman D, Rasmussen SA. What obstetrician-gynecologists should know about Ebola: A perspective from the Centers for Disease Control and Prevention. *Obstet Gynecol* 2014;124: 1005–1010. [PubMed: 25203368]
12. Rasmussen SA, Jamieson DJ, Honein MA, Petersen LR. Zika virus and birth defects—Reviewing the evidence for causality. *N Engl J Med* 2016;374:1981–1987. [PubMed: 27074377]
13. Finer LB, Zolna MR. Declines in unintended pregnancy in the United States, 2008–2011. *N Engl J Med* 2016;374: 843–852. [PubMed: 26962904]
14. Petersen EE, Polen KN, Meaney-Delman D, et al. Update: Interim guidance for health care providers caring for women of reproductive age with possible Zika virus exposure — United States, 2016. *MMWR Morb Mortal Wkly Rep* 2016;65:315–322. [PubMed: 27031943]
15. Zotti ME, Williams A. Reproductive health assessment after disaster: Introduction to the RHAD Toolkit. *J Women’s Health* 2011;20:1–5.
16. Horney J, Zotti ME, Williams AM, Hsia J. Cluster sampling with referral to improve the efficiency of estimating unmet needs among pregnant and postpartum women after disasters. *Women’s Health Issues* 2012;22:253–257.
17. Arosemena FA, Fox L, Lichtveld MY. Reproductive health assessment after disasters: Embedding a toolkit within the disaster management workforce to address health inequalities among Gulf-coast women. *J Health Care Poor Underserved* 2013;24:S17–S28.
18. Simpson ME, Quinones M. Reproductive Health Assessment After Disaster (RHAD) in four Illinois counties. Canton, IL: Graham Hospital School of Nursing, 2014.
19. Zotti ME, Williams AM, Wako E. Post-disaster health indicators for pregnant and postpartum women and infants. *Matern Child Health J* 2015;19:1179–1188. [PubMed: 25476606]
20. Lane JE, Dimick J, Syrax M, Bhandary M, Rudy BS. Bioterrorism and disaster preparedness among medical specialties. *Am J Disaster Med* 2012;7:48–60. [PubMed: 22649868]
21. Subbarao I, Lyznicki JM, Hsu EB, et al. A consensus-based educational framework and competency set for the discipline of disaster medicine and public health preparedness. *Disaster Med Public Health Prep* 2008;2:57–68. [PubMed: 18388659]
22. Jorgensen AM, Mendoza GJ, Henderson JL. Emergency preparedness and disaster response core competency set for perinatal and neonatal nurses. *J Obstet Gynecol Neonatal Nurs* 2010;39:450–467.

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FIG. 1.

Description of CDC Online Course. *Course goal:* After completing this course, learners will be able to effectively respond to the needs of WRA during and after a disaster.

Target audience: Health professionals in community or public health settings, state and local epidemiologists, emergency preparedness personnel, and other public health staff interested in reproductive health in emergency response. *Learning objectives:* After completing this course, you should be able to: (1) Recognize the effects of postdisaster events and selected infectious diseases on WRA, especially pregnant and postpartum women. (2) Describe postdisaster challenges in surveillance of WRA. (3) Use assessments, clinical guidance, and public health surveillance tools in emergency preparedness and response for WRA. WRA, women of reproductive age.

TABLE 1.

DRH EMERGENCY PREPAREDNESS AND RESPONSE TOOLS AND RESOURCES

<i>Tool or resource</i>	<i>Year of release date</i>
Reproductive Health Assessment After Disaster Toolkit	2011
Estimating the number of pregnant women in a geographic area	2012
Contraceptive availability during an emergency response in the United States	2013
Health indicators for disaster-affected pregnant and postpartum women and infants	2014
<i>Types of scientific documents and communications</i>	<i>Ongoing</i>
Current knowledge about the specific hazard and reproductive health	
Recommendations, special considerations for treatment, and/or interventions for pregnant women and neonates	
Public health recommendations for healthcare providers	
Information for the general public	

DRH, CDC Division of Reproductive Health.