

# Special Focus: Climate Change and Pregnant Women

## ? DID YOU KNOW?

Floods place pregnant women at increased risk of exposure to environmental toxins and mold, reduced access to safe food and water, psychological stress, and disrupted health care.



Pregnant and postpartum women and their infants are uniquely vulnerable to the health impacts of climate change, due to the many physiologic and social changes that occur as a result of pregnancy. Climate-related exposures may lead to adverse pregnancy and newborn health outcomes, including spontaneous abortion, low birth weight, preterm birth, increased neonatal death, dehydration and associated renal failure, malnutrition, diarrhea, and respiratory disease.

## Heat-related impacts<sup>1</sup>

- Pregnant women are vulnerable to temperature extremes and are especially susceptible to dehydration, which releases labor-inducing hormones. Newborns are especially sensitive to ambient temperature extremes because their capacity for regulating body temperature is limited.
- [Extreme heat](#) events are also associated with adverse birth outcomes, such as preterm birth, low birth weight and infant mortality.

## Drought and flood risks<sup>2</sup>

- [Drought](#) endangers pregnant women's access to safe and reliable water sources for drinking and sanitation, increasing their vulnerability to dehydration (leading to pre-term labor) and infectious agents.
- Pregnant women and newborns are uniquely vulnerable to [flood](#) health hazards. Flood exposure was associated with adverse birth outcomes (preterm birth, low birth weight) after Hurricane Katrina and the 1997 floods in North Dakota.
  - Floods also place pregnant women at increased risk of exposure to environmental toxins and mold, reduced access to safe food and water, psychological stress and disrupted health care. Other flood-related health outcomes for mothers and babies include maternal risk of anemia, eclampsia, and spontaneous abortion.

## Infectious disease<sup>3</sup>

- Pregnancy-related changes to immune function could also place pregnant women at increased risk for waterborne disease, especially gastrointestinal illness, as a result of flooding. Pregnant women who develop severe gastrointestinal illness are at high risk for adverse pregnancy outcomes.
- Women are especially vulnerable to vector-borne disease, including Lyme Disease, Dengue and Zika virus, which causes microcephaly in fetuses.



## ! FAST FACT:

Zika causes microcephaly, along with other infant health problems like hearing loss, delayed growth and eye defects.

## Zika virus and pregnancy<sup>4</sup>

Beginning in May 2015, Brazil experienced a significant outbreak of Zika virus and rising cases of microcephaly in infants born to mothers with the virus. Subsequent research concludes that Zika causes microcephaly, along with other infant health problems like hearing loss, delayed growth and eye defects. Pregnant women can be infected with Zika virus if exposed and can pass the virus to their fetus. However, at the time of this writing (August 2016), researchers do not know what the level of risk for contracting the virus once a pregnant woman is exposed, nor do they know the level of risk an infected woman has of passing the virus to her fetus. They also do not yet know what the relative risks are for complications and defects if a fetus is infected. Therefore, every precaution should be taken to prevent exposure of pregnant women to Zika. For more information, see the [CDC healthcare provider recommendations for Zika virus](#).

## Extreme weather events<sup>5</sup>

- Extreme heat exposure can lead to dehydration and renal failure in pregnant women. Dehydration in early pregnancy can affect the fetal growth, while dehydration in late pregnancy can cause pre-term birth.

## Air Quality<sup>6</sup>

- Pregnant women are more sensitive to the harmful health effects of [wildfire](#) smoke and exposure of pregnant women to inhaled particulate matter is associated with negative birth outcomes.
- Exposure to [air pollutants](#) and ground-level ozone can cause respiratory illness in pregnant women and lead to low birth-weight or pre-term babies.

## Food security<sup>7</sup>

- Nutrition is essential to healthy pregnancy, nursing and newborn outcomes. Pregnant women are therefore particularly vulnerable to climate-related impacts to [food](#) safety, access and nutritional value. Poor nutrition is related to delivery problems, low birth weight, and even newborn death.

## The physician role in climate change and pregnancy health

- Talk to your patients about climate-related health risks, and advise them on how to minimize risks:
  - Closely monitor pregnant patients during periods of extreme heat: assess their access to clean drinking water, shade or cooling centers, air conditioning, and social supports.
  - Advise patients to check the Air Quality Index (AQI) <http://airnow.gov/index.cfm?action=aqibasics.aqi> for unsafe ozone and particulate levels during hot days and in event of wildfires. Even if pregnant women live far from wildfire sites, smoke plumes can travel thousands of miles so they should monitor air quality closely.



## FAST FACT:

Extreme heat exposure can lead to dehydration and renal failure in pregnant women. Dehydration in early pregnancy can affect the fetal growth, while dehydration in late pregnancy can cause pre-term birth.



- Advise and assist patients to create an emergency response plan in case of need to evacuate, for example in event of flood, wildfire, extreme weather or other emergent climate threat. For more information and guidance, visit the CDC site for emergency preparedness for pregnant women and infants.
- Advise patients on the risks of illness from food, water and vector-borne pathogens and to take appropriate precautions against illness:
  - Prepare all food with safe, clean water
  - Wear protective garments and insect repellent when outdoors near mosquito and tick habitats. Use screens on windows and door at home to keep insects out.
  - Recognize the symptoms of Lyme disease and Dengue
    - CDC Lyme Disease and pregnancy fact sheet: [http://www.cdc.gov/lyme/resources/toolkit/factsheets/10\\_508\\_lyme-disease\\_pregnantwoman\\_factsheet.pdf](http://www.cdc.gov/lyme/resources/toolkit/factsheets/10_508_lyme-disease_pregnantwoman_factsheet.pdf)
    - CDC Dengue and pregnancy factsheet: [http://www.cdc.gov/dengue/resources/educationMaterials\\_pdfs/15\\_261427-A\\_Seda\\_508\\_Update\\_Prevent\\_dengue\\_during\\_pregnancy508.pdf](http://www.cdc.gov/dengue/resources/educationMaterials_pdfs/15_261427-A_Seda_508_Update_Prevent_dengue_during_pregnancy508.pdf)
  - Zika virus:
    - Avoid travel to areas where there have been outbreaks of Zika virus: <http://wwwnc.cdc.gov/travel/page/zika-travel-information>
    - CDC Zika and pregnancy site for patients: <http://www.cdc.gov/zika/pregnancy/question-answers.html>
    - For physicians: Doctor's Visit Checklist for Pregnant Women who Traveled to an Area with Zika: <http://www.cdc.gov/zika/pdfs/docvisit-checklist-travelpreg.pdf>
- Educate your colleagues and community about the impacts of climate change on the health of pregnant women and their babies.
- Advocate and work to ensure reliable access to and provision of quality reproductive services for all women.
- Advocate for policies to reduce greenhouse gas emissions and the health impacts of climate change.



## For More Information

- See the guide's sheets on [specific climate impacts](#) for more guidance on adaptation and mitigation strategies.
- Environmental Protection Agency Air Pollution and Pregnancy Health [https://www.epa.gov/sites/production/files/2014-05/documents/ochp\\_prenatal\\_fs\\_7\\_10.pdf](https://www.epa.gov/sites/production/files/2014-05/documents/ochp_prenatal_fs_7_10.pdf)
- American Congress of Obstetricians and Gynecologists position statement on climate change and women's health: <http://www.acog.org/Resources-And-Publications/Position-Statements/Climate-Change-and-Womens-Health>
- Climate change and the potential effects on maternal and pregnancy outcomes: an assessment of the most vulnerable—the mother, fetus and newborn child <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3595418/>



## ? DID YOU KNOW?

Pregnant women are vulnerable to temperature extremes and are especially susceptible to dehydration, which releases labor-inducing hormones.

- EPA Climate Change and Pregnancy factsheet  
<https://www3.epa.gov/climatechange/impacts/health/factsheets/pregnant-health-climate-change.pdf>
- CDC Zika Virus page: <http://www.cdc.gov/zika/pregnancy/>
- CDC Lyme Disease page: <http://www.cdc.gov/lyme/index.html>
- CDC Dengue Fever page: <http://www.cdc.gov/dengue/>

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## “ Citations

- <sup>1</sup> Gamble, J.L., J. Balbus, M. Berger, K. Bouye, V. Campbell, K. Chief, K. Conlon, A. Crimmins, B. Flanagan, C. Gonzalez-Maddux, E. Hallisey, S. Hutchins, L. Jantarasami, S. Khoury, M. Kiefer, J. Kolling, K. Lynn, A. Manangan, M. McDonald, R. Morello-Frosch, M.H. Redsteer, P. Sheffield, K. Thigpen Tart, J. Watson, K.P. Whyte, and A.F. Wolkin, 2016: Ch. 9: Populations of Concern. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, Washington, DC, 247–286. Available at <https://health2016.globalchange.gov/populations-concern>
- <sup>2</sup> Ibid.
- <sup>3</sup> Ibid.
- <sup>4</sup> Centers for Disease Control and Prevention (2016). Zika and Pregnancy. Available at <http://www.cdc.gov/zika/pregnancy/question-answers.html>
- <sup>5</sup> Gamble, J.L., J. Balbus, M. Berger, K. Bouye, V. Campbell, K. Chief, K. Conlon, A. Crimmins, B. Flanagan, C. Gonzalez-Maddux, E. Hallisey, S. Hutchins, L. Jantarasami, S. Khoury, M. Kiefer, J. Kolling, K. Lynn, A. Manangan, M. McDonald, R. Morello-Frosch, M.H. Redsteer, P. Sheffield, K. Thigpen Tart, J. Watson, K.P. Whyte, and A.F. Wolkin, 2016: Ch. 9: Populations of Concern. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, Washington, DC, 247–286. Available at <https://health2016.globalchange.gov/populations-concern>
- <sup>6</sup> Ibid.
- <sup>7</sup> Ibid.



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