

Talk to Your Patients about Extreme Weather Events and Health Impacts

Accessible link: <https://www.cdc.gov/climate-health/index.html>

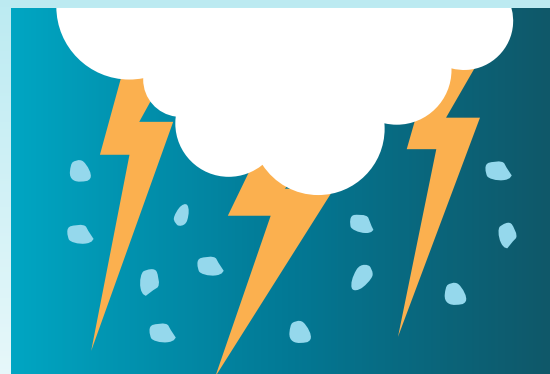
Precipitation, hail, floods, drought, heat events, and wildfires are expected to become more frequent and severe due to climate change.¹ These extreme weather events will negatively impact human health and well-being, property, the surrounding environment, infrastructure, and ecosystem services.¹ These hazards can negatively impact mental and physical health. Review this information and share with your patients.

Takeaways for Healthcare Providers, Hospitals, and Clinics

- Ensure that generators and critical infrastructure are located in areas protected from severe weather or flooding.²
- Review emergency plans and consider disproportionately impacted regions of your community.³ The FEMA National Risk Index can help you understand the factors shaping your region's risk profile.⁴
- Healthcare systems should increase assistance to populations that are at disproportionate risk during disasters.^{5, 6} Increasing access to mobile health services and telemedicine can ensure that primary healthcare needs are addressed during these challenges.⁷ Integrating screening questions for unmet social needs and mental health can help you identify patients who may be disproportionately impacted.⁸
- Consider preemptively addressing healthcare needs such as refilling medications and oxygen tanks and scheduling dialysis sessions for patients with chronic conditions.^{3, 7, 9}

Advice for Your Patients

1. Tell patients to prepare for emergencies in advance.¹⁰ When extreme weather is in the forecast, suggest patients prepare an emergency 3-day water supply for each person and pet in their home.¹¹
2. Ensure patients know shelter locations, evacuation routes, how to receive warnings, and how to operate generators safely.^{10, 12, 13}
3. Encourage wearing a medical alert bracelet or other identification.¹⁴
4. Encourage people with disabilities to sign up for Smart 911 or similar registries.¹⁵



Populations at Greater Risk¹

- Infants and children
- Pregnant women
- Adults over 65 years old
- Black, Indigenous, and People of Color (BIPOC)*
- People experiencing homelessness
- People with lower incomes
- Rural populations
- Outdoor workers
- People living in mobile homes
- People with disabilities
- People with mental health conditions
- People with chronic health conditions

* BIPOC refers to racial and ethnic communities, such as Black, Indigenous, Asian, Latino/Hispanic, and Middle Eastern



Talk to Your Patients about Climate Sensitive Infectious Diseases

Accessible link: <https://www.cdc.gov/climate-health/index.html>

The United States is home to many different disease-carrying vectors (e.g. ticks, mosquitoes, and rodents) whose geographic distribution will be affected by rising temperatures and changes in precipitation.¹ Some climate sensitive infectious diseases experiencing changes in geographic distributions and seasons include Lyme disease, West Nile fever, chikungunya fever, dengue fever, Zika virus disease, cryptococcosis, plague, hantavirus pulmonary syndrome, and leptospirosis.¹ Review this information and share with your patients.



Takeaways for Healthcare Providers, Hospitals, and Clinics

- Educate frontline providers on recognizing the symptoms of climate sensitive infectious diseases.
- Ensure clinics can easily report illnesses to local public health departments. This is key to preventing excess morbidity and mortality.^{16, 17, 18}
- Engage local communities in surveillance efforts, including reporting abnormal animal behavior and/or illnesses. This can aid in disease identification.¹⁹
- Develop and use testing protocols to track the spread of mosquito-borne illnesses. This practice can inform vector control programs and public health initiatives.^{20, 21}

Advice for Your Patients

1. Educate patients on the signs and symptoms of climate sensitive infectious diseases, particularly those that are present or emerging in your area.
2. Talk to patients about how to reduce mosquito breeding areas: by emptying or covering containers or treating standing water that cannot be drained.²²
3. Advocate for mosquito and tick bite prevention. Patients can use EPA-registered insect repellents, wear long-sleeved shirts and long pants, and install or repair screens on windows.²³

Populations at Greater Risk¹

- Infants and children
- Pregnant women
- Adults over 65 years old
- People with chronic health conditions
- People with lower incomes
- People experiencing homelessness
- Rural populations
- Outdoor workers
- Athletes and outdoor recreationists



Talk to Your Patients about Water-related Health Impacts

Accessible link: <https://www.cdc.gov/climate-health/index.html>

Rising temperatures, changes in precipitation, drought, and rising sea levels threaten water quality and availability. These factors can contaminate water sources and adversely impact drinking water treatment and supply systems. They can also increase concentrations of pathogens and other contaminants, increase the occurrence of waterborne illnesses, create favorable conditions for harmful algal blooms (HABs), and increase risks of saltwater contamination.^{1, 24} Review this information and share with your patients.



Takeaways for Healthcare Providers, Hospitals, and Clinics

- Following extreme precipitation events, you should prepare for increases in diarrheal illnesses and health effects due to chemical contamination of drinking water.²⁵
- Develop protocols to test for and report waterborne illnesses. These can curb morbidity and mortality during water contamination events.²⁶
- Educate yourself on the symptoms of exposure to harmful algal blooms (HABs). Routes of exposure to cyanobacteria and cyanotoxins in water include ingestion, inhalation, and skin contact.^{27, 28} Commonly reported symptoms include blisters, rashes, nausea, vomiting, weakness, and fatigue.²⁸
- If safe water supply is limited, give patients access to portable filters and bottled water to prevent or reduce waterborne illness.

Advice for Your Patients

1. Educate patients on the symptoms of waterborne illness.²⁹
2. Inform patients on how to make drinking water safe in an emergency: use water filters or bottled water, boil water, and disinfect water using unscented, household bleach during emergencies.³⁰
3. Endorse responsible fertilizer use and septic systems operation and maintenance to prevent or reduce the risk of HABs in the community.²⁸
4. Urge patients to avoid visiting bodies of water that have ongoing harmful algal blooms.²⁸

Populations at Greater Risk¹

- Infants and children
- Adults over 65 years old
- People who live or work near water hazards
- People with limited access to resources or infrastructure
- People experiencing homelessness
- Rural populations
- People with lower incomes
- People living in mobile homes



Talk to Your Patients about Food Safety

Accessible link: <https://www.cdc.gov/climate-health/index.html>

Precipitation, floods, heat events, drought, hail, and wildfires are expected to become more frequent and severe due to climate change.¹ These events will not only directly negatively impact human health and well-being, but also property and infrastructure. Subsequently, food safety can be compromised, and the risk of foodborne illness can rise, particularly as a result of a power outage.³¹ Review this information and share with your patients.

Takeaways for Healthcare Providers, Hospitals, and Clinics

- Discuss safe food handling practices, especially with patients at risk of illness.³² Follow these recommended practices from the FDA:^{33, 34}
 - » **Clean:** Wash hands and surfaces often
 - » **Separate:** Separate raw meats from other foods
 - » **Cook:** Cook to the right temperature
 - » **Chill:** Refrigerate foods promptly
- Tell patients about the symptoms of food-borne illness: high fever, blood in stool, prolonged vomiting, signs of dehydration, and diarrheal illness that last more than 3 days.^{34, 35, 36}
- Providers should consider engaging in the FDA's Foodborne Illness Continuing Medical Education Program to learn how to treat and educate patients.³⁴

Advice for Your Patients

1. Educate patients on safe food preparation.^{33, 34}
2. Tell patients to prepare for emergencies in advance.¹⁰ Suggest patients prepare an emergency 3-day food supply of non-perishable items for each person and pet in their home if extreme weather is forecasted.³¹
3. Advise patients to keep their refrigerator and freezer doors closed as much as possible to maintain the cold temperature, particularly during a power outage.^{31, 37}
4. Patients should throw away all perishable foods (including meat, poultry, fish, eggs, and leftovers) in their refrigerator when the power has been off for 4 hours or more.³¹ Food from the freezer can be safely refrozen or cooked if it still contains ice crystals and feels as cold as if refrigerated.³¹



Populations at Greater Risk¹

- Infants and children
- Adults over 65 years old
- People who live or work near water hazards
- People with limited access to resources or infrastructure
- People experiencing homelessness
- Rural populations
- People with lower incomes
- People living in mobile homes



Talk to Your Patients about Mental Health and Wellbeing

Accessible link: <https://www.cdc.gov/climate-health/index.html>

Climate change is associated with negative mental health effects, including depression, anxiety, and suicidality. Negative mental health can be caused by stressors such as the increased frequency and magnitude of extreme weather events. These events can cause repeated trauma, displacement, and loss of livelihoods.¹ Review this information and share with your patients.

Takeaways for Healthcare Providers, Hospitals, and Clinics

- Mental health screening, particularly among children, can help you quantify the burden of disease and identify patients at risk.^{8, 38, 39}
- Expand mental health services through patient outreach, mobile health services, and peer support groups. These can improve community resilience before, during, and after natural disasters.^{19, 38, 39}
- Shifts in agricultural or subsistence harvests impact the physical and mental health of farmers, ranchers, and Indigenous community members.³⁴
- To improve mental health, address existing disparities in mental health services and develop culturally competent support services in collaboration with local and tribal communities.⁴⁰
- First responders and healthcare providers also experience stress when aiding in natural disasters. Use coping techniques like taking breaks, eating healthy foods, exercising, and using the buddy system to partner with another responder to regularly check in with. These can help prevent and reduce burnout and secondary traumatic stress.⁴¹

Advice for Your Patients

Advise patients to take care of their mental health by

1. connecting with others,
2. taking breaks,
3. avoiding too much exposure to the news, and
4. seeking help from others.⁴²

If distress impacts daily life of your patients for several days or weeks, tell them to talk to a trusted person in their life, or contact the SAMHSA helpline at 1-800-985-5990.⁴¹



Populations at Greater Risk^{1, 43}

- Infants and children
- Pregnant women
- Black, Indigenous, and People of Color (BIPOC)*
- People with disabilities
- People with mental health conditions
- People with chronic health conditions
- People with lower incomes
- People experiencing homelessness
- Outdoor workers
- Farmers
- Rural populations
- First responders

* BIPOC refers to racial and ethnic communities, such as Black, Indigenous, Asian, Latino/Hispanic, and Middle Eastern



Talk to Your Patients about Populations at Higher Risk of Climate Impacts

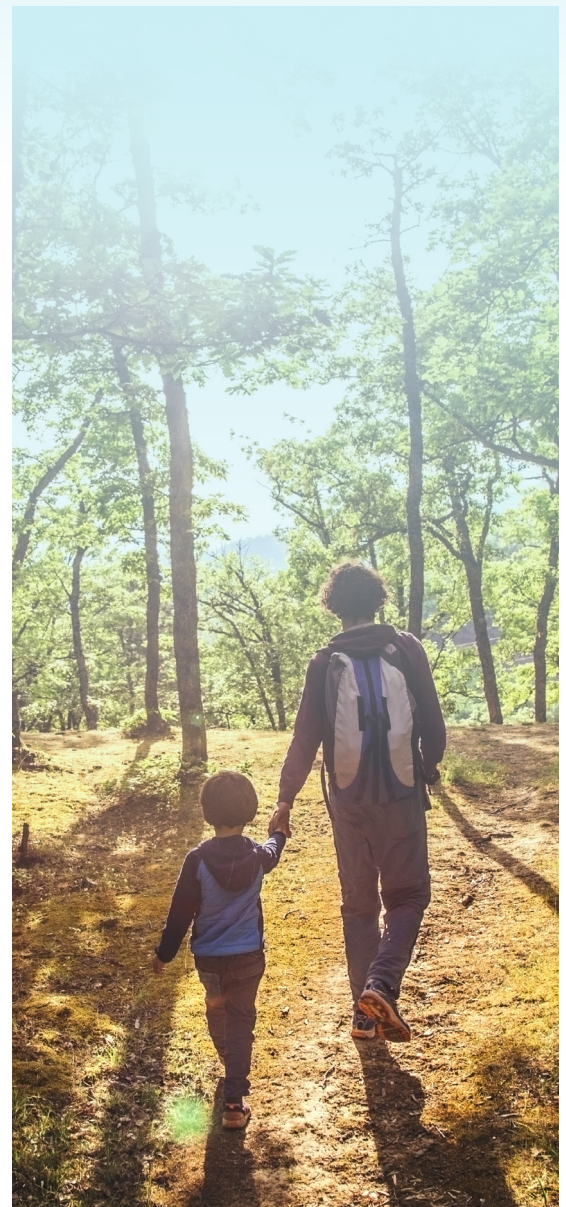
Accessible link: <https://www.cdc.gov/climate-health/index.html>

Climate change will affect everyone; however, there are some individuals and communities that will be disproportionately burdened. Disproportionate impact to climate change is influenced by factors such as preexisting health conditions, age, sex, race or ethnicity, income, and access to resources.¹ Health-related burdens are experienced more acutely by communities that have been under-resourced and overburdened.¹ Review this information and share with your patients.



Takeaways for Healthcare Providers, Hospitals, and Clinics

- **Strengthen Partnerships** in communities that are at higher risk of climate change-related harms: Engage communities, workplaces, and local organizations to identify unmet needs and priorities, increase access to healthcare resources, and invest in activities that will help the community.^{44, 45}
- **Make Information Accessible:** Ensure health information and resources are made available through various means (e.g. at pediatric offices, schools, and community centers). Ensure information is available in various languages and formats.^{46, 47}
- **Perform Patient Outreach:** Identify trusted messengers and community organizations to reach out to patients disproportionately impacted by climate driven disasters. Use electronic medical record data, mobile health programs, home visits, or other methods to reduce morbidity and mortality.³



Climate Change Medical Factsheets Footnotes

Accessible link: <https://www.cdc.gov/climate-health/index.html>

1. Hayden, M. H., Schramm, P. J., Beard, C. B., Bell, J. E., Bernstein, A. S., Bieniek-Tobasco, A., Cooley, N., Diuk-Wasser, M., Dorsey, M. K., Ebi, K. L., Ernst, K. C., Gorris, M. E., Howe, P. D., Khan, A. S., Lefthand-Begay, C., Maldonado, J., Saha, S., Shafei, F., Vaidyanathan, A., & Wilhelmi, O. v. (2023). Human health. In A. R. Crimmins, C. W. Avery, D. R. Easterling, K. E. Kunkel, B. C. Stewart, & T. K. Maycock (Eds.), Fifth National Climate Assessment. U.S. Global Change Research Program. <https://doi.org/10.7930/NCA5.2023.CH15>
2. Melnychuk, E., Sallade, T. D., & Kraus, C. K. (2022). Hospitals as disaster victims: Lessons not learned? *Journal of the American College of Emergency Physicians Open*, 3(1), e12632. <https://doi.org/10.1002/emp2.12632>
3. CDC. (2018, April 4). Reaching At-Risk Populations in an Emergency. <https://emergency.cdc.gov/workbook/index.asp>
4. FEMA. (2024). National Risk Index - Map. <https://hazards.fema.gov/nri/map>
5. National Wildlife Federation. (2011). Facing the Storm: Indian Tribes, Climate-Induced Weather Extremes, and the Future for Indian Country. <https://www.nwf.org/Educational-Resources/Reports/2011/08-03-2011-Facing-the-Storm>
6. CDC. (2024, May 15). Safety Messages for Pregnant, Postpartum, and Breastfeeding Women During Natural Disasters and Severe Weather. https://www.cdc.gov/reproductive-health/emergency-preparation-response/safety-messages.html?CDC_AAref_Val=https://www.cdc.gov/reproductivehealth/features/disaster-planning-parents/index.html
7. Nejad, S. S., Jannati, N., Sarabi, R. E., & Bahaadinbeigy, K. (2020). Use of telemedicine and e-health in disasters: a systematic review. <https://api.semanticscholar.org/CorpusID:229022509>
8. Frazee, T. K., Brewster, A. L., Lewis, V. A., Beidler, L. B., Murray, G. F., & Colla, C. H. (2019). Prevalence of Screening for Food Insecurity, Housing Instability, Utility Needs, Transportation Needs, and Interpersonal Violence by US Physician Practices and Hospitals. *JAMA Network Open*, 2. <https://api.semanticscholar.org/CorpusID:202673428>
9. Lester, C. A., Mott, D. A., & Chui, M. A. (2016). The Influence of a Community Pharmacy Automatic Prescription Refill Program on Medicare Part D Adherence Metrics. *Journal of Managed Care & Specialty Pharmacy*, 22(7), 801–807. <https://doi.org/10.18553/jmcp.2016.22.7.801>
10. CDC. (2024, February 6). Preparing for Floods. <https://www.cdc.gov/floods/safety/index.html>
11. FEMA. (2004). Food and Water in an Emergency. <https://www.fema.gov/pdf/library/f&web.pdf>
12. Climate ADAPT. (2018). Establishment of early warning systems. <https://climate-adapt.eea.europa.eu/en/metadata/adaptation-options/establishment-of-early-warning-systems>
13. World Meteorological Organization. (2022). Early Warnings for All: Executive Action Plan 2023-2027. <https://library.wmo.int/records/item/58209-early-warnings-for-all>
14. CDC. (2023, March 29). Epilepsy & Disaster Preparedness. <https://archive.cdc.gov/#/details?q=https://www.cdc.gov/epilepsy/emergency/index.htm&start=0&rows=10&url=https://www.cdc.gov/epilepsy/emergency/index.htm>
15. CDC. (2024, April 18). Improve Access. <https://www.cdc.gov/prepare-your-health/create-community/improve-access.html>
16. CDC. (2024, May 15). Laboratory Information for Specimen Submissions. https://www.cdc.gov/vector-borne-diseases/php/laboratories/?CDC_AAref_Val=https://www.cdc.gov/ncezid/dvbd/specimensub/index.html
17. CDC. (2019, December 17). NCEZID: Vector-borne Diseases (spread by bites from mosquitoes, ticks, or fleas). <https://archive.cdc.gov/#/details?url=https://www.cdc.gov/ncezid/what-we-do/our-topics/vector-borne-diseases.html>
18. CDC. (2024, May 15). Lyme Disease- Clinical Resources. https://www.cdc.gov/lyme/hcp/communication-resources/?CDC_AAref_Val=https://www.cdc.gov/lyme/healthcare/index.html
19. Ballman, E. S., Leahy, J. E., Sponarski, C. C., Galli, M. G., & Gardner, A. M. (2023). A citizen science approach to investigate the distribution, abundance, and pathogen infection of vector ticks through active surveillance. *Ticks and Tick-Borne Diseases*, 14 3, 102144. <https://api.semanticscholar.org/CorpusID:257441727>
20. C.R. Connelly, Justin A. Gerding, Susan M. Jennings, Andrew Ruiz, Roberto Barrera, Sue Partridge, & ben Beard. (2020, July 17). Continuation of Mosquito Surveillance and Control During Public Health Emergencies and Natural Disasters. https://www.cdc.gov/mmwr/volumes/69/wr/mm6928a6.htm?s_cid=mm6928a6_w
21. Maine Tracking Network. (2024). Tickborne Diseases. <https://data.mainepublichealth.gov/tracking/tickborne>



22. EPA. (2024, October 16). Success in Mosquito Control: An Integrated Approach. <https://www.epa.gov/mosquitocontrol/success-mosquito-control-integrated-approach>
23. CDC. (2024, February 8). What to Do to Protect Yourself From Animals After a Disaster. https://www.cdc.gov/natural-disasters/response/what-to-do-protect-yourself-from-animals-after-a-disaster.html?CDC_AAref_Val=https://www.cdc.gov/disasters/animalhazards/facts.html
24. Payton, E. A., Pinson, A. O., Asefa, T., Condon, L. E., Dupigny-Giroux, L.-A. L., Harding, B. L., Kiang, J., Lee, D. H., McAfee, S. A., Pflug, J. M., Rangwala, I., Tanana, H. J., & Wright, D. B. (2023). Water. In A. R. Crimmins, C. W. Avery, D. R. Easterling, K. E. Kunkel, B. C. Stewart, & T. K. Maycock (Eds.), Fifth National Climate Assessment. U.S. Global Change Research Program. <https://doi.org/10.7930/NCA5.2023.CH4>
25. CDC, & AWWA. (2019). Emergency Water Supply Planning Guide for Hospitals and Healthcare Facilities. <https://www.cdc.gov/water-emergency/media/pdfs/2024/07/emergency-water-supply-planning-guide-2019-508.pdf>
26. CDC. (2024, May 22). About Waterborne Disease Surveillance. https://www.cdc.gov/healthy-water-data/about/?CDC_AAref_Val=https://www.cdc.gov/healthywater/surveillance/nors.html
27. CDC. (2024, May 6). Clinical Signs and Symptoms Caused by Freshwater Harmful Algal Blooms. https://www.cdc.gov/harmful-algal-blooms/hcp/clinical-signs/symptoms-freshwater-harmful-algal-blooms.html?CDC_AAref_Val=https://www.cdc.gov/habs/specific-groups/healthcare_providers.html
28. CDC. (2022). Facts about Cyanobacterial Blooms for Poison Center Professionals. https://www.cdc.gov/harmful-algal-blooms/media/pdfs/332669A_FS_CyanobacterialBlooms_508.pdf
29. Minnesota Department of Health. (2022, October 20). Causes and Symptoms of Waterborne Illness. <https://www.health.state.mn.us/diseases/waterborne/basics.html>
30. CDC. (2024, November 9). How to Make Water Safe in an Emergency. https://www.cdc.gov/water-emergency/about/?CDC_AAref_Val=https://www.cdc.gov/healthywater/emergency/making-water-safe.html
31. FDA. (2023, November 20). Food Safety in a Disaster or Emergency. <https://www.foodsafety.gov/keep-food-safe/food-safety-in-disaster-or-emergency#:~:text=A%20disaster%20can%20disrupt%20the%20food%20supply%2C%20so,who%20are%20on%20special%20diets%20Meet%20pets%E2%80%99%20needs>
32. CDC. (2024, April 29). People at Increased Risk for Food Poisoning. <https://www.cdc.gov/food-safety/risk-factors/index.html>
33. FDA. (2024, March 5). Safe Food Handling. <https://www.fda.gov/food/buy-store-serve-safe-food/safe-food-handling>
34. FDA. (2022, May 25). Foodborne Illness Continuing Medical Education Program. <https://www.fda.gov/food/healthcare-professionals/foodborne-illness-continuing-medical-education-program>
35. White, D. D., Elias, E. H., Thomas, K. A., Bradatan, C. E., Brunson, M. W., Chischilly, A. M., Enquist, C. A. F., Fisher, L. R., Froehlich, H. E., Koebele, E. A., Méndez, M., Ostojia, S. M., Steele, C., & Vanos, J. K. (2023). Southwest. In A. R. Crimmins, C. W. Avery, D. R. Easterling, K. E. Kunkel, B. C. Stewart, & T. K. Maycock (Eds.), Fifth National Climate Assessment. U.S. Global Change Research Program. <https://doi.org/10.7930/NCA5.2023.CH28>
36. FDA. (2017). Four Steps to Handling and Preparing Food Safely. <https://www.fda.gov/media/107837/download?attachment>
37. Bolster, C. H., Mitchell, R., Kitts, A., Campbell, A., Cosh, M., Farrigan, T. L., Franzluebbers, A. J., Hoover, D. L., Jin, V. L., Peck, D. E., Schmer, M. R., & Smith, M. D. (2023). Agriculture, food systems, and rural communities. In A. R. Crimmins, C. W. Avery, D. R. Easterling, K. E. Kunkel, B. C. Stewart, & T. K. Maycock (Eds.), Fifth National Climate Assessment. U.S. Global Change Research Program. <https://doi.org/10.7930/NCA5.2023.CH11>
38. Jonovich, S. J., & Alpert-Gillis, L. J. (2014). Impact of pediatric mental health screening on clinical discussion and referral for services. *Clinical Pediatrics*, 53(4), 364–371. <https://doi.org/10.1177/0009922813511146>
39. North, C. S., & Pfefferbaum, B. (2013). Mental Health Response to Community Disasters: A Systematic Review. *JAMA*, 310(5), 507–518. <https://doi.org/10.1001/jama.2013.107799>
40. Bhui, K., Warfa, N., Edonya, P., McKenzie, K., & Bhugra, D. (2007). Cultural competence in mental health care: a review of model evaluations. *BMC Health Services Research*, 7(1), 15. <https://doi.org/10.1186/1472-6963-7-15>
41. CDC. (2018, March 19). Emergency Responders: Tips for taking care of yourself. <https://emergency.cdc.gov/coping/responders.asp>
42. CDC. (2019, November 13). Taking Care of Your Emotional Health. <https://emergency.cdc.gov/coping/selfcare.asp>
43. Dodgen, D., Donato, D., Kelly, N., la Greca, A., Morganstein, J., Reser, J., Ruzek, J., Schweitzer, S., Shimamoto, M. M., Thigpen Tart, K., & Ursano, R. (2016). Ch. 8: Mental Health and Well-Being. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. <https://doi.org/10.7930/JOTX3C9H>
44. Patel, L., Conlon, K. C., Sorensen, C., McEachin, S., Nadeau, K., Kakkad, K., & Kizer, K. W. (2022). Climate Change and Extreme Heat Events: How Health Systems Should Prepare. *NEJM Catalyst*, 3(7), CAT.21.0454. <https://doi.org/10.1056/CAT.21.0454>
45. Loban, E., Scott, C., Lewis, V., Law, S., & Haggerty, J. L. (2021). Improving primary health care through partnerships: Key insights from a cross case analysis of multi stakeholder partnerships in two Canadian provinces. *Health Science Reports*, 4. <https://api.semanticscholar.org/CorpusID:238527266>
46. Boudreaux, M., Chu, J., & Lipton, B. J. (2023). School-Based Health Centers, Access to Care, and Income-Based Disparities. *JAMA Network Open*, 6(9), e2334532–e2334532. <https://doi.org/10.1001/jamanetworkopen.2023.34532>
47. Rayburn, W. F., Armstrong, J., & Fairchild, D. (2024). Women Accessing Care at a National Network of Retail Health Clinics. *Journal of Women's Health*, 33(6), 774–777. <https://doi.org/10.1089/jwh.2023.0933>