View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by OpenSIUC

Southern Illinois University Carbondale

OpenSIUC

Publications

Department of Geography and Environmental Resources

Summer 2017

Climate Change and Health: Risk Awareness can Improve Patient Care

Julia Sanabria

Leslie A. Duram

Southern Illinois University Carbondale, duram@siu.edu

Follow this and additional works at: https://opensiuc.lib.siu.edu/gers_pubs

Recommended Citation

Sanabria, Julia and Duram, Leslie A. "Climate Change and Health: Risk Awareness can Improve Patient Care." *Illinois Pediatrician* 35, No. 2 (Summer 2017): 6-7.

This Article is brought to you for free and open access by the Department of Geography and Environmental Resources at OpenSIUC. It has been accepted for inclusion in Publications by an authorized administrator of OpenSIUC. For more information, please contact opensiuc@lib.siu.edu.

Climate Change and Health: Risk Awareness Can Improve Patient Care

BY JULIA L. SANABRIA, MS AND LESLIE A. DURAM, MA, PHD

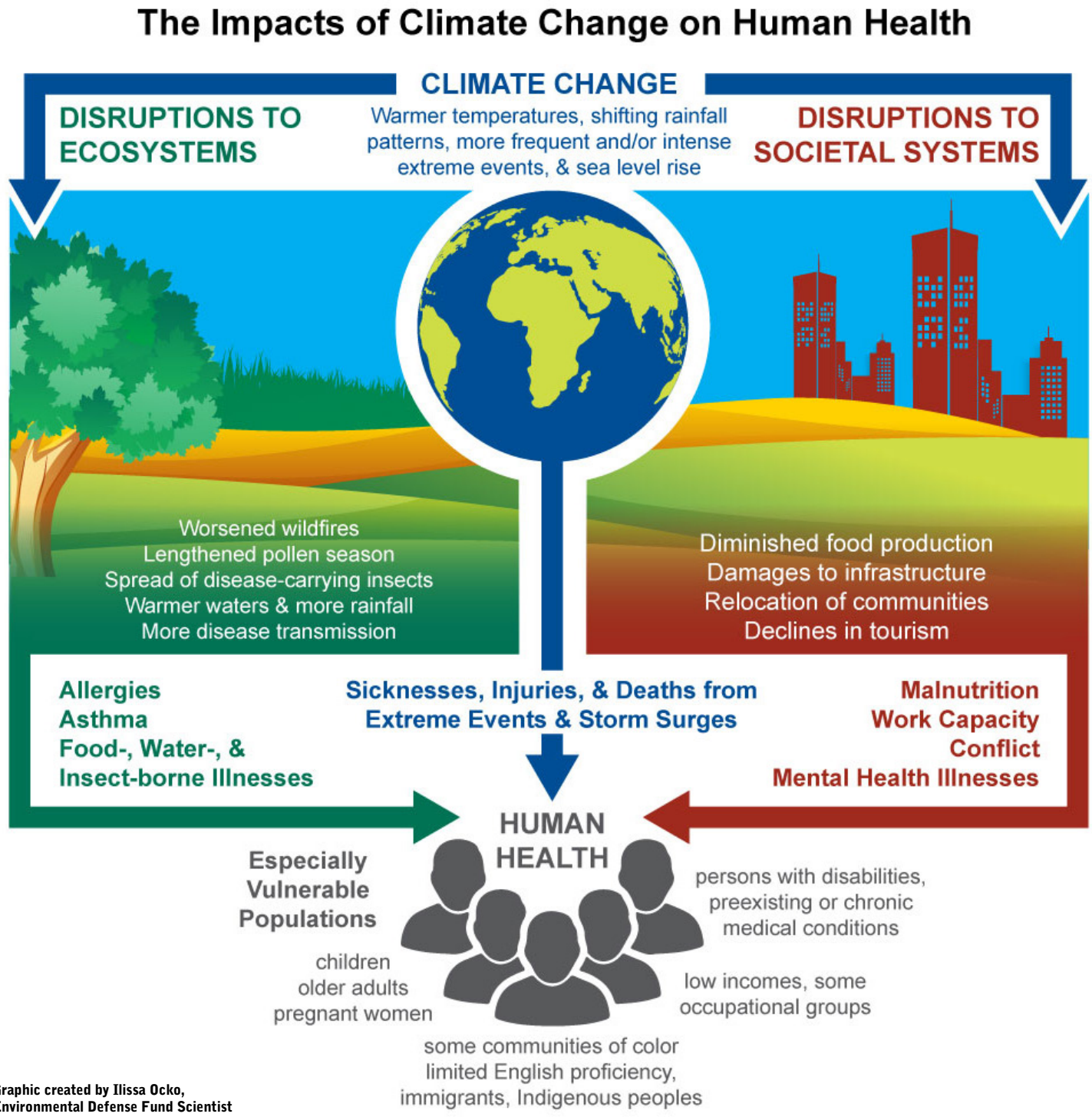
Although climate change is a global concern, people in cities may feel its effects more severely. As climate change continues to impact cities, or settlements with high population density and built infrastructure, it is crucial that public health officials are aware of risks to human health and are able to anticipate the health-related consequences of climate change. Cities are currently home to over half of the world's population, with more than six billion people expected to be residing in cities by 2050.[1,2] Cities are the source of over 70% of global greenhouse gas emissions, which are the most recognized contributor of anthropogenic climate change.[3,4] In addition, cities consume between 60% - 80% of the world's natural resources.[4,5] Physical manifestations of climate change are already affecting most cities, including Chicago, which increases the urgency of the situation. In fact, climate change is expected to intensify a number of existing health problems in cities.

Climate change will directly increase risks to health from injuries and mortality during extreme weather events. Risk of illness in the aftermath of these untoward weather events is also increased. Water-borne diseases are likely to be more prevalent after flooding events or periods of intense rainfall.[3] Food-borne diseases will increase due to foods being exposed to higher temperatures that cause bacterial growth.[3] Increased mortality is expected in urban areas from more intense and more frequent heat waves.[6]

Climate change will also increase risks to health indirectly and more discretely via respiratory illnesses from poor air quality. Higher temperatures and local weather changes such as wind patterns will create unfavorable conditions for health. For example, if high atmospheric pressure occurs over an area, pollutants will be concentrated close to the ground. Dust, allergens, water vapor, mold, soot, and other particulate matter and gases will build in the atmosphere during these times, often with the influence of heat and ultraviolet radiation.[7] Allergies in particular, become more problematic with changes in temperature. According to an article from National Geographic, "Warming temperatures in some areas, like the northern United States, extend the periods during which plants release pollen. The combined effect of warming temperatures and more CO2 means that the amount of pollen in the air has been increasing and will continue to increase as climate change worsens."[8] Allergist Leonard Bielory, MD, from the American College of Allergy, Asthma, and Immunology (ACAAI), says that pollen counts are expected to more than double by 2040 and recommends allergy sufferers begin treating their allergies with over-the-counter or prescribed medications two weeks before symptoms usually start.[9] To help patients manage symptoms from allergies, asthma, or other respiratory illnesses, health care providers should report information on heat index to their patients and educate them to monitor pollen and mold counts.

The spread of infectious diseases, such as West Nile Virus (WNV) and Lyme, is already increasing from regional climate change.[10-12] For example, the *Chicago Tribune* reported on August 4, 2016, that the North Shore Mosquito Abatement District observed an increase in the number of WNV-carrying mosquitoes. This increased the risk of contracting the disease from "low" to "moderate."[11] Such manifestations of climate change would be expected to increase due to shifting temperature and precipitation patterns.

continued on page 16



Graphic created by Ilissa Ocko, Environmental Defense Fund Scientist

One of the most significant manifestations of climate change is heat. Cities already tend to be hotter than their surrounding suburbs and rural areas. This is due to the "urban heat island," which is a warming effect surrounding urbanized areas due to all of the concrete.[2] Compounding the problem is the fact that increased humidity makes hot days feel even hotter. Hot days, particularly those that reach over 90°F, are associated with poor air quality from increased ozone pollution levels.[12] Climate experts say that increases in ground-level ozone, a toxic gas that causes respiratory health problems and is linked to human combustion of fossil fuels, is in the top five global health impacts expected from climate change.[13] According to Chicago Climate Action Plan, "Since 1980, Chicago's average temperature has increased approximately 2.6 degrees Fahrenheit."[13] This added warming from the urban heat island effect makes cities and their residents even more vulnerable to climate change, subjecting them to intensified, longer, and more frequent

heat waves and exacerbating heat-related illnesses and mortality.[3, 14]

Those most at risk include children, seniors, people in poverty, and those with pre-existing health conditions. Because children are a population at increased risk, they must be a focus in public health education regarding climate change. Pediatricians are trusted by parents and patients to provide up-to-date and accurate information on health care. In the future, this must include education on ways to keep healthy in a changing climate.

As climate change continues to impact cities, it is increasingly important for physicians and all members of the healthcare system to be aware of variations in risk factors among different demographic groups. Healthcare officials will need to anticipate new challenges in order to be able to meet the changing health demands of these populations and provide their communities with the tools and knowledge for prevention of heat-related illnesses and deaths. For example, understanding the relationships between climate and pollen levels, migration patterns of disease carrying animals, heat and humidity impacts, or natural hazards and disease outbreak patterns could greatly impact a patient's quality of life.

Acquiring knowledge on the interconnected effects of climate change and health will empower physicians to proactively inform patients about new health concerns. Physicians must be able to understand the current and future conditions of climate change in order to anticipate their patients' needs and properly treat and diagnose them. Physicians will also need to relay this information to their patients and families so that the entire community can adapt and build resilience to climate change. Adapting healthcare practices to climate change and associated health risks will improve the level of patient care, and save lives. ■

REFERENCES

1. Macomber JD. Building Sustainable Cities. *Harvard Business Review*. July 1, 2013. https://hbr.org/2013/07/building-sustainable-cities/
2. McCarthy MP, Best MJ, Betts RA. 2010. Climate change in cities due to global warming and urban effects. *Geophysical Research Letter.* Vol. 37, L09705. Doi: 10.1029/2010GL042845.
3. Rosenzweig C, Solecki WD, Hammer SA, Mehrotra S. 2011: Urban Climate Change in Context. *Climate Change and Cities: First Assessment Report of the Urban Climate Change Research Network, ARC3,* Rosenzweig C, Solecki WD, Hammer SA, Mehrotra S Eds., Cambridge University Press, Cambridge, UK, 3-11. http://uccrn.org/files/2015/01/ARC3-Frontmatter-Final.pdf
4. Camaren P, Swilling M. 2012. "Sustainable, Resource Efficient Cities —Making it Happen!" *United Nations Environment Programme.* https://sustainabledevelopment.un.org/content/documents/1124SustainableResourceEfficientCities.pdf
5. World Bank. 2015. "Building Regulation for Resilience: Managing Risks for Safer Cities." *World Bank Group, GFDRR.* https://www.gfdrr.org/sites/default/files/publication/BRR%20report.pdf
6. EPA. 2016. "Climate Change Indicators: Heat-Related Deaths." Environmental Protection Agency. Dec 17, 2016. https://www.epa.gov/climate-indicators/climate-change-indicators-heat-related-deaths
7. Environmental Health Perspectives. 2015. Air Quality and Climate Change: A Delicate Balance. *Environmental Health Perspectives.* Vol. 123, Number 6. June 2015. 149-153. https://ehp.niehs.nih.gov/wp-content/uploads/123/6/ehp.123-A148.alt.pdf
8. Becky Little. 2016. Climate Change is Making Your Allergies Even Worse. *National Geographic*. April 8, 2016. http://news.nationalgeographic.com/2016/04/160408-pollen-climate-change-allergies-spring-seasons/
9. American College of Allergy, Asthma and Immunology (ACAAI). "The year 2040: Double the pollen, double the allergy suffering?" ScienceDaily, 9 November 2012. https://www.sciencedaily.com/releases/2012/11/121109083736.htm.
10. ME Barata, G Ligeti, G,T De Simone, Dickinson D, Penney JJ, Rahman M, Zimmerman R, 2011: Climate change and human health in cities. *Climate Change and Cities: First Assessment Report of the Urban Climate Change Research Network*, Rosenzweig C, Solecki WD, Hammer SA, Mehrotra S Eds., Cambridge University Press, Cambridge, UK, 179–213.
11. Gaines LV. 2016. "Officials report West Nile virus uptick throughout North Shore." *Chicago Tribune*. Aug, 4 2016. http://www.chicagotribune.com/suburbs/northbrook/news/ct-evr-west-nile-virus-tl-0811-20160804-story.html
12. Kenward AY, Todd DS, Wang R. 2014. "Summer in the City: Hot and Getting Hotter." *Climate Central*. 2014. http://assets.climatecentral.org/pdfs/UrbanHeatIsland.pdf
13. Chicago Climate Action Plan. 2017. http://www.chicagoclimateaction.org/pages/climate_change_and_chicago/5.php
14. Sanabria JL. 2017. "A Literature Review of Climate Change and Urban Sustainability" Master's Research Paper, *Southern Illinois University*. May 2017. http://cola.siu.edu/geography/graduate/theses-and-dissertations.php

CONTACT INFORMATION

Julia Sanabria, MS, SIU Sustainability Outreach and Education Fellow: j.sanabria444@siu.edu or j.sanabria444@gmail.com 847-800-9503: 4532 Faner Hall, Mail code 4514, Southern Illinois University (SIU) Carbondale, IL 62901

Leslie A. Duram, PhD, Director, Environmental Studies, Professor, Geography: duram@siu.edu 618-453-6084: 4537 Faner Hall, Mail code 4514, Southern Illinois University (SIU) Carbondale, IL 62901