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GLOBAL WARMING AND PUBLIC HEALTH

American Public Health is the premier public health organization in the USA. In their annual conference during November 2017, in Atlanta, the major theme of the conference was how global warming affects the health of the population.

Pharmacists are the most accessible healthcare professionals, so it is important for us to learn about this subject and educate our patients. If a pharmacist limits himself or herself to only treating patients after they get sick, rather than being proactive and preventing sickness in the first place, they cannot claim to be a true health care provider.

APHA executive director George Benjamin stated the following in the Washington Post article: *"We're committed to making sure the nation knows about the effects of climate change on health. If anyone doesn't think this is a severe problem, they are fooling themselves."*

Interestingly, the US is the only developed country, where the highest percent of the population as well as elected officials still appear to confuse day to day weather with "global climate change", clearly represented by the ever raising average temperature of the earth as a whole.

I assume many healthcare professionals, including pharmacists, do not see the link between climate change and health. Relationships between climate change and the following health conditions has

been documented - global warming is increasing the particulate concentration in the air that in turn increases the number of asthma patients you see in your pharmacy. Allergy season in the US has been increasing and the geographic range of Lyme disease has increased by two-fold, and there has also been increases in geographic range of Zika and West Nile virus.

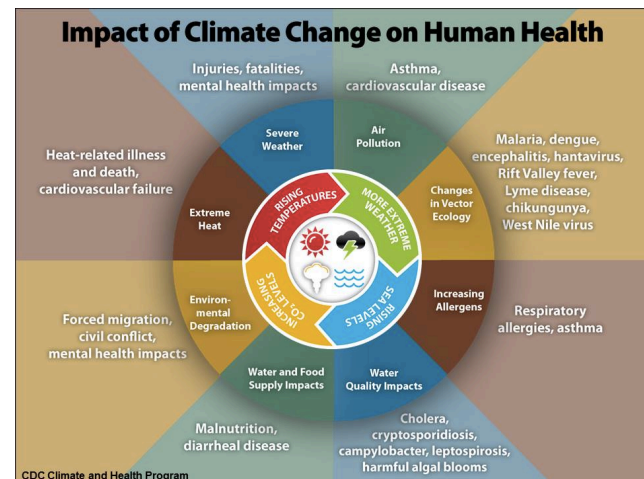


Image courtesy CDC, compiled with information from the [National Center for Environmental Health](#)

The third national assessment of climate change in 2014 identified some of the health impacts of climate change that can be already felt in the US.

With health care expenses consuming more of our budget with every passing year, successfully adopting strategies to mitigate the effects of climate change and limiting further climate change will not only save lives but save money.

There are some interesting developments in this regard in various pockets of the country. Minnesota has developed an extreme heat toolkit offering education on warming temperatures in Minnesota and how to adapt to those changes. San Francisco has identified neighborhoods most susceptible to health effects of extreme heat. This index enables the government to direct resources appropriately to prevent the negative effect of heat – that may include things like designating cooling centers where citizens can go or even planting trees to offer shade and provide relief from heating.

In the US, for the majority of the population, availability of clean water is not a problem - large



population even uses clean water for watering lawns, a luxury that most people in the world couldn't afford; water born disease burden is drastically reduced. Global warming has increased frequency and severity of extreme weather events such as heavy rainfall and flooding¹, that may result in contamination of waterways and the higher temperature leads to accelerate growth of bacteria.

Haines et al.² have reported that a small increase in temperature and precipitation changes will result in increased diarrheal disease burden. For all those pharmacists who are worried about development of antibiotic resistance, this may be a good starting point to avoid that problem.

According to recent IRS statistics³, tax-exempt hospitals devote more than 400,000 hours annually for assessment of community health needs [CHNAs]. While CHNAs focus on the quality of health care in the community and implementations strategies for normal operation of the hospitals, they pay little attention to the environmental factors affecting community health. Actions such as reducing use of coal-fired power plants, decreasing and cleaning toxic wastes and protecting ecosystems may have an upfront cost but may end up showing a positive balance sheet by decreasing the healthcare expenditures paid by the community in the long run.

The recent policy statements issued by American Academy of Pediatrics⁴ and American College of Physicians⁵ in 2016 clearly demonstrate their recognition of the negative effect of global warming on health by increasing respiratory, heat related, water-borne, and mental illnesses.

Interestingly, the largest professional association representing pharmacists in the USA in their 2017 policy statement⁶ has no mention of the negative effects of global warming on the patients they serve. Hopefully, for readers of this article, it will be a good starting point to recognize this important determinant [global warming] of patient health and how pharmacists can play a role in improving patient outcomes and decrease costs.

References:

1. Smith KR, Woodward A, Campbell-Lendrum D, et al. Human health: impacts, adaptation, and co-benefits. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK, and New York, NY: Cambridge University Press; 2014:709–754.
2. Haines A, Kovats RS, Campbell-Lendrum D, Corvalan C. Climate change and human health: impacts, vulnerability, and mitigation. *Lancet*. 2006;367(9528):2101–2109.
3. Internal Revenue Service, Treasury. Additional requirements for charitable hospitals; community health needs assessments for charitable hospitals; requirement of a section 4959 excise tax return and time for filing the return. Final regulations and removal of temporary regulations. *Fed Regist*. 2014;79(250):78953–79016
4. Ahdoot S, Pacheco SE; Council on Environmental Health. Global climate change and children's health. *Pediatrics*. 2015;136(5):e1468–e1484.
5. Crowley RA; Health and Public Policy Committee of the American College of Physicians. Climate change and health: a position paper of the American College of Physicians. *Ann Intern Med*. 2016;164(9):608–610.
6. "Full policy manual – American Pharmacist Association"; <https://www.pharmacist.com/policy-manual>; accessed February 18, 2018