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Warm-up vs. health?



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ANALYSIS/OPINION:

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As thousands pour into emergency rooms and millions line up to be vaccinated, Brazil's public health officials and recently even its military fight to control vector-borne diseases that were eradicated from urban centers decades ago.

Mosquitoes are carrying illnesses like dengue and yellow fever into Brazil's largest cities, including Rio and Brasilia. And the tropical disease, chikungunya, unheard of Italy, was reported there last year. These three recent outbreaks have caused a total of more than 80 deaths, 57,000 new infections and widespread panic.

As a result of global warming, mosquitoes, ticks, rodents and other vectors are expanding their geographic range and altering long-established patterns of disease. Climate changes worldwide are also causing serious problems with food and water supplies, increasing mental health concerns, and exacerbating air pollution which elevates chronic disease risk.

Global temperature increases of 0.9 degrees Fahrenheit (0.6 degrees Celsius) over the last century have led to an estimated 150,000 deaths and the loss of 5.5 million disability-adjusted life years (DALYs) annually, with the rates expected to double over the next several decades. The World Health Organization (WHO) has documented 39 new or re-emerging diseases since the 1960s, many linked to global warming — an explosion of illnesses not seen since the Industrial Revolution when masses of people moving to cities increased the spread of disease.

Yet, only minimal attention has been paid to one of the most significant yet least-publicized hazards of climate change — its impact on the health of people worldwide. Human health, influenced by a complex system of biological, social, economic, political and geographic factors, is particularly vulnerable to the effects of global warming. On World Health Day, it is time to focus international attention on this critical issue.

Many infectious diseases exhibit sensitivity to climate change. Mosquitoes — the most common disease vectors that spread illnesses such as malaria, West Nile and yellow fever — thrive in wet and humid tropical environments. At least 1 million people die every year, including 3,000 children every day, from malaria. A rise of 3.6 to 5.4 degrees F in global temperatures would cause malaria-carrying mosquitoes to enter new geographic areas, placing millions more people at risk of the disease.

Studies also suggest the extreme storms of El Nino increased mosquito populations, contributing to a fivefold rise in malaria rates. As global climate change produces more extreme weather events, such as hurricanes and flooding, spikes in the prevalence of other weather-sensitive diseases can be expected. Furthermore, deforestation, a major contributor to global warming, has brought animals and ticks in contact with humans, resulting in the emergence of a new infectious illness, Lyme's Disease, first reported in 1975.

The Earth's water supply has also been profoundly affected by global warming, endangering the health of people and the planet. The 0.07-inch yearly rise in global sea levels has reduced fresh-water availability, elevated water temperatures, and contributed to changes in precipitation patterns that threaten already scarce water supplies.

Combined with extreme weather events, changes in the availability of water affect agricultural food production, destroy botanical sources of natural medicines, incapacitate sewage systems and result in widespread population displacement leading to disruptions in acute and chronic disease management as well as conflict in many regions.

Changes in the Earth's water supply have threatened populations around the globe with new diseases and sanitation concerns: 1.1 billion people worldwide lack safe drinking water and 2.6 billion do not have access to adequate sanitation infrastructure. In the United States alone, there were more than 750,000 cases of diseases associated with unsafe drinking water between 1980 and 1996.

Moreover, changes in the quality and distribution of water after extreme weather events are linked to increased malnutrition and food poisoning, increased rates of child and infant mortality and elevated morbidity and deaths from diarrheal diseases.

Flooding, in particular, causes upsurges in rodent-borne illnesses such as leptospirosis, tularemia, plague and viral hemorrhagic diseases. The impact on human health continues long after the waters recede — with toxic contamination of food and water and mental health problems, such as post-traumatic stress disorder and depression. Unsurprisingly, developing nations bear the overwhelming burden of the health-damaging effects of climate change.

In the 1990s, of the 600,000 casualties caused by weather-related natural disasters, 95 percent occurred in the developing world. As a result of flooding in 2007 alone, 30,000 people died in Venezuela. In China, 105 million people required immediate basic survival needs such as food, water, shelter, sanitation and medical assistance.

Scientific evidence also suggests the noticeably hot summers of recent years may not be a coincidence. Climate change generates extremely hot weather, which threatens large population groups across the world with heat stroke and cardiac and respiratory complications. The 2003 European summer heat waves, during which temperatures reached 95 to 104 degrees F, were associated with 35,000 deaths over two months. As the average global temperature rises, such heat waves can be expected to increase in severity and frequency.

Along with changes in water supplies and temperature patterns, global warming has dramatically affected the quality and safety of the very air we breathe. Air pollution, enhanced by the effects of global warming, is linked to 2 million deaths worldwide. A study extrapolating the effects of air pollution suggests that a 1.8 degree F rise in temperature could increase yearly global deaths by another 21,600.

Global warming enhances smog formation, which contributes to chronic disease risk for lung cancer, heart disease, asthma and allergies (the rates of which have increased fourfold in the U.S. alone since 1980). These diseases are exacerbated by ground-level ozone formation emanating from traffic emissions, increases in particulate matter, pollen and mold, and exposure to greenhouse gases like nitrous oxide. Recent conditions in Beijing offer a worrisome example of the effects of air pollution on human health. In this city of more than 17 million people, 2007 smog levels exceeded safety guidelines set by the World Health Organization by 400 percent, leaving citizens with only 65 days of acceptable breathing air and prompting public health officials to close highways and restrict air travel and raising concerns by some about the health of athletes competing in the 2008 Summer Olympics.

The profound effects of climate change demonstrate that the health of our planet and its people are inextricably entwined and underscore why action is needed now on multiple fronts to safeguard the health of people worldwide.

The fight to stop global warming and reduce its health-damaging effects begins with building a cleaner energy future and a more climate-conscious population. Greenhouse gas emissions must be reduced and natural resources protected by increased use of clean, efficient energy sources, developing new clean energy technologies, and encouraging individuals to make more environmentally conscious lifestyle decisions.

Public health infrastructure and planning must be strengthened by advancing climate modeling, improving environmental public health tracking and disease surveillance, and increasing research into the relationship between climate change and health.

Increasing health professional training and public education, developing government and private sector response plans, and building communication networks will enhance society's capacity to respond. To prevent and reduce

the serious public health threats from global warming, governments, nongovernmental organizations, businesses, schools, philanthropists and individuals must collaborate across communities and countries to develop and implement lifesaving programs and policies to ensure a greener and healthier world.

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