Medical News & Perspectives | CLIMATE CHANGE AND HEALTH

Critical Care Physician Takes on Climate Change in New WHO Role

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There's no shortage these days of sobering climate statistics. The 10 warmest years on record have all occurred since 2010, according to the National Oceanic and Atmospheric Administration. This year's June and July were the hottest of these months on record for both global land and ocean temperatures. In fact, July was likely the hottest of *any* month since global record keeping started in 1850.

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Many health care professionals are already dealing with the effects of climate change, whether personally, in their clinical practice, or both. Vanessa Kerry, MD, MSc, a critical care physician at Massachusetts General Hospital, is one of them. Kerry is the cofounder and chief executive officer of Seed Global Health, a nonprofit organization that helps to train and advocate for the health care workforce in sub-Saharan Africa, a region that is deeply affected by climate change. She also directs the Global Public Policy and Social Change Program at Harvard Medical School.

This June, the World Health Organization (WHO) appointed Kerry its first-ever Director-General Special Envoy for Climate Change and Health. "The climate crisis is a health crisis," she said in a recent video interview with *JAMA*, in which she spoke about the rapidly escalating threat that climate change poses to human health—and the opportunity the health care sector has to change course.

This interview has been edited for clarity and length.

JAMA: Let's talk about why the WHO decided to create this new position focused on climate change and health. Why was now the right time?

DR KERRY: The WHO has been working incredibly hard in this space. They have an entire department dedicated to the environment, climate change, and health, which is an unbelievable team pulling together the data and helping us to understand exactly how our communities and our countries and our globe are being impacted by what is fundamentally a health crisis. We're already seeing that 1 in 4 deaths is from an environmental cause. Seven million people a year are dying from air pollution. That's more than died in the entire COVID pandemic throughout the 3 years.

JAMA: What are some of the various ways that the health of populations around the world is already being affected?

DR KERRY: What we're seeing is a rise in disease across pretty much every disease grouping you could think of. [Climate change] creates an increase in vector-borne and communicable diseases. It creates an increase in noncommunicable diseases—cancer, cardiovascular disease, kidney disease, pulmonary diseases. It creates an increase in maternal health issues and maternal mortality, with increases in stillbirths and preterm births. We're seeing an increase in mental health issues, as well as the trauma, of course, from things that happen in extreme weather events, like drownings.

[We will be] seeing a rise of about 250 000 deaths each year, according to the WHO, that are coming directly from climate change. That's just death, not including all the morbidity and the suffering that we're seeing from people who are getting sick and who can't participate in their lives or their livelihood in the way they want to. The health impacts are both direct and indirect, and they're creating a real and vicious cycle that is going to impact people's access to thrive and to earn money and will drive a lot of people into poverty.

JAMA: Globally, heat waves are becoming more frequent, longer, and more intense. In the US, parts of the Southwest had record-breaking heat in July. Phoenix, Arizona, had 31 days in a row of temperatures above 110 °F [43.3 °C]. Older adults and people who work outdoors or who are unsheltered are some of the populations that are particularly vulnerable during heat waves. How should the world be preparing for more extreme temperatures?

DR KERRY: The way we should be preparing is by drastically reducing the greenhouse gases that we're putting into the atmosphere. We're on track right now to hit 2.4 to 2.6 °C over the next immediate period. That's not even close to the Paris Agreement's goal to stay at 1.5 °C. Health experts have already said we are in uncharted territory.

Some of this is also going to be about how we are protecting our communities and making resources available because without access to air conditioning or cooling systems or safe water or mechanisms to escape the heat, it's going to be very difficult to manage. Individuals can try to do what

they can, but this is going to be a systemic issue where parts of where we live are going to become uninhabitable and people are going to end up moving.

I'd love to say that there's a clear pathway for clinicians to take, but it's impossible to walk away from the macro here, which is that we are facing such drastic changes on a very system-wide scale. We have to get to the root cause of the problem.

JAMA: To what extent do you think health systems are ready for influxes of patients who are dealing with extreme heat?

DR KERRY: I think our health systems are stressed already, whether it's in the United States or in communities like in sub-Saharan Africa where Seed Global Health works. A lot of health systems are facing a crisis of health care workers, especially after the COVID pandemic where there's been burnout, attrition, direct loss. The last statistic was a year and a half ago, but it was that 180 000 health care workers had died.

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And that's billions of dollars in training and tens of decades of training among health care workers that's lost that now needs to be replicated.

Health systems are stressed because they don't have all the resources they need to manage the disease we have today. We're not remotely ready for the disease that we're going to see coming down the pipeline, whether it's extreme heat, or the noncommunicable disease and the air pollution, or if it is the vector-borne diseases that we're seeing.

Pakistan's a great example. After the floods [in 2022], malaria cases quadrupled in the country. It went to about 1.6 million cases, including in provinces where it had been eradicated. That's a huge new stress on a health system that already has a number of challenges.

We're now looking at an increased flux of disease at a rapid rate from climate change that in its own way is going to be a COVID pandemic many times over, year in and year out. Whether it's the wildfires in Hawai'i that we're seeing right now, the smoke that was coming down from Canada, the extreme heat that we've seen, the flooding and devastation, the new vector-borne diseases that are coming—all of this is going to challenge our health systems.

We have an opportunity though. Actually, I'm a total optimist, believe it or not.

I'm sitting here giving a doom and gloom sort of picture, but we can change the course of how we react and what we're dealing with. We can choose here and now to begin a path of transition to less greenhouse gases. We can choose here and now to invest in strong, robust health systems. Family medicine and primary health care can cover 80% to 90% of the disease burdens that we're going to see coming down the pipeline.

We focus on prevention, we make people healthier, we contribute less greenhouse gas. Any disease puts in much more greenhouse gases as [patients] pursue care and use more services. We're facing a choice and an opportunity to really reorient and focus on prevention. We'll not only be able to manage climate, but we're going to be able to manage the diseases we're seeing today.

JAMA: You mentioned wildfires. Here in Chicago where *JAMA* is headquartered, we had an unusually hazy June. We're one of the regions that have been affected by smoke from Canada's most severe wildfire season on record. What happens to air quality when wildfires increase?

DR KERRY: When wildfires increase, you see an increase in the particulate matter that enters the air. If you have asthma or reactive airway diseases, they can be triggered and you can have problems. Over the long-term, these exposures can also obviously lead to malignancies or to other long-term lung disease. For those folks with cardiovascular disease, it can increase stress in cardiovascular disease.

We're seeing accelerated events like this and they're impacting huge communities. The visual of seeing New York City under an orange haze was quite profound, and that's 22 million people that were deeply exposed to a huge amount of environmental insult to their bodies. For those people whose jobs are outdoors, they're put at higher risk. Those are often the folks that are already more vulnerable.

As these wildfires accelerate, we're seeing profound impacts. Look at Hawai'i. People were running into the ocean and had to be rescued by the Coast Guard on Maui because of the fires and the physical danger. And then in addition to the physical danger, you lose your house, you lose your jobs as businesses burn down. And that, again, has a long tail of impact as you suddenly have to make choices between food or seeking health services.

The more severe and the more frequent these events are happening, the more we're at risk of all of these things. And smoke, by the way, isn't just across the border between two nations that touch. We can see smoke transmit across huge areas of this earth. We can be subject to what's happening somewhere very far away.

JAMA: Extreme flooding has been reported this year in places including China, India, Japan, and the US Eastern Seaboard. Last year, monsoon rainfalls in Pakistan caused unprecedented flooding that affected 33 million people. What are your concerns when you see these reports?

DR KERRY: There's a number of concerns. Just the alarming rate of these events is one huge concern, but obviously there's immense physical harm that comes from extreme flooding. One is drowning and death that comes from the increased water. Second is a huge amount of vector-borne diseases. You see rises in malaria, rises in dengue and mosquito-borne illnesses. But you also see cholera. You see diarrheal diseases. You see disruptions in water and sanitation.

In Malawi, where Seed Global Health works, they've just endured one of the largest and longest cholera outbreaks in the country's history. The schools shut down, and multiple people died both from flooding as well as from the cholera. That was from a series of tropical storms that have devastated the community. Cholera in Malawi was a year-long phenomenon. They

only just declared the cholera outbreak over in the last week or so.

But you also see changes in agriculture, loss of food and food insecurity that comes as fields are flooded and food sources become compromised. And you see, again, loss of housing and safety and shelter, which can have very real implications for people's health and well-being.

JAMA: *JAMA* Medical News recently covered research showing that weather-related power outages pose an increasing threat to people who rely on electronic medical devices. As more communities experience interruptions in power, what role will physicians and health care systems have in ensuring ongoing care for all patients?

DR KERRY: We are going to see a loss of life from that or worsening of disease patterns as it comes about. Or we're going to be investing in gas generators that are contributing [to greenhouse gases] and we're going to enter this vicious cycle. I think health systems and clinicians need to be thinking about what this means for their patients and starting to screen them the same way we screen for abuse or whether you have access to food or are safe in your home.

We're going to have to screen [patients] for climate vulnerability, because extreme weather events are happening with more frequency. This is a new engagement that I think we're going to have to do as clinicians when we think about the determinants of our patients' health and the environments that they live in. Part of their safety is going to be their climate safety.

JAMA: Let's move on to solutions. You mentioned that you're an optimist, so let's talk about your goals. What are some of the things you hope to accomplish in your new role at the WHO?

DR KERRY: Emerging out of COVID, climate change is very much a pandemic of myriad diseases that we need to be prepared for, and we need to have people understand that at the highest level.

The goal of this position is 3-fold. One, it's to advocate and to change the thinking and understanding among policymakers and leaders and across sectors—so political, private sector, labor ministers, and finance ministers—to understand the deep connection between climate and health and all these other sectors.

Some of that's going to be working with the UAE [United Arab Emirates] and the COP28, which is the big climate conference that happens every year. This one is in the UAE. We're working with the presidency of this climate conference, which has dedicated the first-ever Day of Health, on very clear deliverables that we can create from that day that change the political value and calculus of the climate change and health nexus, and change how policymakers engage this space to make better decisions to protect the health and well-being of their population.

The second big thing is going to be to change the financing around it, because right now, only about 0.5% of climate financing goes to the health space. We need to make investments to close the gap of 10 million health care workers around the world, to create strong health systems that they can work in with the tools that they need with green electricity and with all the ability to respond to the various types of diseases that are going to come down the pipeline.

Because if you have a healthy population, they can go to work, they can be taxed and create contributions to the GDP [gross domestic product]. You see productivity. You see more stable homes and communities and more stable nations. You see the gender equity gaps close. Women get jobs in the health sector and are paid, and they then contribute to the social sectors in these countries or invest more in health and education, in turn. There are huge positive benefits that can come if we start to transform the investments we make.

The third is to support the WHO in how they're engaging in this strategically. And to look for the opportunities to be able to help make these linkages across sectors. An example is the multilateral development banks. The World Bank, the Islamic Development Bank, and the African Development Bank, and others came together to announce a $1.5 billion fund to basically drive investments in primary health care, which again will manage 80% to 90% of the disease burdens we see in the world. That also is our climate resilience.

I guess I would say I come at this as a clinician who has seen firsthand what some of these impacts can be on patients, and I come at this as a mother. I have 2 small kids who are so aware of climate change and so frustrated even at their young ages about the fact that people don't seem to be making the right choices.

JAMA: Let's talk about training the global medical workforce. Clearly medical education will need to incorporate the realities of climate change. What recommendations do you have for educating students and practicing clinicians?

DR KERRY: I think all medical schools, nursing schools, and health professional schools need to have programs dedicated to climate change, both to educate about the increasing risks to human health from climate change and to understand the health sector's impact on climate change.

Five percent of greenhouse gases come from the health sector. That's actually more than the airline sector, which I think people don't realize. We have a real role in our own practices and as administrators in hospitals to think about how we can reduce our own impact in this, and to make sure we're asking questions as clinicians to challenge the system.

And then there's the fun side, which is the cobenefits. You can help educate your patients that if they walk or they bike somewhere, not only are they reducing their greenhouse contribution to the world, but they're getting healthier as they do it. I think some of this is about reframing values, but we need to be doing this at every level, at the student-training level, at the CME [continuing medical education] level, at the health-professional level, and at the hospital level whether it's private or academic.

And the industry should be doing it too, right? A lot of clinicians are now working in industry and not necessarily in the clinical setting. I think learning about it in that setting too is going to be critically important.

JAMA: The COVID-19 pandemic exposed the stark health disparities on our planet. How can we try to prevent the same health inequities from playing out as climate change unfolds?

DR KERRY: That's a really important question. I think COVID showed, without question, our failure to close the equity gaps that exist in the world today. Climate change is taking the exact same pathway. Those that are already most susceptible to the impacts of climate change are those that are going to be hurt the most and have the least amount of resources to be

able to combat that impact and to protect their health and well-being. That's going to have a huge cost on our world and on the resources that we have. As these equity gaps grow, it's going to be more of a challenge to address them. COVID, I think, has shown us the need for strong, resilient health systems and the importance of them from a prevention standpoint, from closing equity gaps, and from our resilience and preparedness.

JAMA: Beyond caring for patients who are affected by climate change, what else can health care professionals do?

DR KERRY: I think health care professionals have a profound role in this. We live on the frontlines of seeing the impacts of what is happening every day. We have powerful stories and narratives, and there's a growing understanding that stories are really powerful sources of creating change.

I think that we have the ability to take our daily experience and build powerful narratives and to bring evidence and data forth to help change things, and to know that we as scientists and as clinicians can be really trusted voices in this. But we need to get proactive about being advocates. We need to learn the tools of advocacy. We need to engage not just our patients and our leadership within our hospitals or within our health communities, but I think we need to start helping to really raise this at high political levels too.

We are really facing a profound health crisis. The work is only going to get harder if we can't find a way to tackle this here and now. ■

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