



Editorial

Healthcare professionals need to be CCLEAR: Climate collaborators, leaders, educators, advocates, and researchers

The 6th Assessment of the Intergovernmental Panel on Climate Change sounded its most piercing red alert ever – *we are in a climate crisis* [1]. In this Special Issue of the Journal of Climate Change and Health, professionals in the healthcare arena share their experiences and solutions for mitigating and adapting to the rapidly progressing changes around us. Why are we focusing on healthcare professionals? Why us? Why now?

Climate change and environmental decline are global problems of unprecedented magnitude and complexity, of the type sometimes called “wicked” problems or “grand challenges” that cross multiple scales, disciplines, systems, societal levels, and geographic locations [2,3]. The healthcare sector’s contribution to this most pressing of public health problems is significant, accounting for approximately 10% of the annual greenhouse gas emissions in the United States and significant amounts of total emissions and other pollutants globally [4,5]. Additionally, we are responsible for keeping health systems functioning through the floods, fires, severe weather and heat emergencies that we already experience with increasing frequency and intensity, and which are forecast to worsen under all current emission scenarios. As tempting as it may be to try to leave this crisis to politicians, governments, international agencies, treaties, and big multinational corporations to solve, healthcare professionals have a unique responsibility and outsized platform for immediate and meaningful action.

Here we make the case that our potential contribution to ameliorating the climate crisis extends beyond our sector’s fractional contribution, arguing that healthcare should lead the charge towards meaningful change. Among professionals, healthcare providers are trusted voices globally lending us credibility with a very large audience including the general public, the private sector, the greater scientific community, and key policy makers. In the urgency of this moment, we can and must rise to this critical occasion to take a prominent role next to other climate leaders. In doing so, the authors propose the adoption of a mnemonic for climate action that healthcare professionals can embrace and use as a platform to catalyze action. The acronym CCLEAR, detailed below, will help us “see clearly” how these actions can translate to meaningful benefit for our patients and the planet.

In the fight against climate change, healthcare professionals possess unique attributes which stem from our rigorous scientific training, analytical curiosity, and empathic and holistic perspective that enable us to readily recognize the scope, urgency, and impact of new problems and thus act to reduce health harm. This strategic viewpoint entrusts us with societal responsibility and a critical skill set relevant to addressing the climate crisis, including the following:

- We recognize that climate change will be the greatest healthcare problem of the 21st century [6].

- We understand from our medical experience how prevention avoids irrecoverable consequences, and that adaptation and mitigation reduce morbidity, mortality, human pain and suffering, and cost.
- We recognize the interdependence of biologic processes, the complexity of unanticipated consequences, the impact of social determinants on health, and, most importantly, how to assess solutions critically.
- We are specifically trained in and utilize daily the power of science to solve problems, practice evidence-based decision-making, know how to follow changing data as it unfolds, and are experienced in explaining scientific findings and recommendations to a wide and diverse audience.
- In our practices we must, at times, make major consequential decisions for patients despite incomplete information. Doing nothing because of uncertainty or undiscovered details is not an option in healthcare – nor in the climate crisis.
- Healthcare has a history and obligation to effect social justice. We see directly how climate change affects the most vulnerable first and hardest, and we have a duty to respond.

It’s easy to say “we should do something,” and far more difficult to determine what is truly actionable and impactful. Here we describe specific charges for those in the healthcare professions.

We need to work with our hospitals and clinics to clean up our own act. The 10% of greenhouse gases we contribute in the U.S could be less [4], and globally we can do better. In order to walk the walk, healthcare professionals must adopt the mindset of *Climate Collaborators*. We need to learn from experts at the intersection of environmental science and engineering, climate change and health, architecture, agriculture, economics, policy, and human behavior. With a multidisciplinary approach, we are better equipped to speak up forcefully to effectively influence our healthcare administrators and finance officers to incorporate environmental priorities into business decisions – *because this is about health, and because we are running out of time*. This charge may conflict with other short-term priorities, but we are practiced in using collaborative science, teamwork, and innovation to meet new challenges and find new ways of achieving our goals. We can set an example and reaffirm that the mission of our healthcare institutions is to improve the health of the community at large, including when this may require investment of resources.

To accept this challenge of our time, healthcare professionals need to play an active role. We should be *Leaders* within our own institutions and serve as role models for other sectors and institutions in incorporating these new priorities. We can use our collective influence to spur sustainable changes in industries contributing to our supply chain, by insisting certain environmental standards are followed and by encouraging innovative manufacturing, labeling,

packaging, and shipping practices that reduce environmental harm. Along those lines, we should advocate that accrediting bodies for hospitals and healthcare institutions also lead by formally including climate-related disaster preparation as well as “greening” of all hospitals, clinics, and labs as part of their core requirements. Minimum standards should include decreased use of toxic chemicals, decreased emissions of greenhouse gases and air pollutants, and improved waste management practices, as well as requiring clear contingency plans for weather-related disasters.

We should seize the opportunity to use our platform in society to become climate *Educators*. It is our responsibility to clearly communicate the facts to our patients, to each other, to the public, and to decision-makers and stakeholders at every level. Climate change is a health issue, and it is not hyperbole to state that this is a matter of survival for people all around the world. We must re-prioritize and commit the time for ourselves and those we supervise to testify, write letters, provide commentary, give lectures, and roll up our sleeves using the rarest commodity in healthcare – time. We should advocate for and assist in expanding climate and health literacy and action in elementary, secondary, and medical schools, as well as during residency, in departmental presentations, hospital-wide symposia, and national healthcare organizations as part of continuing education. We can prepare for and participate in outreach, irrespective of our specific specialty or role in healthcare – climate change touches us all, and each of us brings a unique personal perspective to this crisis. Healthcare professionals who have the willingness and capacity to act constitute an essential part of a climate-resilient health system. These activities should be viewed as a legitimate part of the job, just like other public health, “healthcare citizenship”, and practice-building activities, rather than something only done on our own time. Educational support needs to appear in our budgets and be sanctioned in our organizational priorities.

Similarly, we should use our voice to *Advocate* for climate-related legislation, policy, and business decisions to improve human health. We need to speak up loudly in support of measures to increase sustainable energy, stop the use of fossil fuels, and enhance infrastructure changes in line with local, national, and international sustainability goals. We should advocate for climate justice both in our own communities and globally, speaking up when pollution or heat islands or carbon-emitting industries are concentrated in our poorest or least represented communities. We should explore how current retirement and endowment investment portfolios may favor perpetuating the status quo of unabated CO2 emissions from fossil fuel consumption rather than fostering the transition to a cleaner and healthier world, and then raise awareness and implement changes.

Finally, healthcare is a science-based enterprise, and climate change is a health issue. Therefore, we should apply what we already know firsthand about the value of *Research* and apply those scientific principles and methodologies to conduct and support acquisition of new knowledge and innovate for meaningful mitigation. This might include investigating the impacts of climate change on specific disorders locally and globally, the environmental, health and economic effects of approaches such as more plant-based diets, use of reusable hospital and clinic supplies, telemedicine, incentives for public transportation, alternative means of professional and community education that reduce travel, and listening and learning from local community-derived solutions. Research also should encompass translational knowledge processes from communities around the globe who have been living sustainability for millennia. Many novel solutions are highlighted in this Special Issue, and the mission of the Journal of Climate Change and Health includes creating a broad forum for new data to be shared through this and subsequent issues. Additionally, we should support collaboration among global partners to study the effects of climate change around the world including links to migrations and armed conflicts, illness and food insecurity, mortality and impacts on quality of life. We must better understand the effects of climate anxiety and

climate depression, and what interventions help both the symptoms and their causes. We can advocate for increased research funding for the intersection of climate change and health and to investigate the comparative effectiveness of different mitigation and adaptation strategies on health outcomes, which will in turn inform policy.

Being in the healthcare profession helps us envision how climate change will impact people’s lives. When stakes are high, we need to make the best judgment in the moment and act. We are called to honor the legacy of generations of physicians who advocated to make the world a better, healthier place. By espousing the principles of CCLEAR – Climate Collaboration, Leadership, Education, Advocacy, and Research – we can and should take on this “grand challenge” with conviction, resolve, and purpose. It is our job, and the lives of our patients depend on it.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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