



SGIM Forum

Society of General Internal Medicine

HEALTH POLICY CORNER

SEEKING INSPIRATION IN THE CLIMATE CRISIS: ADVOCACY BY SGIM MEMBERS

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Health Care and Climate Change

Climate change has been called the “greatest public health challenge of the 21st century,”¹ with ramifications making the COVID-19 pandemic seem transient. This global pandemic provides important perspective on how we can respond to external challenges, even when science is politicized. It also shows us how important it is that healthcare providers and systems proactively work to prevent far-reaching climate-change related disasters and public health crises that pose more risk to particular populations and communities. The pandemic has forced each individual, industry, and government across the globe to reckon with its immediate repercussions. Along the way, we have seen the value of collective action, the human and economic consequences of collective inaction, and the power of prevention in “flattening a curve.”

Climate change demands the same urgent, collective action. Now is more important than ever for healthcare providers, educators, researchers, and academic institutions to lead on curbing the climate crisis. The world looks to healthcare providers for advice on how to respond to public health threats such as COVID and climate change. As advocates for the vulnerable and underserved, we need to continue highlighting at-risk populations and develop strategies to mitigate adverse effects which will disproportionately impact those least able to deal with them. Accordingly, we urge individual SGIM members and the collective organization to increase awareness of the following:

- health impacts of climate change,
- informing related treatment choices,
- educating health professionals, and
- advocating for policies and practices that address the health effects of climate change.

By highlighting concrete examples of SGIM members’ work, we hope to encourage further discussion on how SGIM as an organization can effectively address the growing specter of climate change.

Education on Climate Change

At the University of Colorado School of Medicine, SGIM member Dr. Beth Gillespie partnered with faculty from emergency medicine to offer one of the first medical school electives on climate and health. The two-week course gives students a broad overview of fundamental topics including climate science and communication; water-, vector-borne, and heat-related illness; water and food security; extreme weather; air quality; healthcare systems; and international governance. The first week, students break out into small groups after morning lectures to work through relevant problem-based scenarios. Written by course directors, each scenario has learning objectives designed to complement topics addressed by experts in their lectures. Beyond these scenarios, students are expected to lead one journal club discussion on an article from the literature, and to write an op-ed then

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FROM THE EDITOR

MAKING CLIMATE COMMITMENTS

Tiffany I. Leung, MD, MPH, FACP, FAMIA,
Editor in Chief, *SGIM Forum*

Not long before writing this column, *The Washington Post* published an article noting that 2020 tied with 2016 as Earth's hottest year.¹ This occurred even as U.S. greenhouse gas emissions in 2020 dropped by more than 10% during the year as a result of intermittent COVID-19-related lockdowns and its consequences, including, in part, more working from home, less car commuting, and also less overall air travel.² Some European cities, like Milan, Italy, invested in new cycling infrastructure during the pandemic as people also avoided public transit. Even though personal behavior can incrementally influence our climate and health, people and policy are intertwined drivers of climate and environmental change.

Like this pandemic, climate change respects no borders, making global climate commitments essential to preserve precious shared environmental resources and motivate human behavior with fewer negative environmental impacts. As the pandemic continues, so, too, do other urgent contemporary public health priorities, as Jean Kutner, SGIM president, reminds us. SGIM experts, leaders, and advocates in climate health share their insights on advancing climate justice, promoting climate health education of the public and medical communities, and improving patients' and population health. As you read articles in this first-ever *Forum* theme issue on climate change and health, I encourage you to also explore the informative references that authors cite, including important policy statements, government reports, position papers, and research articles.

We have an engaged and forward-thinking *Forum* associate editor team to thank for highlighting climate change and health in this special theme issue. I hope you find this to be a springboard for continuous learning and inspiration on how you can engage in climate advocacy and care for patients affected by climate change.

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EMERGING FROM THE COVID-19 HAZE WITH RENEWED ENERGY, ENTHUSIASM, AND COMMITMENT

Jean S. Kutner, MD, MSPH, President, SGIM

... I have been keeping a "topics that were put on hold due to COVID-19" file. Digging through files from a year ago has been enlightening. Part of this process involved deciding which projects and initiatives are worth continuing to pursue and which no longer have relevance. For those projects that remain relevant, I find that I have renewed energy, enthusiasm, and commitment.



Today, I e-mailed several colleagues regarding the status of an initiative on which we had been working: "Can you remind me where we are with regards to this initiative? I have a dim memory that we were moving this forward, but the details are lost in the haze of COVID." Turns out I wasn't the only one—my colleague responded, "...my last e-mail on this was 1/23/20! I think that was about a decade ago." Our attention has been so focused on COVID-19 for the past year that it can be hard to remember what our other priorities were before the beginning of the pandemic. Since our Incident Command Center was first activated in early 2020, I have been keeping a "topics that were put on hold due to COVID-19" file. In looking at that file, now, it is gratifying to see that I have actually accomplished some of the items on that list. However, it was also eye opening to see what is on the list that I had completely forgotten. Digging through files from a year ago to reconstruct where

I was on projects has certainly been enlightening. Part of this process involved deciding which projects and initiatives are worth continuing to pursue and which no longer have relevance. For those projects that remain relevant, I find that I have renewed energy, enthusiasm, and commitment.

As I read Drs. Bass and Weppner's Q&A column in this edition of the *Forum*,¹ and reviewed the Medical Society Consortium on Climate and Health website,² it felt a bit like the experience of emerging from the COVID-19 haze that I describe above. Climate change is *not* new to SGIM. SGIM has been a member of the Medical Society Consortium on Climate and Health since its founding in 2017, endorsing the Consortium consensus statement³ and having an SGIM representative on the Steering Committee. The effects of climate change on health, and particularly the health of the most vulnerable, are entirely consistent with SGIM's commitment to population health and addressing health disparities.

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The SGIM *Forum*, the official newsletter of the Society of General Internal Medicine, is a monthly publication that offers articles, essays, thought-pieces, and editorials that reflect on healthcare trends, report on Society activities, and air important issues in general internal medicine and the healthcare system at large. The mission of the *Forum* is to inspire, inform, and connect—both SGIM members and those interested in general internal medicine (clinical care, medical education, research, and health policy). Unless specifically noted, the views expressed in the *Forum* do not represent the official position of SGIM. Articles are selected or solicited based on topical interest, clarity of writing, and potential to engage the readership. The Editorial staff welcomes suggestions from the readership. Readers may contact the Editor, Managing Editor, or Associate Editors with comments, ideas, controversies, or potential articles. This news magazine is published by Springer. The SGIM *Forum* template was created by Howard Petlack.

Q & A WITH SGIM'S CEO AND THE LIAISON TO THE MEDICAL SOCIETY CONSORTIUM ON CLIMATE AND HEALTH

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What is the best way for SGIM to be engaged in advocacy regarding climate change?

Each year, SGIM's Health Policy Committee (HPC) develops a list of priorities for national advocacy in clinical practice, education, and research that are approved by SGIM's Council.¹ Although the HPC's current health policy agenda does not mention climate change as a priority, the HPC reported to the Council that it wanted to clarify the Society's position on climate change and improve communication with the Medical Society Consortium on Climate and Health. As part of the process of clarifying the Society's position, the HPC will have to decide how to prioritize climate change in its health policy agenda, specifically whether it should be a focus of active advocacy, coalition advocacy, or just monitoring. Since climate change falls beyond the realm of the Society's top priorities for clinical practice, education, and research, it may fit best under coalition advocacy which refers to issues for which SGIM works collaboratively with other stakeholder organizations to advance our position. Thus, it will be very important to nurture an effective partnership with the Consortium.

What could be done to strengthen SGIM's relationship with the Medical Society Consortium on Climate and Health?

SGIM has been a member of the Consortium for several years, but communication between the two organizations has been relatively infrequent. In spring 2020, SGIM joined the Consortium in expressing serious concerns about the "transparency" rule proposed and subsequently adopted by the Environmental Protection Agency (EPA). The rule prohibits the EPA from considering any evidence where the data behind the study is not publicly available, effectively excluding a lot of peer-reviewed scientific studies.

Thanks in part to the impetus of the SGIM *Forum* editors in dedicating this issue to the climate theme, we are now moving forward to ask the HPC and Council to endorse two statements developed by the Consortium. The first statement is a national call to action on climate, health, and equity that has been endorsed by 16 of the 31

organizational members of the Consortium.² The second statement contains recommendations for the Biden-Harris Administration regarding actions the medical and public health communities see as necessary "to address the climate health emergency and move the nation toward a vision of healthy people in healthy places on a healthy planet."³

What specific actions could SGIM members take to address concerns about climate change?

In the HPC's "advocacy pyramid" that guides SGIM's approach to health policy, the top of the pyramid refers to collective efforts by the Committee and its lobbyists, while the base of the pyramid consists of individual actions that members take. The following is a list of specific actions that we encourage individual members to consider:

1. Foundational. Learn more about the contributors to and health impacts of climate change: <https://www.nejm.org/climate-crisis>.
2. Clinical care. Start conversations to help patients understand health impacts of climate change and how to improve their own health and their communities with "co-benefit" approaches: <https://www.acpjournals.org/doi/10.7326/M20-6443>.
3. Local advocacy. Develop skills related to communication with legislators and leaders, as well as letters to the editor: <https://usclimateandhealthalliance.org/uscha-state-policy-initiative/advocacy-tools/>.
4. Community presentations. Be prepared to help explain to your community how it can address climate change in a practical and effective manner: https://climateforhealth.org/wp-content/uploads/2019/10/3_letstalk_health_and_climate-oct25.pdf.
5. Financial advocacy. Understand what industries contribute to climate change, and encourage divestment from these companies: <https://climatechange.lta.org/divest-sri/>.
6. Medical education. Develop cases and curricula for teaching medical students, residents and other trainees to understand the impact of climate change,

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- and how to address it with their patients, communities and professional organizations: <https://www.publichealth.columbia.edu/research/global-consortium-climate-and-health-education>.
7. Grand rounds, lectures, and presentations. Review available evidence to develop a regionally-relevant talk on health impacts of climate change for colleagues and staff - <https://www.acponline.org/advocacy/advocacy-in-action/climate-change-toolkit>.
 8. Academic work. Submit research, curricula, and workshops to share with academic colleagues at the SGIM national meeting, to promote more discussion and collaboration around addressing health impacts of climate change: <https://www.sгим.org/meetings>.
 9. Interest groups and committees. Join fellow SGIM members in the HPC, Environmental Health

Interest Group, or other related venues to discuss and address health impacts of climate change: <https://connect.sгим.org/>.

10. Additional training. Gain additional training on advocacy through fellowship opportunities: <https://www.healthequity.challiance.org/health-equity-education-advocacy-fellowship>.
11. Making conferences climate friendly. Work with professional societies such as SGIM to develop more robust virtual options for meetings or explore viable carbon offset options for those that travel to be there in person.
12. Collective SGIM advocacy. Clarify SGIM’s policy position on climate change and work with other professional organizations to support the Consortium’s call to action.
13. Collaborating professional societies. Learn more about what collaborating health care societies are doing through the

Consortium: <https://medsocietiesforclimatehealth.org/>.

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share it with peers for feedback. Other activities from pre-COVID offerings include a local field trip to the National Science Foundation Ice Core Facility and three-day mountain retreat to the YMCA of the Rockies.

Fellowships in Advocacy and Equality

The University of Colorado also supports a rotating climate policy fellow for recent residency graduates; these fellows help direct the above-mentioned course. Dr. Gillespie is also working with fellowship directors to pilot a mid-career fellowship option to allow teaching faculty access to the network of experts in communications, research and policy while being able to continue their “day job” of clinical and academic obligations.

Another example of such fellowship training comes from Dr. Gaurab Basu, a longtime SGIM member and co-director for the Center for Health Equity Education and Advocacy (CHEEA) at the Cambridge Health Alliance. Centering the professional responsibility for clinicians to leverage change in their communities, Dr. Basu teaches on principles of advocacy across the continuum from physician trainees to mid-career healthcare professionals. CHEEA exemplifies this effort by featuring programs, such as the Health Equity Scholars, that educates mid-career healthcare professionals on knowledge and skills to advocate for health equity, including featuring climate change as a case study on the importance of advocating for change.

Leadership in Professional Societies

As SGIM members know, professional organizations give us platforms from which to advocate for a variety of issues. Long-time SGIM member Dr. Matt Hollon responded to the compelling position paper on *Climate Change and Health* published by the American College of Physicians in 2016 with a plan to improve awareness. After becoming governor of the Washington ACP Chapter, Dr. Hollon made it his goal to put climate change advocacy into action. Through this position, he engaged colleagues and the community through multiple routes, including speaking at state ACP chapter meetings, regional SGIM meetings, and university grand rounds; as well as engaging the public in editorials

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GENERAL INTERNISTS AS CLIMATE HEALTH ADVOCATES

Neha Pathak, MD; Homan Wai, MD, FACP; Robert Byron, MD, MPH, FACP

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In Virginia, a hospitalist cares for a woman in her fifties who worries how she will pay her bills. She remains hospitalized and debilitated by an acute asthma exacerbation from a pollen season that seems to arrive earlier every year.

In Montana, a physician is increasingly concerned about the risks of wildfire smoke to his patients with pulmonary and cardiovascular disease.

In Georgia, an internist treats a forty-year-old man suffering from heat exhaustion after spending the day hiking with his children on an unseasonably hot, fall day.

As general internists, we have begun to see the effects of climate change on the health of our patients in exam rooms and hospital wards throughout the country. Unfortunately, we may not realize the extent to which climate-related environmental stressors play a role in the health of our patients. After all, the connections between climate change and health are rarely taught in the medical school curriculum. Those who witness the negative impacts on patients may feel ill-equipped to address this risk factor because of time constraints, lack of knowledge about how to mitigate the risks, and concerns about bringing politically charged topics into the exam room.¹

But the science is clear.² Climate change harms the health of Americans in many ways, nationally and regionally.³ Longer and more intense pollen seasons, caused by the earlier onset of spring, later frost, and higher atmospheric carbon dioxide concentrations, exacerbate allergic and pulmonary diseases. Coastal communities are at increasing risk of storm damage, mold contamination, displacement, and disruption such as reduced access to health care. Warming water temperatures increase the risk of waterborne infections from *Vibrio* species and exposure to harmful algal blooms. Vulnerable patients in

cities suffer disproportionately from the heat island effect due to the lack of tree canopy, resulting in greater risks for heat-related illnesses. Wildfires, already burning more acreage with increased intensity, affect thousands directly, and millions more through their smoke plumes.

As physicians on the frontlines of the climate crisis, it is our duty to address the root causes of our patients' health concerns and to mitigate the associated health disparities and inequities through action beyond the exam room. In a 2016 position paper, the American College of Physicians recommends that the healthcare community "support efforts to mitigate and adapt to the effects of climate change; and educate the public, their colleagues, their community, and lawmakers about the health risks posed by climate change."¹

As general internists who have worked with other clinicians to create state-level climate health advocacy groups, we share information about how like-minded health professionals can engage in this work in their own communities.

As part of preventive care, it is our responsibility to champion climate change mitigation and adaptation policies to protect the health of patients and their communities.

Clinician-led, State-level Climate and Health Advocacy Groups

Virginia Clinicians for Climate Action (VCCA) was founded in 2017 with a mission to build a network of clinician leaders advocating for health through climate change solutions. VCCA works with other local environmental and health groups to advocate for policies that protect the health of our patients and help our communities mitigate the risks posed by climate change. With the passage of the landmark Virginia Clean Economy Act (VCEA) in 2020, Virginia became the first southern state to commit to 100% clean electricity by 2050 and joined the Regional Greenhouse Gas Initiative (RGGI) in 2021.

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Another regional success includes the cancellation of the Atlantic Coast Pipeline project. VCCA joined environmental partners to oppose the construction of this natural gas pipeline, limiting new infrastructure for polluting fossil fuels. The cancellation was also a win for environmental justice, as plans for the pipeline included a compressor station in a historically African American community.

VCCA educated fellow clinicians across the state with conferences and webinars, and released a report in 2020 that assessed the health burdens of particulate matter 2.5 (PM2.5) from the transportation sector in Virginia and analyzed potential health benefits for clear car policies by year 2035. This data supports the advocacy for stronger transportation emission controls.

Montana Health Professionals for a Healthy Climate (Montana HPHC), a non-partisan organization, strives to overcome political and other barriers to climate action through education, increased awareness, and advocacy. Montana HPHC was formed in 2019 to give voice to healthcare professionals who are concerned about the threat climate change poses to their families and their patients and want to work for change, especially at the state-level. Montana HPHC members educate the public and elected officials about the implications of climate change and the many ways available to address it. All healthcare professionals, including environmental health professionals, climate scientists, public health officials, and others are welcome.

While many Montana healthcare professionals are concentrated in a few urban centers, a significant portion serve more rural areas. Montana HPHC provides a way for healthcare professionals, many of whom are isolated, to combine their expertise and concerns for their patients relative to climate change and convey those concerns to others. Elected officials, whether it be at the national, state,

or local level, may listen to concerns from global or national organizations, but they really listen to matters important to their constituents.

Georgia Clinicians for Climate Action (GCCA) was founded in 2019 by physicians in Georgia with the following goals:

- educating health professionals about the climate risks facing patients throughout urban, rural, and coastal areas of Georgia;
- advocating for climate policies that protect the health of our patients and strengthen climate resiliency in the healthcare sector, and
- developing community partnerships to address climate justice for those most affected by climate change.

GCCA has used collective knowledge to educate local healthcare providers about Georgia-specific climate risks to the health of patients. Additionally, members have penned op-eds for local newspapers informing voters about healthy voting during the COVID-19 crises to elect leaders that will focus on climate and health.

Getting Involved

Currently, 22 states across the country have clinician-led, climate and health advocacy organizations—most of which affiliated with the Medical Society Consortium on Climate and Health, a national organization focused on informing the public and policymakers about the harmful health effects of climate change. State groups are working to advance education of the public and healthcare sector while advocating for healthy climate policies within different political environs.

Beyond the care of individual patients, we have the power to educate voters and elected officials about the human health risks of climate change and to advocate for political solutions that protect our patients from the associated health harms.

As part of preventive care, it is our responsibility to champion mitigation and adaptation strategies within our communities. State-level climate and health advocacy groups offer internists throughout the country an opportunity to learn more about the climate change-related health risks unique to our practice locations. These groups also allow us to amplify our voices and work within political systems unique to where we live, in order to promote policy change that can protect our patients.

As internists, climate change must be on our problem list. While not a disease, perhaps we should think of it as one given its harm to our patients' wellbeing. Given our oath to do no harm, should we be quiet about a disease ravaging our patients' lives, or should we be taking action to address the danger wherever we live and work? As long as the climate crisis affects our patients' health, this, too, is our lane.

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HEALTH IMPACTS OF CLIMATE MOBILITY IN THE UNITED STATES

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Movement of people in response to climate change, referred to as *climate mobility*, is increasingly expected to play an important role in reshaping American demographics in coming decades. Gradual alterations in temperature and sea level, combined with sudden natural disasters, such as hurricanes and wildfires, will push increasing numbers of people to migrate. This process may drastically shift population centers around the country and will likely worsen health outcomes. This column will discuss the myriad economic and health-related impacts of climate mobility on social determinants of health for those who are displaced.

A patient we will call Vanessa illustrates the potential for profound social and health-related sequelae of climate mobility in the United States. Vanessa had recently moved to her uncle's house in Los Angeles after her home in Northern California burned down during one of the most destructive wildfire seasons ever recorded. Shortly after starting the school year, Vanessa developed acute anxiety, palpitations, dizziness, and bilateral lower limb paralysis. She revealed that her uncle had been sexually abusing her and was ultimately diagnosed with conversion disorder. While the proximal factors in her presentation are all too commonly seen in clinical practice, the distal precipitant of her situation was wildfire and subsequent movement to a new location. In this situation, climate-related hazards created social disruption, leading to a tragic outcome.

Versions of Vanessa's story may become increasingly common as more Americans are exposed to the hazards of climate change. Climate change will contribute to disasters, disasters will push people to move, and the displaced will suffer new or exacerbated health problems. Data from the National Oceanic and Atmospheric Administration (NOAA) shows that severe weather events in the United States have already become more frequent, destructive, and deadly, killing an additional 235 people per year.¹ This trend is expected to continue as wildfires, tropical storms, droughts, and other disasters become more common and intense.

Concerning as they are, mortality figures fail to capture the social and economic impacts of climate change

in the United States. Recent modeling suggests that by the end of the century, up to 13 million Americans could be displaced by sea level rise alone.² More than 2.5 million people in Florida could be displaced, devastating regional economies, and upending countless livelihoods. Almost half of the communities threatened with inundation from sea level rise are socioeconomically disadvantaged, restricting their ability to adapt to climate risks. Neighborhoods on the front lines of climate change may also face economic depression; there is already evidence of decreased market valuations in Floridian coastal properties.³ These changes will place additional financial strain on an already vulnerable population and threaten to worsen preexisting disparities.

How will health outcomes change for the displaced? Like Vanessa, many will suffer from the predictable distress caused by economic, ecologic, and physiologic stress. Extreme weather events and migration have been associated with increased incidence of domestic violence, suicide, post-traumatic stress disorder, depression, and worsening of existing psychiatric illnesses.⁴ Human pathogens will have new opportunities due to a combination of flood-related damage to sewage and sanitation infrastructure and increasing suitability for vector-borne diseases. In the absence of adaptation strategies, extreme heat could cause 36,000-98,000 deaths annually by 2100, representing a 3- to 8-fold increase.⁵

Physician lives and practices will also be affected. For example, Floridian physicians disproportionately practice in coastal areas with 14.6% of them living in or around Miami in 2017. These physicians may choose to relocate their practices as sea levels rise, and floods and hurricanes cause property damage. Out-migration of physicians could reduce access to health care for patients who are unable or unwilling to move, leading to disparities in care. Similarly, patients who move to new areas will likely encounter barriers to healthcare access, especially if they travel across state lines. Large-scale episodic environmental and health disasters will also become more common—Hurricanes Katrina and Maria are

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CANARIES IN THE COAL MINE OF CLIMATE CHANGE

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Case Study

In mid-September 2020, wildfires from California and southern Oregon shrouded Portland, Oregon in smoke, obscuring the horizons and registering “hazardous” levels of particulate matter less than 2.5 micrometers (PM_{2.5}) on the Environmental Protection Agency’s Air Quality Index (AQI). Just days after Portland registered the worst measured AQI in the world on September 13, I called my patient “Paul” for an urgent care appointment. That week our clinic had emergently transitioned to telemedicine as these air quality conditions are dangerous even to healthy, immunocompetent adults. Paul, a relatively healthy, never smoker, 40-year-old man was experiencing a cough productive of black sputum and pleuritic chest pain, relieved intermittently by an albuterol inhaler. Like many adults seen at our clinic, he stayed in a community shelter only open for the night. He spent most of the day outside, walking nine miles roundtrip to a public library to find refuge from the smoke. He could not afford public transportation due to coronavirus-related job loss. Without an indication for hospital admission, we could not provide the treatment he most needed—respite from the inciting smoke. Ultimately, he was diagnosed with mild persistent asthma that improved with the addition of daily inhaled corticosteroids, allergy medications, transit assistance, and the marked improvement of the local air quality.

Literature

As the incidence of climate-related emergencies continues to rise, we expect to see more patients like Paul, about whom we have an alarming paucity of baseline data. While populations who are homeless may represent a minority of patients, the climate-related health issues affecting them foreshadow effects on the elderly and those with chronic disease, and, eventually, the general public. Paul is a “canary in the coal mine” of a warming earth, exposed to extreme weather events. We have an ethical obligation to our vulnerable populations and to the future of general public health to better understand and effectively mitigate the human health effects of climate change.

The association between particulate matter air pollution and pulmonary disease has been well documented, and wildfires contribute a significant amount of

particulate matter that worsens pulmonary disease.¹ A study of the Rice Ridge fire in Seeley Lake, Montana, in September 2017 demonstrated resident participants who experienced only 35 days of “very unhealthy” air quality and nine days of “hazardous” had clinically significant reduction in FEV₁/FVC ratios with sustained reduction in lung function at two years.² These participants were presumably housed and were reported to have an average household income between \$30,000-\$75,000. There is a lack of similar data on our unsheltered neighbors—despite 945,000 articles under the Medical Subject Heading (MeSH) “Lung Diseases” on *PubMed* (January 14, 2021), only 292 relate to “Homeless Persons” and none of them also consider “Climate Change.”

Our Federally Qualified Health Center (FQHC) in Portland, Oregon, cares for more than 5,000 men and women with housing instability of whom more than 1,600 (33%) have a chronic pulmonary disease, including 769 patients with COPD and 789 patients with asthma, as of December 2020. Our patients represent the majority of the 4,015 people in Portland who met the Housing and Urban Development’s definition of homelessness during the biennial Point-In-Time (PIT) count on January 23, 2019:³ 2,037 people who were unsheltered, 1,459 people in emergency shelters, and 519 people in transitional housing. Additionally, the PIT count documented an increase in individuals of color, severely disabled, and those who are chronically unsheltered in this population, emphasizing exacerbation of disparities. There is concern that the PIT count may not even be possible this year due to the risks of the persisting COVID-19 pandemic which will hinder not only evaluation of the homeless crisis, but also access to federal resources based on documented need.⁴

Action

With this, we ask physician leaders of the healthcare, scientific, and health policy communities to take ownership of addressing the disparities in those who are most vulnerable to the impending climate emergencies. This is underpinned by medical, ethical, and economic necessity. The following three actions physicians must take immediately:

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THE INTERNIST-EDUCATOR'S ROLE IN BATTLING CLIMATE CHANGE

Christian Cuvillier Padilla, MD; Megan McNamara, MD, MS

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In September 2017, Hurricane Maria battered the islands of the Caribbean, devastating, among other territories, the island of Puerto Rico—my birthplace and home. I was a medical student on the island at the time, starting my clinical years, and could not have imagined the rude introduction into patient care I was about to receive. To make a long story short: all of us on the island worked tirelessly for months to mitigate the damages caused by the hurricane, but a return to baseline has not been achieved, even to this day. Damage to infrastructure was ubiquitous and the loss of life immeasurable. Storms similar in magnitude to Hurricane Maria are projected to increase in frequency over the coming century, a trend driven at least in part by anthropogenic climate change. This effect on tropical cyclones is just one of myriad anticipated consequences of the warming of our planet.¹ Given that the populations we care for as specialists (and trainees) in Internal Medicine will very likely be affected, it seems prudent to reflect on our particular skillset to find the ways in which we are best equipped to tackle this issue. Education is a significant part of what we do as internists, and it has been used as a tool to fight some of the medical community's most formidable battles. In the search for suitable strategies in our battle against climate change, the mobilization of the internist-educator seems like a sensible way to start.

Unfortunately, there is a deficiency in medical education pertaining to the effects of climate change. Although some medical schools made efforts to integrate the concept of climate change into their curricula, and there is a defined interest on behalf of the health professional community to enhance education on the topic,^{2,3,4} there still remains much to be done. Academic internists are thus in the position to contribute to the development of a relatively new branch of medical pedagogy. One important point to be recognized is that our work as internists imparts deep understanding of the nuanced relationship between clinical pathology and a patient's environment. We can draw on this understanding to develop practical and realistic educational curricula for medical trainees.

At our institution, we are developing case-based discussions that integrate aspects of the physical science of climate change, the geopolitical considerations to be taken into account (e.g., forced migration) and the mech-

anisms by which disease can be brought on or exacerbated. One case, for example, highlights the intricacies of caring for a displaced population of Puerto Rican veterans. Issues pertaining to access and continuity of care, cultural and language barriers, and mental health consequences of traumatic events are woven into a discussion of principles spanning from basic science to advanced pathophysiology. These discussions take place as part of a larger case-based learning curriculum that consists of almost-weekly sessions during academic half-days. The sessions are held with participation of a variety of learners, ranging from undergraduate nursing students, to psychology and social work interns, to medical residents. This is done with the intention of exposing participants to the entire gamut of the healthcare team, in order to better understand how multidisciplinary collaboration can lead to higher-quality care. Given the opportunity for residents to contribute to this curriculum, the introduction of climate change themes is my ongoing project in our program. With the increasing use of case-based learning in medical education, similar endeavors could be readily undertaken at other academic institutions.

A recent survey showed that patients seem to trust their physicians when it comes to environmental issues. A potential challenge to making the most of this trust is the additional finding that many physicians are unsure about their role in addressing this problem and may feel uncomfortable in doing so.⁵ Although confidence when speaking on the topic is expected to grow with the increasing education on it during medical training, it is important to address the lack of clarity on our role. As physicians, we are fundamentally involved in the promotion and maintenance of health. It is most definitely our responsibility to disseminate accurate information on climate change because it is pertinent to our patients' health. Just as we would be alert to factors that would preclude adequate glycemic or blood pressure control, we can, for example, counsel patients about the effects of changing air quality on allergies, asthma, and other chronic pulmonary diseases. It could be so valuable to incorporate climate education into patient encounters and raise patients' awareness of climate change and the possible consequences on their lives. A brief discussion regarding available resources for monitoring and

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examples—with resulting damages to tertiary care centers and reduced health access for thousands.

While many studies have estimated the number of people who may be displaced, determining where they will go is more challenging. One model predicts a significant population shift from coastal regions to inland cities, such as Atlanta, Denver, Chicago, and Austin.² As a result, this could increase the burden on state and federal safety net institutions and worsen preexisting housing crises. Climate mobility may also be visible in rural areas, as economic opportunities dissipate due to increasing climate-related problems with agriculture and families relocate to metropolitan areas with more opportunities. More research must be done to verify how climate mobility will affect rural America, and whether these patterns may worsen preexisting gaps in healthcare access.

It is also unclear who will migrate. Will wealthy individuals be the first to leave threatened areas or will they use their capital to adapt to hazards that would cause others to emigrate? Will the elderly and infirm be unable to leave high-risk neighborhoods? Will communities of color be disproportionately left behind

or displaced? Changing population demographics in specific catchments could alter risk pools, affecting the cost of private health insurance. These questions have profound implications for equitability and affordability of health care.

Climate mobility poses a complex problem for healthcare, as many of the specifics necessary for policy and financial decision-making—the who, when, and where—are unknown. More research must be done to establish how health systems will be affected by climate change and increased mobility. Physicians must ask themselves how their practices may be affected by climate migration, and how they may best safeguard the health of their patients. Health professionals should advocate for policies that increase community adaptability to climate change and encourage responsible land use, and use their votes at the city, state, and national level to agitate for a future that anticipates and protects Americans from the hazards of climate mobility.

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IMPROVING CARE (continued from page 9)

1. Advocate diligently in our communities for development of year-round, 24-hour weather refuge for people who are unsheltered. Additionally, partner clinics and hospitals with community resources, such as shelters or hotels, to provide access to necessary medical respite for patients who are unsheltered and ill or in need of time to convalesce following hospitalization.
2. Lead dialogues in our communities between local officials, key stakeholders, allies, and those who are unsheltered to better determine existing resources and outstanding needs. The

- needs of each community will depend upon the environment and culture and will necessitate unique approaches that can only be determined at the local level.
3. Document the disproportionate climate-fueled suffering of our populations who are unsheltered, through dedicated research, policy creation, and narrative publication. Climate change is creating a multitude of new health problems that will challenge existing knowledge and infrastructure, and as physicians we must be astute observers to these changes so that we may advocate for the needs of our communities.

Climate change is no longer a theoretical risk—its manifestations are now in our clinics and hospitals, and as physicians we have been the first to see them. We can expect to see more people like Paul showing up in our emergency rooms in respiratory distress as the days with extraordinary air pollution increase. While it remains to be seen if we are past the point of effectively mitigating climate change itself, physicians must be prepared to document, report, and research health effects to help communities prepare for increases in the climate-related health emergencies to come.

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PERSPECTIVE: PART I (continued from page 10)

preparation could go a long way in reducing risk of exacerbations and adverse events.

Hurricane Maria and the following weeks were instrumental in my decision to become an internist and sparked my interest in climate change and its consequences. Unfortunately, anthropogenic climate change has already put into motion its colossal wheels, and efforts made now to halt its progression have come relatively late. While society should continue to advocate for measures to quell the impact of carbon emissions on our atmosphere, there must be an increased focus on strategies to adapt to it. We, as internists, will undoubtedly play a tremendous role in this adaptation process and our strongest tool to do so lies perhaps in education.

I urge fellow internists and trainees to make deliberate efforts at their own institutions to continue the adoption of pedagogically sound methods to integrate climate education into

our training. The result will be a generation of physicians who will, in turn, easily grasp the links between the environmental science, social determinants of health, and disease overall. We should also keep in mind that efforts made to educate our patients may yield downstream benefits in the form of more efficacious health-care utilization and increased societal awareness of this problem. More than anything else, it will provide an opportunity to improve the quality of care we provide—as internists, we should want nothing more.

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PRESIDENT’S COLUMN (continued from page 3)

As we consider our priorities, both individually and as a professional society, climate change and its effects on health are definitely worth our continued attention.

I appreciate the foresight and expertise of the *Forum* Editor and the authors in bringing this important topic back to light.

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and social media. This leadership position allowed him to work closely with his state medical society to build coalitions with other state chapters of health profession societies thereby leveraging support and advocacy for specific state government policies and legislative actions.

Collective Advocacy with Professional Societies

As an organization, SGIM has officially partnered with the Medical Society Consortium on Climate and Health, an organization of more than 29 prominent member societies, such as the American College of Physicians, the American Medical Association, and the National Medical Association, that represent more than 60% of total practicing U.S. physicians. The Consortium “has pursued a three-pronged strategy of organizing, empowering and amplifying the voices of doctors and other health professionals” to address climate change and its impacts on human health. In June 2019, the Consortium developed and released the *U.S. Policy Action Agenda on Climate, Health and Equity* endorsed by almost 150 health professional societies and 500 hospitals in the Health Care Climate Council.² The document includes 10 specific policy positions to address the causes of climate change, support healthy alternatives, prepare for environmental and social stressors likely to result from climate change, and support meaningful economic changes to limit impacts, and to help health systems engage in prevention and response. The Consortium will also offer an annual conference for interested healthcare providers from all levels of training and practice. Collaboration with the Consortium will continue through the SGIM Health Policy committee and the designated liaison, Dr. Bill Weppner.

What We All Can Do

Some challenges seem so sweeping as to be unsurmountable—but,

as we write this, vaccines for the COVID-19 pandemic are being administered as a result of an amazing response by scientists and researchers. Similarly, we see glimmers of hope as more people and professional organizations confront the health risks of climate change. And while we may hope for a technological solution, it doesn’t take a luddite to realize this likely won’t be sufficient. So, what can we do as individual physicians and members of SGIM?

Taking inspiration from the work of our above-cited colleagues and the innumerable projects starting and flourishing around the world, we encourage SGIM members to look at what they are doing individually and seek ways to incorporate discussions on climate change into their work. This is the foundation of advocacy: individual actions in our lives and practices at our home institutions that serve as practical examples. In clinical settings, this can be talking to patients about “co-benefits” that help to support a healthy life and healthy environment, such as incorporating human-powered transportation and increasingly plant-based diets. In educational settings, we can apply skills in curriculum development, case-based lectures, and other collective teaching formats to teach trainees about the current and expected health effects of climate change. We can find venues to share our concerns with the public regarding our concerns as health care providers. As part of regional and national conferences, we can propose workshops, educational innovations, and other forms of academic work to support the understanding of academic internal medicine teachers and leaders in addressing climate change. We can use virtual venues such as *GIM-Connect* to share curricula and ideas.

And, of course, this is just the beginning! For more actions and resources, SGIM membership can use to address the health effects of climate change, please refer to

the Q&A by Drs. Eric Bass and Bill Weppner in this issue of the *Forum*.³

Policy Positions

At the “top tier” of advocacy, SGIM pursues formal lobbying regarding national policy. While a global climate crisis may be outside the limited bandwidth that SGIM lobbying efforts focus on, we as an organization can continue to collaborate with other academic and healthcare organizations to lend our name and weight to policies addressing root causes of climate change. As part of this, we proposed a policy statement to the SGIM Health Policy Committee that offers to clarify SGIM’s stance on climate change and streamline ongoing work by Health Policy Committee members as they review positions from outside organizations seeking potential endorsement. As physicians, educators, researchers, and leaders, we are obligated to respond to the evidence. There is ample evidence that unfortunately, humans and our activities have caused the impending climate crisis. Organizations like SGIM provide us a professional home in which we can acknowledge this, then collaborate and share ideas on solutions.

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GLOBAL WARMING AND HEALTH DISPARITIES: PAST, PRESENT AND FUTURE

Olveen Carrasquillo, MD, MPH

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Reporter (Spring 2021): “So why were we caught so flatfooted when COVID hit? Why did we allow this to happen?”

Me: “Actually, scientists have been warning us about this pandemic for decades.”

Reporter (Spring 2021): “Did you ever think that COVID would hit the minority community so hard?”

Me: “Actually COVID follows the same pattern as most major diseases. We all knew it was going to strike minority and vulnerable communities the hardest.”

Reporter (Fall 2021): “Now that everyone has been vaccinated, can you take out your crystal ball and let me know what is another major event that will be coming in the future and which we can stop now before it decimates minorities and vulnerable groups?”

Me: “Interesting question, since we have not made much headway in any of the existing health disparities. But if you want to know one which actually has already insidiously started and which if we do nothing, will mushroom over the next decades, that is easy: Global Warming.”

On September 20, 2017, Category 4 Hurricane Maria made a direct hit on Puerto Rico, lashing it for 30 hours. The storm landed on an island that had already suffered over a century of economic humiliation by a colonial overseer. In 1898, the U.S. army invasion sought to “liberate” an island that had already won autonomy from Spain. Immediately, the local currency was devalued, bankrupting residents and allowing U.S. corporations to purchase most of the island at a steep discount. Twenty years later, island residents were given citizenship and immediately tens of thousands were drafted in WWI. The island’s most recent economic decline began in 1995, when President Clinton phased out corporate tax breaks for the island’s manufacturing sector, leading to widespread unemployment. A few years before that, a poorly thought out and underfinanced health reform had eliminated most public health facilities in favor or “privatization”. Highly inequitable federal Medicare and Medicaid funding meant the island had to fund an increasingly substandard privatized health system through debt. Then, vulture capital and hedge funds moved in. Within a few short years, the island was \$150 billion in

debt and unable to meet payments. As federal law did not allow the island to declare bankruptcy, in 2016, President Obama assigned a federal fiscal oversight board with dictatorial powers to ensure the debt was paid back.

With Hurricane Maria, Puerto Rico became a case study on how inequities in social determinants of health (SDH) place racial and ethnic minorities (as well as other disadvantaged groups) at increased risk of morbidity and mortality from not only acute and chronic health conditions, but also such natural disasters. The hurricane hit an island in which in which most SDH were already way past the red zone. It killed 3,000 people, making it the deadliest U.S. hurricane in over a century. Immediately afterwards, there were outbreaks of scabies, lice, and conjunctivitis in shelters. Lack of clean water also led to *Leptospirosis* outbreaks. Mental health effects as a result of degradation of livelihoods, homelessness, and relocation also had major impact. However, most deaths were due to the complete disruption of the island’s hospital and health care system. The hurricane destroyed much of what was already a very substandard system. Many persons with chronic illnesses having no access to care, medicines, dialysis, or inpatient care simply died.

In the immediate aftermath, President Trump went to his comfort zone of denying the death toll, praising his response to the hurricane, and demeaning and insulting island residents. Federal Emergency Management Agency leaders declared that the best solution was for the colony to become self-sufficient. And, as always, disaster capitalists and profiteers made out nicely from the island’s suffering. Such devastation had already been forewarned twelve years prior by another deadly hurricane: Katrina. That had been another stark example of what happens to minority communities long disadvantaged by SDH and hit by such predictable natural disasters. We also know that over the next decades, the proportion of such cyclones that reach Category 4 and 5 levels and will continue increase due to global warming.¹

We also have robust data on other ways climate change will increasingly and disproportionately impact minority populations. African Americans are more likely to live in neighborhoods with few trees and more

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heat-trapping pavement. Blacks and Native Americans have 2-3 times higher mortality from heat-related deaths than whites. Lack of central air-conditioning has been shown to be a major driver of this inequity. Pregnant women's exposure to extreme heat raises their risk of being hospitalized and black women are more severely impacted by this than white women. Latino children are twice as likely to die from asthma and nearly half of them live in counties with poor air quality. The effects of increased carbon dioxide on crop nutrient concentrations will exacerbate inequalities in zinc and iron deficiencies with disproportionate impact South East Asian and sub-Saharan African countries. By 2100, Hawaii and some Pacific islands will experience about one- to two-and-a-half-foot higher sea level rise when compared to global averages.³

As extreme weather and climate-related events continue to increase, they will impact SDHs, including the built environment, social ecosystems, air and water quality, and the transmission of disease through insects and pests. Most impacted will be populations that are least resilient, including older adults, children, low-income communities, and communities of color.² President Biden's initial step to rejoin the Paris Climate Accord is an anemic but necessary first step to reverse Trump's disastrous record on climate change. Kamala Harris has pledged strong support for the Green New Deal aimed at weaning the United States from fossil fuels and curbing green-

house gas emissions. Those of us in the health disparities field will need hold this new administration accountable for their bold vision for addressing health disparities, racial justice and most definitely climate change.

Reporter (2090): "So your NEJM paper shows that over the last 50 years, one billion premature deaths can be attributed to climate change. Why were we caught so flatfooted?"

My Great grand child's response: "Actually, scientists have been warning us about this for many decades".

Reporter: "Did anyone ever think the minority community would be hit so hard?"

Response: "Yes. Just look up what they used to call SDH."

Reporter: "Why did we allow this to happen?"

Response: "Actually, 70 years ago, people thought things would change with the 2020 election. Democrats had just taken control of the House, Senate and White House"

Reporter: "Democrats never even had the back bone to stand up the insurance and pharmaceutical industry to enact National Health Insurance. Did anyone seriously think they would stand up to the fossil fuel industry?"

Response: "Well, some of them used words like big bold change when they spoke about global warming. Some voters actually believed them. But just like health insurance, when elected the talk suddenly

changed to slow incremental change, meeting half way, and reaching bipartisan compromises. But hey, this is America. For the last 300 years, regardless of party affiliation, it has been the interests of wall street, large corporations and the whims of the rich which have always comes first. This is the way."

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PRESIDENT'S COLUMN (continued from page 3)

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ERRATUM

January 2021 Issue

Article, Journal Venues for Quality Improvement

2021 Update, by Joshua Hamer, PhD; Carlos A. Estrada, MD, MS

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*"Deep roots are not reached by the frost"--JRR Tolkien.
(Sangeeta Isaac, MD)*