A Call for Articles on Climate and Graduate Medical Education—JGME Supplement Issue

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Discussions about climate change, "the single biggest health threat facing humanity" according to the World Health Organization,[1] are moving beyond the weather we see outside our windows. In 2022, the American Medical Association adopted a policy declaring "climate change a public health crisis" based on the substantial scientific evidence demonstrating its adverse effects on patients' health.[2] Climate health effects include poor air quality (eg, fire particulates, ground-level ozone, allergens), extreme weather (eg, hurricanes with subsequent power interruptions, human displacements), rising temperatures (causing heat stress, poor water quality), and new vector-borne diseases.[3] Worldwide, there are an estimated 5 million deaths annually attributed to climate effects, which are expected to balloon to 83 million by 2100.[4] These numbers make the COVID-19 pandemic statistics—3.3 million estimated worldwide deaths up to January 2023—pale in comparison.[5] The climate statistics do not include deaths in which climate change contributed to mortality, nor illnesses caused by climate change. Patients who are youngest, oldest, with chronic diseases, and historically marginalized are disproportionately experiencing climate change-related illnesses.[6]

Future physicians and other health professionals must be prepared for these effects, yet a search for climate change-related educational tools for graduate medical education (GME) yields few samples. The percentage of US MD-granting medical schools with required curriculum on the health effects of climate change doubled from 27% in the 2019-2020 academic year to 55% in 2021-2022.[7] Undergraduate climate change curricula tends to be generic in nature and limited in quantity. For GME training programs, each specialty and subspecialty is facing different patient health care challenges, thus tailored approaches are required. For example, emergency medicine trainees may need training to handle climate-enhanced disasters while obstetrics and gynecology trainees may focus on the effects of heat, pollution, and other factors on the developing fetus and pregnant women.[8] Pulmonary fellows will consider how respiratory disease patterns are changing, as well as implementing anticipatory guidance for patients using oxygen, CPAP, and nebulizers during power losses. Pediatric residents need to respond to climate-related changes in infectious disease patterns, air quality, and heat-related illnesses, which are now affecting nearly every child worldwide.[9,10] Anesthesiology programs are already discussing the effects of different inhalants on the ozone layer (TABLE).[11]

New educational tools to prepare physicians for future climate-related health problems are urgently needed. How can these new materials—including curricula, resources, experiences, and assessments—be integrated into currently overfull GME programs? How can faculty quickly develop, teach, and evaluate this content? Many would argue that, as the most powerful factor influencing patients' health for the next half-century, actions in response to climate change may be one of the most powerful health promotion interventions in the physician's toolbox. Thus, we must ensure future physicians are prepared to anticipate, react to, and treat climate-related health problems in their patients.

As a result of this gap in trainee education, the **JGME Editorial Board is issuing a call for articles, in ALL categories, for a JGME supplement issue on climate change and GME,** to be published in 2024. This initiative will be led by JGME and guest editors, with a peer-review process. The goal of this supplement is to provide tools for GME programs located throughout the world in the areas of curriculum, resources, assessments, and faculty development. Where there are gaps, articles providing specific research directions, for enhancing our understanding of the intersections of patients, trainees, training programs, and those marginalized or underserved by health care, are strongly encouraged.

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TABLE
Examples of Climate and Graduate Medical Education Intersections

Climate determinants of health	Can residents counsel a patient who must work outside during extreme heat (eg, construction, agriculture, landscaping, or package delivery workers)? Can residents identify and counsel patients with moderately severe chronic illnesses regarding access to air conditioners or cooling stations? Can residents use the electronic medical record to identify patients at risk for climate-related health effects?
Vector-borne conditions	Can residents diagnose and treat new or emerging infectious diseases in their region? Can residents describe how climate change–related occurrences, such rising temperatures, storms, fires, flooding, and power outages, produce different vector-borne conditions?
Climate-related disasters	Can residents identify which patients live in flood-prone or wildfire risk areas? Can residents counsel patients with chronic illnesses on how to plan for leaving home suddenly? Can residents identify which clinical conditions are most at risk for decompensation in situations of severe weather (eg, heat, cold)?
Medications	Can residents identify which medicines may promote heat exhaustion, stroke, or dehydration? Can residents identify which inhalers will explode in an overheated car? Can residents counsel patients regarding plans for temperature-sensitive medications during loss of power and refrigeration?
Health center power loss	What preparations, such as simulations, have residency programs put in place for extended brownouts or blackouts? How will residents and faculty access the health center during flooding and other extreme events?

When submitting articles for the JGME climate supplement, please indicate the educational topic areas (eg, curriculum, resources, assessments, faculty development, other) in your cover letter. We look forward greatly to seeing your work on this urgent, vital topic. Please contact jgme@acgme.org with any questions.

References

1. World Health Organization. Climate change and health. Accessed January 2, 2023. https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health
2. American Medical Association. AMA adopts new policy declaring climate change a public health crisis. Accessed January 2, 2023. https://www.ama-assn.org/press-center/press-releases/ama-adopts-new-policy-declaring-climate-change-public-health-crisis
3. Climatenexus. How climate change affects your health. American Public Health Association. Accessed January 2023. https://www.apha.org/-/media/Files/PDF/infographic/Climate_Change_Overview.ashxreleases/ama-adopts-new-policy-declaring-climate-change-public-health-crisis
4. Bressler RD. The mortality cost of carbon. *Nat Commun*. 2021;12(1):4467. doi:10.1038/s41467-021-24487-w
5. World Health Organization. The true death toll of COVID-19: Estimating global excess mortality. Accessed January 13, 2023. https://www.who.int/data/stories/the-true-death-toll-of-covid-19-estimating-global-excess-mortality
6. Centers for Disease Control and Prevention. Justice, equity, diversity, and inclusion in climate adaptation planning. Accessed January 13, 2023. https://www.cdc.gov/climateandhealth/JEDI.htm
7. Mallone WT, Cox N. *Climate Action in Academic Medicine: An Overview of how Medical Schools and Teaching Hospitals and Health Systems are Responding to Climate Change*. Washington, DC: AAMC; 2022.
8. Guidice LC, Llamas-Clark EF, DeNicola N, et al. Climate change, women's health, and the role of obstetricians and gynecologists in leadership. *Int J Gynaecol Obstet*. 2021;155(3):345-356. doi:10.1002/ijgo.13958
9. Nadeau K, Perera F, Salas RN, Solomon CG. Climate, pollution, and children's health. *N Engl J Med*. 2022;387(18):e45. doi:10.1056/NEJMp2213408
10. Perera F, Nadeau K. Climate change, fossil-fuel pollution, and children's health. *N Engl J Med*. 2022;386(24):2303-2314. doi:10.1056/NEJMra2117706
11. Van Norman GA, Jackson S. The anesthesiologist and global climate change: an ethical obligation to act. *Curr Opin Anaesthesiol*. 2020;33(4):577-583. doi:10.1097/ACO.0000000000000887

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