CLIMATE HEALTH EQUITY DAY:

OUR PATIENTS, OUR PLANET, OUR FUTURE

RESEARCH SYMPOSIUM PROGRAM

MARCH 1, 2025

The Medical Society Consortium ON CLIMATE & HEALTH

GREYBIRD FOUNDATION

AAMC

EXPRESS INSIGHTS

MGD My Green Doctor

WELCOME

Dear Attendees,

It is with great joy that we welcome you to the Research Symposium within our second annual Climate Health Equity Day, hosted by Medical Students for a Sustainable Future and supported by the Medical Society Consortium on Climate & Health. We are thrilled to host you for this important event exploring the critical nexus between climate change and health equity.

Today, we come together as a dedicated and passionate community of students, advocates, researchers, and change-makers committed to rising to the challenge of protecting the health of current and future generations from the urgent challenges posed by a changing climate. As you embark on this journey with us, we encourage you to embrace the wealth of knowledge and insights that will be shared throughout the day. The presentations and discussions you will experience this afternoon are the culmination of student-driven research, with the support of faculty mentors and community members. They serve as a testament to our collective commitment to understanding and addressing the complex dynamics between our environment and our well-being.

As you engage with speakers and attendees alike, we encourage you to consider how you can leverage this knowledge to spark positive change in your own communities. Each of us has the power to make a difference, and together, we can drive meaningful progress towards a healthier, more sustainable future for all.

Thank you for joining us today, whether you are at the beginning of your journey as a climate advocate or a seasoned organizer. We are honored to have you with us, and we look forward to an afternoon of inspiring conversations and collaborative action.

Warm regards,

Siddhi Deshpande, University of Michigan Medical School
Mia Guzynski, Wake Forest University School of Medicine
Shreya Gupta, Rutgers Robert Wood Johnson Medical School
MS4SF Research Co-Chairs

ORAL PRESENTATIONS

Exploring the Green Divide: Regional Insights into U.S. Medical Schools' Planetary Health Performance

Anika Pruthi, MS2 at Cooper Medical School of Rowan University

Anika Pruthi is a dedicated and visionary climate advocate at her medical school. As an MS4SF and Green Committee Leader, she inspires a new generation of changemakers by advocating for policies that address the urgent threats of climate change. When she's not pioneering green projects or exploring new ways to integrate climate solutions into healthcare, Anika is at the forefront of looking at how we can use big data to unravel trends between environmental change and public health to create evidence-based solutions to protect vulnerable populations.

The Body is Permeable: Human Health in Times of Climate Change

Gaia Yun, Undergraduate Student at Dartmouth College

Gaia Yun is a senior undergraduate student at Dartmouth College majoring in biology and minoring in studio art on the pre-medical track. She is deeply interested in the intersection between public health and the environment, and hopes to pursue an MD-MPH degree in the future. She is also invested in the power of visual art and storytelling as a force for education, awareness, and advocacy.

High heat vulnerability exacerbates placental heat shock protein gene expression associations with suboptimal child temperament

Kiki Brabander, PhD Student at CUNY, The Graduate Center

Kiki Brabander is a second year PhD student in Clinical Psychology at Queens College, City University of New York. Generally, her research interests are in understanding gene-environment interactions, such as the underlying mechanisms of how early life stress shapes future emotional regulation. Her current project investigates the effect of different climate stressors on the in-utero environment and how placental gene expression impacts child behavior. In her spare time she loves snowboarding in the winter and running in the summer!

POSTER SESSION

IN PERSON
SESSION I: 3PM - 3:45PM

01

Alexandros Axiotis 1,2, Donato Delngeniis 1,2, Sameera Ramjan 1,2, Claire J. Brabander 1,2, Barbara Kinsella-Kammerer 1, Sheow Yun Sie 1, Jennifer Valad 1, Yoko Nomura 1 2 3 4

1 Department of Psychology, CUNY Queens College, Flushing, NY, USA,
2 Department of Psychology, CUNY Graduate Center, New York, NY, USA.
3 Department of Psychiatry, Icahn School of Medicine at Mount Sinai, New York, NY, USA,
4 Department of Environmental Medicine and Climate Sciences, Icahn School of Medicine at Mount Sinai, New York, NY, USA

Synergistic Effects of Prenatal Exposure to Superstorm Sandy and Nitrogen Dioxide on the Early Development of Child Psychopathology

Objective: This study investigates the prenatal impact of two climate change-related environmental exposures - Superstorm Sandy (SS) and nitrogen dioxide (NO_2) - on child developmental psychopathology. We examined the individual risks associated with each exposure and dual exposure relative to unexposed children.
Methods: A longitudinal study followed preschool-aged children between 2-5 years (N=183). Structured clinical interviews assessed age of onset for multiple psychopathologies, including, attention-deficit/hyperactivity disorder (ADHD), anxiety disorders, and disruptive behavioral disorders (DBD). Survival analysis estimated the cumulative risks for these disorders.
Results: Exposure to both SS and NO_2 showed significantly elevated risks for psychopathology, including a more than 10-fold increased risk of ADHD ($p = .032$), two-fold increase in anxiety disorders ($p = .047$), and 11-fold increased risk in DBD ($p = .0002$). SS exposure alone was associated with a 3-fold increase in DBD risk ($p = .043$), whereas NO2 exposure alone did not significantly elevate DBD risk.
Conclusions: Prenatal exposure to both SS and NO_2 was associated with substantially elevated risks for ADHD, anxiety disorders, and DBD. SS exposure alone, but not NO_2, showed an increased risk in DBD. Findings highlight significant synergistic effects of multiple climate-related exposures on developmental psychopathology, particularly heightened DBD risk with dual prenatal exposures.

02

Natalie M Baker BS MS 1,2, Karla Santiago-Soltero BS 2, 3, Viviana Flores BS 4 , Subin Lim BA 5 , Bruna Galvao de Oliveira Wafae MD MMSc 1,6, Stephanie Cohen MD 2, 5, Gabriela Cobos MD 5, Priya Manjaly MD 4, Martina J. Porter MD 6, Gregory Orlowski MD PhD 4, Kanglin Chen PhD 7, Aileen Y Chang MD* 8, Alexandra P Charrow MD MBE* 2

1 Harvard Medical School, Boston MA
2 Department of Dermatology, Brigham and Women's Hospital, Boston, MA
3 Ponce Health Sciences University, Ponce, Puerto Rico
4 Department of Dermatology, Boston Medical Center, Boston, MA
5 Department of Dermatology, Tufts Medical Center, Boston, MAÍ
6 Department of Dermatology, Beth Israel Deaconess Medical Center, Boston, MA
7 Department of Government, Harvard University, Cambridge, MA
8 Department of Dermatology, University of California San Francisco, San Francisco, CA

Environmental and social drivers of hidradenitis suppurativa prevalence: a high-resolution geospatial analysis

Objective: Hidradenitis Suppurativa (HS) is a painful, chronic skin condition with higher prevalence in women, marginalized racial and ethnic groups, and individuals with lower socioeconomic status. Prior studies have established links between environmental factors such as ambient temperature and HS flares. However, the relative contribution of biological, social, and environmental burdens to observed racial disparities in HS prevalence remains unknown. Methods.
Methods: Our analysis included 3051 patients with HS (mean age 35.9 ± 13.6, 78.8% female), representing a crude HS prevalence of 0.46% in Boston, and 195 census tracts.
Results: Our multivariate linear regression model explained 71.88% of the variance in HS prevalence (Adjusted $R^2 = 0.7188$). We found significant positive associations between HS prevalence and median 3pm air temperature ($\beta = 0.1321$, 95% CI [0.0339, 0.2302], $p = 0.0086$), PM2.5 concentrations ($\beta = 0.1734$, 95% CI [0.0859, 0.2608], $p = 0.0001$), smoking prevalence ($\beta = 0.2837$, 95% CI [0.1596, 0.4077], $p < 0.0001$), percent Black population (log-transformed) ($\beta = 0.0298$, 95% CI [0.0201, 0.0395], $p < 0.0001$), median age ($\beta = 0.1418$, 95% CI [0.0334, 0.2503], $p = 0.0106$), and neighborhood deprivation index (NDI) ($\beta = 0.1991$, 95% CI [0.0550, 0.3432], $p = 0.0070$).
Conclusions: To our knowledge, this study represents the first geospatial analysis of HS using clinical data to examine disease distribution and key risk factors. It is also the first to consolidate data from across all 4 separate academic medical centers in Boston. Our results suggest that key socio-environmental stressors may contribute to HS prevalence and may aid in strategic community-based interventions, patient counseling, and future policy.

03

Henry Chen 1, Danae Kelley 2
1 Department of Environmental Systems Policy, University of California San Diego
2 Department of Sociology, University of California San Diego

Rising Heat Levels Exacerbating Asthma: An Australian Case Study

Objective: Identify gaps in Australia's Climate Action Plan, focusing on the connections between climate change and asthma exacerbation. Examine how demographics such as gender, race, socioeconomic status, and pre-existing health conditions influence health outcomes. Evaluate policy solutions, including carbon tax and carbon trading, as well as mitigation and adaptation strategies.
Methods: A comprehensive literature review was conducted to investigate the links between climate phenomena and asthma. Case studies of Australian mitigation and adaptation measures were analyzed, along with economic policies and sociological factors contributing to disproportionate impacts on vulnerable populations.
Results: Australia's climate change policy does not adequately address environmental justice, urban planning, or public health, resulting in fewer resources for vulnerable groups. Socioeconomically disadvantaged communities are disproportionately located in wildfire-prone areas due to affordable housing constraints, further exacerbating their exposure to climate risks and respiratory health issues.
Conclusions: The best solution is carbon tax, it's a more equitable and effective policy compared to cap and trade, as it distributes benefits more evenly across the population. It generates government revenue that could support disadvantaged communities and provides strong incentives to reduce high-carbon-emitting practices. Addressing the gaps in Australia's climate policy requires integrating equity-focused strategies and public health considerations.

POSTER SESSION

IN PERSON
SESSION I: 3PM - 3:45PM

04

Emma Cowles 1, Leon Liu 1, Lauren Fine, M.D.1

1 Dr. Kiran C. Patel College of Allopathic Medicine, Nova Southeastern University

Hazardous Omissions: Investigating the Lack of Environmental Health Education in Medical Training

Objective: The study aims to evaluate environmental health (EH) content in pre-clerkship medical education through student perspectives on the importance of EH knowledge and an analysis of EH in third party resources (TPR).
Methods: Second, third, and fourth-year students at Nova Southeastern University Dr. Kiran C Patel College of Allopathic Medicine (NSU MD) were surveyed for attitudes and knowledge on EH. McNemar's and Chi-square tests evaluated trends amongst EH knowledge, TPR use, and students' desired specialties. A review of EH keywords in commonly used TPR was concurrently conducted.
Results: Statistical analysis indicated no correlation between EH knowledge and (1) the study resources used, (2) participants' desired specialties, and (3) their attitudes on EH. Survey results indicate a lack of EH comprehension, general openness for EH to be taught in curricula, and a noted reliance on TPR. TPR review indicated varying mentions of EH keywords.
Conclusions: Medical students feel they have not adequately learned EH topics through their pre-clerkship courses and express a desire to include relevant content in the curriculum. Additionally, there is a significant reliance on TPR, despite the varying degree of EH content they provide.

05

Ursula Gately 1, Emma Giarracco 1, Rebecca Osborn 1

1 The Johns Hopkins Institute for Planetary Health, The Johns Hopkins University School of Medicine

"Pulse of the Planet" – A Medical Waste Art Installation

"Pulse of the Planet" is an art installation that transforms discarded medical materials into a thought-provoking display, highlighting the environmental impact of healthcare—specifically medical waste. By exploring the intersection of healthcare, climate change, and art, the project aims to inspire and engage attendees in envisioning a more sustainable future. The project seeks to raise awareness about the environmental footprint of medical waste, inspire climate-smart healthcare practices by showcasing sustainability within the sector, and foster engagement through an interactive, visually impactful medium. The installation will depict a human heart crafted from medical waste such as masks, gloves, and caps (symbolizing fragility and the human body), IV tubing, syringes, and vials (tools of healing), and broken instruments or plastics (unsustainable practices). The heart will be centrally displayed against mirrored panels, reflecting the role of healthcare workers in combating climate change. Attendees will contribute small, non-hazardous medical waste (e.g., unused or expired supplies) to the installation, symbolizing collective responsibility. An infographic or digital display will showcase annual medical waste volume, environmental impacts of healthcare., sustainable innovations like reusable materials and waste reduction.

06

Mia Guzynski 1, Sandeep Narayan 2

1 Wake Forest University School of Medicine
2 Scope Anesthesia of North Carolina

The Leaking Nitrous Oxide - Not a Laughing Gas Anymore!

Objective: Anesthetic gases are not metabolized by patients and are released directly from hospitals into the environment where they exhibit potent greenhouse gas effects. Compressed gases, like nitrous oxide (N2O), are commonly stored in a central tank and delivered through pipes in facility walls to the anesthetic ventilators. Several reports have shown that these pipelines leak 70-90% of the N2O before usage.
Methods: This project sought to determine the leak rate of nitrous oxide at Carolinas Medical Center, Main Campus in North Carolina for 2023 by analyzing purchase and utilization data to determine the discrepancy.
Results: 719,264 liters of nitrous oxide was purchased for 2023. Clinical usage data for the year was calculated based on a 6-month data model of anesthesia records of the main operating rooms and estimations of clinical usage for areas of the hospital using paper records. Only 100,000 liters of N2O was clinically accounted for compared to the 719,264 purchased, showing a clinical usage rate of only 14%, and a leak rate of 84%. Carolinas Medical Center's N2O leak rate is comparable to other reported facilities.
Conclusions: Decommissioning existing central pipelines and transition towards cylinders attached to each anesthesia machine could reduce anesthetic gas wastage and reduce associated environmental impacts.

07

Hajrah Hussain 1

1 Hackensack Meridian School of Medicine

We Know, We Know, We Know

"We know, We know, We know" is a poem about the gap between the scientific knowledge we have about the harms of chemical exposures and rates of asthma in areas with poor air quality versus the lived experience of being in a built environment that prioritizes corporate health over corporal health. Specifically, the poem focuses on the ongoing public hearings against a fourth liquid natural gas power plant in the ironbound area of Newark, NJ that measures 4-square miles and is historically overburdened as a site of environmental racism.

POSTER SESSION

IN PERSON
SESSION I: 3PM - 3:45PM

08

Andrea McGowan 1, Amy Zhao 1, Melanie Stewart 1, Alyssa Valentyne 2, Kaitlin Rose 2, Mallory Davis 2

1 University of Michigan Medical School
2 Department of Pediatric Emergency Medicine, University of Michigan

Visual Waste Audit in the Pediatric Emergency Department

Climate change is a critical global challenge, and the healthcare sector significantly contributes to environmental burdens through resource-intensive practices and waste generation. Pediatric Emergency Departments (EDs) exemplify the tension between providing efficient patient care and minimizing environmental impacts. Specifically, certain prepackaged medical kits generate unused waste or resources that aren't recycled when they could be. This study evaluates unnecessary medical waste through the use of a visual waste audit to identify opportunities for diversion.
We propose conducting a visual waste audit for four days, 3 times per day in the pediatric ED at a regional Midwest children's hospital. Waste will be characterized to identify reduction opportunities and optimize waste management practices. Visual waste audits involve inspecting waste containers to identify contamination, missed recycling opportunities, and commonly discarded items that could be replaced with sustainable alternatives. Waste audits will be conducted in trash bins in physician work stations, 25% of patient rooms (randomly selected), resuscitation bay, nursing stations, refreshment rooms. Insights from this initiative can be scaled to adult EDs and other healthcare settings, fostering a culture of environmental stewardship. Preliminary results for our study will be collected by the time of the conference.

09

Jonathan Joasil 1

1 Icahn School of Medicine at Mount Sinai

Resuscitating Our Planet Together

"Resuscitating Our Planet Together" is a mosaic that transforms medical waste into a symbol of unity and environmental consciousness. The artwork features a melting globe with a stethoscope wrapped around it. Created from medication vial caps—materials typically discarded by healthcare providers at the beginning of surgical procedures—the artwork is pinned to a 24" by 24" canvas, showcasing the potential to repurpose medical byproducts into striking, community-driven art. With over 80% of healthcare emissions arising from the production and transportation of goods and supplies, including medical supplies and devices, this project emphasizes the urgent need for systemic change. While broader solutions require incentivizing emission reductions and standardizing progress metrics across hospital systems, our interdisciplinary team at Mount Sinai is taking a grassroots approach. By collecting and repurposing vial caps into collaborative artwork, we aim to engage the medical community in sustainability efforts. After completing this piece, we plan to distribute remaining vial caps to students and staff, encouraging them to create their own collages or artwork. Ultimately, we hope to display their pieces throughout the hospital and medical school, promoting awareness and a shared commitment to reducing healthcare's carbon footprint.

10

Meredith Kossoff 1, Alice Zhang 1, Jonathan Szeto, Gyan Moorthy 1, Misha Rosenbach 2

1 Perelman School of Medicine, University of Pennsylvania
2 Department of Dermatology, Hospital of the University of Pennsylvania

Growing an Equitable Urban Canopy: Evaluating the Impact of a Street Tree Program on Well-Being

Objective: Urban trees provide numerous health benefits, but differences in tree coverage may contribute to health disparities. This study aims to evaluate the benefits of urban greening on self-perceived well-being of Philadelphia residents who received a free street tree from the Pennsylvania Horticultural Society and identify opportunities for improvement.
Methods: This study employs a mixed-methods design to evaluate the impact of street trees on residents of medium-high priority environmental justice neighborhoods. Recruitment flyers were left at addresses of tree recipients and participants completed an online survey. Descriptive analysis was performed on quantitative data and qualitative responses were coded using thematic content analysis.
Results: 46 survey responses were received from canvassing 178 addresses. Common reasons for requesting a tree included beautification (57%), environmental benefits (50%), shade (43%), and health benefits (24%). On 5-point Likert scales, participants "strongly agreed" having a tree improved their mental health and neighborhoods (median 5, IQR 1; median 5, IQR 0). Free responses highlighted participants' desire for tree maintenance education (61%).
Conclusions: Street tree recipients in priority neighborhoods believe urban greening positively impacts their mental and physical health, neighborhood, and the environment. Greater maintenance education may reduce hesitancy towards receiving a tree and promote equitable tree distribution.

11

Riley Lima 1 and Dr. Mardi Gomberg-Maitland 2

1 The George Washington University Milken Institute School of Public Health
2 The George Washington University School of Medicine and Health Sciences

The COAT Model: Reducing Plastic Waste in Academic Clinical Research Sites

The authors have asked that the abstract not be published at this time.

POSTER SESSION

IN PERSON
SESSION I: 3PM - 3:45PM

12

Sahithi Madireddy 1, Justin Barry 2, **Ruth Ann Norton 2**

1 Johns Hopkins University School of Medicine
2 Green & Healthy Homes Initiative

Experiences in a Home Electrification Pilot in East Baltimore

Objective: To understand homeowner experiences with building electrification, including perceived financial effects, non-energy benefits, and challenges
Methods: Interviews were conducted with ten clients of a Green & Healthy Homes Initiative home electrification pilot in East Baltimore, delivered at no cost to clients. An interview guide was developed from reviewing the literature on the effects of electrification. Interview responses were transcribed and synthesized into a written analysis.
Results: Eight clients had fully completed electrification. Interviewees had mixed perceptions on the financial consequences of electrification and how it would impact energy use. People reported substantial improvements in quality of life following electrification, especially related to temperature control, comfort, and safety. Some interviewees believed electrification would bring about health benefits. Interviewees noted some challenges in adjusting to new appliances.
Conclusions: People reported a wide range of benefits from electrification, including improved health, lower bills, increased thermal comfort, safer appliances, and reduced financial stress. This exploratory study provides a starting point to assess and communicate how home electrification may affect individual households. Knowing what aspects of electrification are salient to homeowners is critical to improve uptake on a solution that can reduce residential emissions.

13

Evelyn Marin 1, Asma Khursheed 1, Noah Stewart 1, Katrina Bahl **Amanda Cooper MD 2**

1 Penn State College of Medicine
2 Department of Surgery, Penn State Health

Threads for MedEd — Improving students' confidence and easing financial stress with a professional clothing initiative

Objective: The Threads for MedEd Clothing Drive event addresses two components of sustainability by providing free repurposed professional clothing to help alleviate medical students' financial stress
The Threads for MedEd Clothing Drive event addresses two components of sustainability by providing free repurposed professional clothing to help alleviate medical students' financial stress
Methods: Participants completed pre and post-event surveys about confidence in clinical workwear and financial stress. An unmatched t-test analyzed mean differences.
Results: A total of 487 items were donated and 189 were taken by students. Fifty and 41 participants completed the pre and post-event surveys respectively. There was a significant increase in participants' confidence in clinical attire (MD = 0.39; p = 0.02). Most participants agreed the event reduced financial stress (75.6%) and helped their financial situation (73.2%). 48.8% agreed and 48.8% strongly agreed it helped them access clinical clothing. 80.5% found the event compared to other school resources to reduce financial strain very helpful. Most participants were very likely to recommend future events to classmates (92.7%) and found it very fun (68.3%).
Conclusions: The Threads for MedEd Clothing Drive is a sustainable way to repurpose professional clothing. It was positively received, assessed students' financial stress, and improved confidence in clinical wear. These findings offer valuable feedback for administration to create events to better mitigate medical students' stress and wellbeing.

14

Jenna McCoy 1, Angela L. Smith, Psy.D. 2, Rion Wendland, PhD 3, Ryan Dusil 4

1 Carver College of Medicine, University of Iowa
2 Iowa Health Care Stead Family Children's Hospital
3 Roy J. Carver Department of Biomedical Engineering, University of Iowa
4 College of Public Health, University of Iowa

Bike Commuting: Advocating for Human-powered Transport

Objective: Bike commuting provides a sustainable alternative to single-occupancy vehicles but is limited by infrastructure, weather, and psychological barriers. This project collaborates with Iowa City and University of Iowa leadership to improve bike commuting accessibility and incentives for the community. The project includes three Aims: a commuter mentorship program, monetary incentives, and advocacy for human-centered spaces.
Methods: For Aim 1, we partnered with the Iowa City Bike Library to host a winter bike commuting workshop. In Aim 2, we collaborated with local businesses to offer E-bike trials and financial incentives. Finally, for Aim 3, we have formed a community advocacy group to push for improved biking infrastructure. Funding is provided by the NSF Innovation Corporation grant, through the University of Iowa
Results: To date, 13 participants have completed the winter bike commuting course and are riding this winter. We've distributed $3,000 in e-bike vouchers, and ongoing discussions with the City of Iowa City and Johnson County Metropolitan Planning Organization are focused on infrastructure improvements.
Conclusions: Increasing bike commuting reduces carbon emissions, enhances health, and creates safer, more vibrant spaces, promoting community well-being. By supporting biking at both individual and community levels, we can maximize its potential as a sustainable, transformative transportation option.

15

Ryan Neill MS 1, Timothy Singer MD 1, Peter Harris MD 1, Gail Rosseau MD 1

1 Department of Neurosurgery, George Washington University Hospital

The Impacts of Climate Change on the Field of Neurosurgery, Where to Go From Here: Systematic Review and Advocacy Tool

Objective: Climate change is adversely affecting neurosurgical patients and the practice of neurosurgery. This study synthesizes neurological sequelae and strategies for sustainable neurosurgical practices to increase preparedness for addressing emerging clinical demands and mitigate carbon footprint.
Methods: Following PRISMA guidelines, search parameters for systematic review were identified to assess the impact of climate change on the field of neurosurgery. Three tables were constructed: (1) specific health implications of climate change on neurological illness that could require neurosurgical intervention, (2) historical review of recent successful climate action events, (3) combining tables 1 and 2 into a translational 'advocacy tool' demonstrating where strategies can be successfully integrated in addressing neurosurgery specific climate issues.
Results: 421 studies were initially obtained via the search criteria. 70 studies relevant to neurological disease incidence impacted by climate change that could require neurosurgical care, and 20 studies were specifically relevant to sustainable neurosurgical practices.
Conclusions: The impacts of climate change on neurosurgery patients and practices include cerebrovascular disease, neurodegeneration, CNS infectious diseases, trauma, and environmental exposures. Through sustainable OR practices and education/training the field of neurosurgery can prepare patients and surgeons for these impacts and rise to address the challenges facing neurosurgeons in the 21st century.

POSTER SESSION

IN PERSON
SESSION I: 3PM - 3:45PM

16

Annie Yu 1, Robert Pritchard 1, Dr. Amanda Caleb PhD 1

1 Geisinger Commonwealth School of Medicine

Toward Climate Resilience in Medicine: The Need for Integrated Climate Health Curricula

Objective: Climate change currently poses one of the greatest public health threats, yet only half of United States medical schools mandate climate-related health education. At Geisinger Commonwealth School of Medicine (GCSOM) we implemented a climate health session in a preclinical course to assess learner perspectives of climate health.
Methods: We developed a lecture on climate health, environmental justice, and health system climate resiliency as pre-work for a workshop on environmental justice. We conducted a pre and post evaluation using a validated survey gauging learners' knowledge and interest on climate health. Data were analyzed using descriptive statistics and thematic analysis.
Results: Ninety-eight percent of students pre and post Session Igreed that climate change affects health. After the session, 96% agreed that physicians should know about climate health and 80.2% indicated increased confidence in speaking to patients about climate health. Students also indicated a need for ongoing education on climate health.
Conclusions: GCSOM medical students recognize the importance of learning about climate health for patient care. Continued development of an integrated climate health curriculum will enhance medical learners' knowledge, communication skills about climate health, and advocacy for systemic change.

17

Amy Zhao 1, Andrea McGowan 1, Melanie Stewart 1, and Sahil Tolia 1

1 University of Michigan Medical School

Longitudinal Integration of Climate and Health Education into Medical School Curriculum

Objective: We aim to provide education to UMMS students on the intersection of climate change, human health, and health system sustainability, integrated across the 4-year medical school curriculum.
Methods: To understand the student body's perceptions on climate health education, we distributed an electronic survey needs assessment. Using this input and experiences from other medical schools, we proposed core competencies and the following curricular targets: organ system-specific content, clinical skills, and health systems science.
Results: Survey results (n=67) showed that 91% of UMMS students believe that environmental health content is lacking in our curriculum and 82% agree that it should be added. We collaborated with the Global Consortium on Climate and Health Education to create videos addressing climate-related effects on each organ system for our preclinical curriculum (M1). We integrated sessions on environmental exposure history-taking and climate-related case studies into our doctoring course (M1-2). Finally, we added sessions on climate change and healthcare impacts into our branches curriculum (M3-4) and global health and disparities paths of excellence (M1-4).
Conclusions: Through collaboration with medical school students, faculty, deans, and other institutions, climate health education can be incorporated into an accelerated medical school curriculum through diverse learning strategies at various curriculum points.

18

Denise Torres 1, Jesse Bell 2

1. University of Nebraska Medical Center College of Medicine
2. University of Nebraska Medical Center College of Public Health

Integrating Planetary Health into the Medical Curriculum: A Student-Led Approach at the University of Nebraska Medical Center

Objective: Present the University of Nebraska Medical Center (UNMC) College of Medicine as an example of a student-led, bottom-up approach to the integration of planetary health in medical education.
Methods: An interdisciplinary group of students created the Healthy Earth Alliance (HEAL) student organization. HEAL's initiatives included integrating climate education into the medical school's curriculum. A proposal that added pertinent climate material into the existing didactic curriculum was drafted and proposed to the institution's curriculum committee. The leadership of HEAL participated in the Planetary Health Report Card (PHRC), a student-driven, faculty-mentored metric-based tool to assess planetary health content in professional schools, for the first time in 2023.
Results: The curriculum proposal was formally approved in 2021. Additionally, a "Climate Change and Health" medical education track was developed. UNMC's first PHRC was published in 2024 and scored a B- overall, ranking 15th out of the 53 participating medical schools in the United States.
Conclusions: UNMC student-driven efforts have successfully contributed to the integration of climate change education within the framework of the medical school's existing curriculum. Ongoing student advocacy efforts aim to evaluate and improve the institution's planetary health engagement to help students address climate-associated health hazards.

POSTER SESSION

IN PERSON
SESSION II: 4PM - 4:45PM

01

Natalie AmRhein 1, Dr. Katherine Alfredo 2

1 Department of Integrative Biology, University of South Florida
2 Department of Civil and Environmental Engineering, University of South Florida

Tracing the Footprint of Contamination: Hillsborough County's Environmental History and Its Impact on Community Health through Case Studies

This presentation investigates the behavioral and health outcomes of different communities in Hillsborough County, Florida, through the lens of archival documents, spatial, and statistical analysis. As the Tampa Bay region continues to grow, understanding the health impacts of man-made built environmental hazards is imperative. This aims to update and expand upon previous studies by aggregating data and connecting historical events in Hillsborough County over the past century with sites like Superfunds and Brownfields. Focusing on the case study locations of the Taylor Road area and East Lake-Orient Park, this study examines their history of environmental contamination, population changes, land use development, and impacts from major infrastructure projects like the I-4 corridor. Notably, the Taylor Road Landfill and Superfund site, a historic dumping site in Seffner, FL, spans 42.5 acres, with the adjacent Hillsborough Heights landfill covering 64 acres. Additionally, historical waste disposal sites as documented by the county complicates the area's environmental history. Using regression analysis and geospatial statistics, we explore the occurrence of high contamination with increased health risks. Through evaluation of land use and climate changes in association with environmentally hazardous situations, we explore the impact of historical redlining using our case studies, scaling up to a county-wide evaluation. For additional depth, we digitized and incorporated data from the USF Special Collection archival and spatial data to provide a comprehensive analysis of the interplay between environmental land use, historic zoning, socioeconomic factors, and human health.

02

Maren Anderson 1, Sarah Power 1, Grace Townsend 1, Alice Moon 2, Joy Suh 3, Willa Xie 4, Nelson Agudelo 5, William Gordon 6, Kaitlyn Kulesus 6

1 College of Medicine, University of Oklahoma
2 Family Medicine Residency, Providence Oregon
3 Neurology Residency Program, University of Colorado
4 Internal Medicine San Francisco, Kaiser Permanente
5 Department of Internal Medicine, University of Oklahoma
6 Department of Anesthesiology, University of Oklahoma

OR Trash to Treasure: Impact of Climate Change on Health Medical Humanities Curriculum and Projects

The second-year medical students in our medical humanities class, Climate's Impact on Health, each completed their own projects related to climate work. As a group at our end-of-semester celebration, we all decorated homemade, up-cycled wood picture frames (made by Will Gordon, M.D.) with pieces of "trash" from operating rooms. Our leader, Kailtyn Kulesus, D.O., collected lids from medicine vials and unused but no-longer-sterile Bovie cords while working as an anesthesiologist. Lids of all colors adorn our frames, and the cords wrapped nicely to create free-standing Christmas trees. We hate to see so much material go to waste, even if for a good cause like surgery, and it felt good to use it for something, especially for creative expression. In our class, we learned about how anesthetic gases contribute to the greenhouse effect that warms our planet's atmosphere and which anesthetic gases are better to use, amongst other environmental impacts from anesthesia and surgery. By making these frames, we are reminded that our work in medicine has an impact on our shared planet, and we need to be mindful of that as we carry out our jobs.

03

Tina Bharani 1, Rebecca Achey 2, **Harris Jamal 3,** Alexis Cherry 4, Malcolm K. Robinson 5, Guy J. Maddern 6, Deirdre K Tobias 7,8 , Divyansh Agarwal 9,10

1 Department of Surgery, Thomas Jefferson University Hospital, Philadelphia, PA 19107, USA
2 Department of Neurological Surgery, Cleveland Clinic Foundation, Cleveland, OH 44195, USA
3 Augusta University/University of Georgia Medical Partnership, Medical College of Georgia, Athens, GA 30606, USA
4 Virginia Commonwealth University School of Medicine, Richmond, VA 23298, USA
5 Discipline of Surgery, Brigham and Women's Hospital, Boston, MA 02115, USA
6 Discipline of Surgery, The Queen Elizabeth Hospital, University of Adelaide, Adelaide, South Australia, Australia
7 Division of Preventive Medicine, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, MA 02115, USA
8 Department of Nutrition, Harvard TH Chan School of Public Health, Boston, MA 02115, USA
9 Department of Biology, Massachusetts Institute of Technology, Cambridge, MA 02142, USA
10 Department of Surgery, Massachusetts General Hospital, Boston, MA 02114, USA

Impact of Climate Change on Surgery: A Scoping Review to Define Existing Knowledge and Identify Gaps

Objective: It is becomingly increasingly appreciated that surgical practices generate disproportionate amounts of environmental waste and greenhouse gas emissions that contribute to climate change. However, the reverse, how climate change impacts surgical operations, has remained poorly defined. In this scoping review, we sought to characterize the evidence for the impacts of climate change on surgery, and to identify knowledge gaps and opportunities for future research.
Methods: Analyses included a comprehensive scoping review, screening 3334 unique citations from three databases – 1766 from Embase, 1329 from Pubmed and 239 from Scopus – to identify studies that had associated climate change with surgery. After systematic searching, quality appraisal, and data extraction, we synthesized findings from qualitative and quantitative studies utilizing the Preferred Reporting Items for Systematic Reviews and Meta-Analysis: Extension for Scoping Reviews (PRISMA-ScR) guidelines.
Results: The screening process resulted in 26 studies which met our inclusion criteria for the scoping review. Included studies spanned all surgical subspecialties, including urology, trauma surgery, and burns and reconstructive surgery. Key findings largely fell into three impact categories – surgical disease burden, surgical care delivery, and post/perioperative outcomes.
Conclusions: Climate change has contributed to increased surgical disease burden, decreased surgical care delivery, and worsened surgical outcomes.

04

Cameron Coakes 1, Julia Faust 1, Yuliya Faryna 1, Spencer DeMedal 1, Aanya Chopra 1, Abdullah Sabry 1, Sneh Shah 1, Dr. Amanda Cooper MD 1,2

1 Penn State College of Medicine
2 Penn State Milton S. Hershey Medical Center, Department of Surgery

Unwrapping Change: Reducing Plastic Waste in the Operating Room

Objective: Penn State Milton S. Hershey Medical Center (PSMSHMC) currently generates three tons of plastic waste annually from hospital-issued scrubs individually wrapped in non-recyclable type 4 plastic. This study aims to assess the feasibility and efficacy of implementing a recycling program to repurpose this waste.
Methods: We utilized Lean Six Sigma to assess improvement strategies, conducted "Gemba" trips to elicit stakeholder perspectives, and developed process maps to identify barriers.
Results: The scrub vendor cites sterility concerns, but studies show no significant bacterial differences between hospital-laundered and home-laundered scrubs, challenging the need for such packaging. We propose partnering with NexTrex, a company that repurposes non-recyclable plastic into decking. Recycling bins, provided by the vendor, would be placed at scrub dispensers throughout the hospital, with janitorial staff collecting the plastic for baling. PSMSHMC would invest $5,000-10,000 in a baler machine, which NexTrex would reimburse through the purchase of baled plastic, making the machine self-financing. An additional $2,000 annually would cover staffing.
Conclusions: This initiative aims to significantly reduce PSMSHMC's carbon footprint while enhancing high-value care and delivering tangible benefits to the local community, including stakeholders and patients. We are confident the moral boost generated will far outweigh the costs and resources required.

POSTER SESSION

IN PERSON
SESSION II: 4PM - 4:45PM

05

Mia Guzynski 1

1 Wake Forest University School of Medicine

All in a Day's Work

This project is a set of drawings in pen depicting full trash bags used in operating rooms after a surgery. It is meant to showcase the volume of waste generated after just one case.

06

Jacqueline Diaz 1, Meghan Webb PhD 2,3

1 Case Western Reserve University School of Medicine
2 La Isla Network, Wuqu' Kawoq | Maya Health Alliance
3 Wuqu' Kawoq | Maya Health Alliance

Heat Stress and Kidney Health: Assessing Occupational Risks Among Sugarcane Cutters in Guatemala

The authors have asked that the abstract not be published at this time

07

Arthur E. Hale, MS 1, Devin M. Kellis, MS 2, Ghee Rye Lee, MMSc, MM 3, Joseph G. Hodgkin, MD 1,4

1 Harvard Medical School
2 University of South Carolina School of Medicine Columbia
3 The Ohio State University College of Medicine
4 Massachusetts General Hospital

How Medical Students Can Address Nuclear Risks to Human and Planetary Health

Objective: Experts indicate that the risk of human and climate catastrophe from nuclear weapons is growing. This presentation explores the intersection of nuclear weapons, human health, and planetary health with an emphasis on potential roles for U.S. medical students in risk reduction.
Methods: We reviewed the effects of nuclear war on human health, health systems, and global climate. Additionally, we documented historical and contemporary efforts by health professionals to address nuclear threats.
Results: Nuclear war would result in thousands to millions of acute deaths and long-term health effects, especially cancer. Health systems and public health infrastructure, including waste, sanitation, energy, and transportation, would be severely disrupted. Black carbon smoke could block global sunlight, reduce temperatures, and compromise agriculture, thereby placing billions at risk of starvation. Nuclear testing and accidents have caused significant humanitarian harm and environmental contamination, particularly affecting Indigenous communities and their land. Legislation supporting affected individuals has faltered. The nine nuclear armed nations are actively modernizing and/or increasing their nuclear arsenals. Even so, there are avenues for risk reduction by U.S. medical students via advocacy, education, and research.
Conclusions: Reducing and eliminating nuclear warheads is necessary for human and planetary health promotion. Medical students and health professionals must act towards this end.

08

Samyukta Karthik 1

1 Penn State College of Medicine - University Park Regional Campus

Under the Weather: Climate Change and Pediatric Mental Health

Objective: Synthesize research on the psychiatric impacts of climate change on children, identify key themes, assess current gaps in research, and provide recommendations for healthcare providers.
Methods: A meta-synthesis approach was used to analyze mixed-methods data from studies spanning from 2015-2024. Terms searched included "climate change", "children", "mental health", and "psychiatric effects." Data was systematically analyzed for common climate change-attributable mental health diagnoses. Identified gaps in populations-specific evidence for psychiatric impacts and built a framework for climate-conscious pediatric care.
Results: Common psychopathology risk increased for attachment problems, PTSD, substance use, depression, and anxiety disorders in settings of acute climate-change-related stressors. Various marginalized communities such as disability or immigrant communities were disproportionately impacted by exposure to severe weather events, with limited research data.
Conclusions: Climate change significantly affects pediatric mental health, highlighting the need for expansion of research alongside targeted interventions and educational programming. Frameworks for climate-conscious child psychiatry is integration of climate screening protocols, anticipatory guidance, emergency preparedness education, and expansion of climate-conscious pediatric training.

09

Anna Liles 1, Camron Johnson-Privitera DO FAAP 2, Harsha Bhagtani MD FAAP 1, David Redden PhD 3

1 Edward Via College of Osteopathic Medicine Virginia
2 Physicians to Children
3 Edward Via College of Osteopathic Medicine Auburn

Attitudes Towards Heat and Health in Medical Student Education

Objective: With the presence of climate change, the need for the inclusion of environmental education has become more apparent. Through an educational intervention, we aimed to increase students' knowledge of the environmental impacts on human health and assess their interest in further education.
Methods: This QI project introduced medical students at the Edward Via College of Osteopathic Medicine to the impact of the environment on medical practice. The intervention in this project was an environmental health focused talk, given by a practicing pediatrician. The talk detailed their experiences of how the climate and environment has shaped their medical practice. Students completed a pre-survey, and following the talk, a post-survey, on a voluntary basis. The surveys assessed students' attitudes about the role of warming global temperatures in their medical education.
Results: When compared to the pre-survey, there was an increase in students indicating their interest in environmental education in the post-survey. In the post-survey 93% of students indicated that they expect to see rising global temperatures affect their patients in clinical practice.
Conclusions: These results demonstrate that this issue is important to medical students and there is interest in highlighting it in the medical school curriculum.

POSTER SESSION

IN PERSON
SESSION II: 4PM - 4:45PM

10

Brittany Suann 1, Natalia Thorup Damonte 1, Daria Lisus 1, Daniela Puma Abarca 2, Romina Llanos Cordova 2, Sonya Shin 3,4

1 Harvard T.H. Chan School of Public Health
2 Socios En Salud
3 Harvard Medical School
4 Brigham and Women's Hospital

Assessment of stakeholder perspectives on climate change and its impact on health, using mixed methodologies, in Carabayllo and Huaycán, Peru

Climate change affects the health of people around the world. In Carabayllo and Huaycán, Peru, these effects are particularly severe, ranging from extreme heat and water scarcity to increased waterborne and food-borne diseases. These challenges are compounded by shortcomings of the healthcare system including fragmentation, mistrust and health disparities between urban and rural areas, which increases the vulnerability of communities. The objective of this project is to conduct a comprehensive assessment of community needs in Carabayllo and Huaycán, an essential component to understanding the current health impacts of climate change from the perspective of residents and affected stakeholders. Focus groups with community members, health workers, and leaders are being conducted, using structured narrative-based interview frameworks to guide conversation and identify key themes in community health needs associated with climate change. The research team is currently in the field carrying out the focus groups, with data analysis and results reporting to be expected by mid-February. The findings will guide future project proposals addressing climate change and health in the region, while providing key inputs for more effective and contextualized climate action in Peru.

11

Baley Kynaston 1, Roman Kovtun 1, Kade Loveridge 1, Chris Nielson 1, Anna Brandes 1, Ellenor Chi 1, Keely Kringlen 1, Kenzie Keeney 1, Luke Garcia 1, Michelle Culbertson 1, Taryn Hunt-Smith 1, **Noah Shepard 1,** Alexa Gathman Ries 1, Lilleana Rogers 1, Ria Kaddu 1, Eva Gontrum 1, Forest Streeter 1, Puja Batchu 1, Samaya Cristina-Bailey 1, Adam Taylor 1, Olivia Hanson 1, Jordyn Gagon 1, Ashley Chadwick 1, Tyler Staten 1, Alexis Pearl Lee 2, Smitha Warrier MD 2, 4, John Pearson MD 2, 4, Joan Gregory MLS 1, Jacob Robson MD 2, 3

1 Spencer Fox Eccles School of Medicine
2 University of Utah Health
3 Division of Pediatric Gastroenterology, Hepatology and Nutrition
4 Department of Anesthesiology

Curricular and Institutional Changes Observed from Implementation of the Planetary Health Report Card at a US Medical School

Objective: To determine the success of implementation of topics relating to planetary health and human-caused environmental change in a US medical school's central curriculum and elective courses through usage of the Planetary Health Report Card (PHRC) to review this school's curriculum and advocate for change.
Methods: Degree of success was largely tracked using objective data from PHRC metrics trended over four years. Other supporting evidence was provided in the form of lecture materials and learning objectives, institutional resources, and anecdotes.
Results: In the midst of a major curriculum change, the medical school reviewed by the PHRC had several positive and negative developments with reference to climate and human health teaching topics. Positive changes are assumed to be largely due to the student and faculty organizations associated with the PHRC. The medical school's institution saw advanced green energy and waste reduction measures developed outside the scope of PHRC advocacy.
Conclusions: Our collective institution has seen improvements in the past four years regarding planetary health teaching and institutional endeavors. These improvements are associated with continued metric tracking and advocacy measures developed by the student teams and faculty liaisons publishing the PHRC.

12

Noah Stewart 1, Mark Heisey HEM, CHMM 2, Matthew Kline 3, Dr. Amanda Cooper, MD 4

1 Penn State College of Medicine
2 Facilities Compliance Program Manager, Penn State Health
3 Director of EHS, Linen & Transport, Penn State Health
4 Department of Surgery, Division of Trauma, Acute Care, and Critical Care Surgery, Penn State College of Medicine

The impact of educational signage on paper towel usage in Hospital Restrooms

Objective: To evaluate the impact of educational signage on paper towel usage in hospital restrooms.
Methods: Paper towel usage in four restrooms (two single occupancy and two main OR locker rooms) was monitored 31 days before and after displaying educational signage. The signage encouraged users to shake hands dry before using one paper towel. A Wilcoxon Rank Sum test was conducted using R version 4.4.2.
Results: The single occupancy restroom with signage showed a 13.4% decrease in paper towel usage, while the restroom where signage was removed had a 1.5% increase. In the main OR locker room with signage, paper towel usage rose by 13.1%, and the locker room without signage showed negligible change. The Wilcoxon Rank Sum test revealed no significant difference in paper towel usage before and after posting signage ($p = 0.5839$). Signage was removed from one single occupancy and one main OR restroom by a third party before the intervention period ended.
Conclusions: The findings suggest that educational signage did not effectively reduce paper towel usage in the studied hospital restrooms, indicating that such interventions may not significantly encourage environmental change. Future interventions may need to implement in-person messaging or more permanent signage.

13

Siddhi Deshpande*, BS 1, Melanie Stewart*, BS 1, Sahil Tolia, MPH 1, Katherine Hughey, MD 2

1 University of Michigan Medical School
2 Department of Family Medicine, Michigan Medicine

Patient Knowledge and Opinions on the Health Impacts of Climate Change

Objective: Our team designed a survey to understand how our patients wish to be supported by their healthcare system amidst a climate crisis. While prior literature has investigated physician perspectives toward climate change and barriers to action within primary care settings, our study addresses a need to understand patient perspectives toward discussing climate change and its health impacts.
Methods: A needs assessment survey was designed to be administered to patients in the waiting rooms of three family medicine clinics at Michigan Medicine. The survey encompasses four domains: current patient knowledge of climate and health, patient interest in discussing climate change in the healthcare context, current patient climate behaviors and motivations, and demographic information. We plan to collect approximately 100 patient surveys from each clinic.
Results: Data collection is ongoing with a target end date of April 2025.
Conclusions: The findings from this study will inform providers on what patients already understand about the growing connections between climate change and human health, as well as elucidate which resources can be shared with patients who desire to learn more. These interventions will ultimately help providers address health literacy gaps and encourage patient-centered communication around climate change.

POSTER SESSION

IN PERSON
SESSION II: 4PM - 4:45PM

14

Filippo Ravalli, MPH 1, **Hannah N. W. Weinstein, BA 1**, Sarabesh Natarajan, MSc 1,Harrison Fillmore, MSc 1, Lee Yang, BS 1, Isabel O'Malley-Krohn, BS 1, Hetty Cunningham, MD 1, Cecilia Sorensen, MD 1

1 Columbia University Vagelos College of Physicians and Surgeons, NewYork-Presbyterian/Columbia University Irving Medical Center, 630 West 168th Street, New York, NY 10032, USA

Implementation of a Climate and Health Equity Curricular Thread: A Medical Student Initiative

Objective: Climate change presents an increasing risk for patients, health systems, and environmental injustices. To address these impacts, medical school curricula on recognizing and mitigating risk are necessary. Here, we describe the implementation of a new Climate and Health Equity longitudinal curriculum.
Methods: This educational initiative was spearheaded by medical students with faculty partnership and leadership from the Global Consortium on Climate and Health Education (GCCHE). Implementation occurred over three phases: 1) development of learning objectives based on the GCCHE's Core Concepts for Health Professionals, 2) audit of existing coursework to identify gaps throughout the pre-clinical, clinical, and elective phases of the curriculum, and 3) collaboration with administration and faculty to integrate climate health justice content.
Results: To date, we have facilitated integration into pre-clinical lectures and interactive sessions. In the clinical phase, we have proposed new curricular content for didactic and simulation sessions. Additionally, a service-learning elective with a local environmental advocacy group is under development. Next steps include reviewing newly integrated materials, expanding the curricula, and soliciting student feedback.
Conclusions: Through iterative implementation and student/faculty partnership, we demonstrate the integration of a longitudinal Climate and Health Equity curriculum that serves to enhance medical students' abilities to address climate change.

15

Phoebe Cunningham 1, Elizabeth Whidden 1, Jessica Campanile 1

1 University of Pennsylvania

Development of a Climate Health Interactive Online Curriculum for Medical Students

Objective: Integrating climate change into medical education is essential for preparing future physicians to address its health impacts. This project highlights the development of PlanetaryRx, an online curriculum designed to integrate climate science into clinical learning. By providing an interactive, self-paced platform, the curriculum aims to standardize climate content across medical schools while enhancing student agency and knowledge.
Methods: Initial data was collected during a full-day elective at the Perelman School of Medicine, covering health effects, policy, sustainability, and patient communication. Pre- and post-surveys assessed students' attitudes, practices, and knowledge of climate-related health impacts using a 6-point Likert scale. A Community Strengths and Needs Assessment informed the development of three pilot modules for PlanetaryRx. These modules focus on the clinical implications of climate change and will be piloted during internal medicine rotations.
Results: Pre- and post-surveys revealed significant improvements in attitudes and practices in 12 of 19 areas, including reduced feelings of powerlessness regarding climate action (mean change: 4.43 to 2.93, $p<0.001$). Knowledge assessments showed significant growth across six of seven health domains ($p<0.05$). Barriers such as time constraints in patient encounters were noted, but interest in sustainability and clinical applications was high.
Conclusions: PlanetaryRx fosters student agency, strengthens knowledge, and reduces feelings of hopelessness around climate change. Pilot feedback will guide broader implementation in Summer 2025, equipping future physicians with actionable skills to address climate-related health challenges.

16

Cindy Xie 1

1 Department of Urban Planning, Massachusetts Institute of Technology

"Cultural Transformation for Planetary Health": A Campus Dialogue Series

Borne out of the Planetary Health Alliance's Campus Ambassador program, the yearlong "Cultural Transformation for Planetary Health" dialogue series at the Massachusetts Institute of Technology (MIT) convened undergraduates, graduate students, staff, and faculty to address the social and humanistic dimensions of Planetary Health. During the 2023-24 academic year, a series of four events, each co-designed with a different department or student organization, engaged 150+ students, staff, and faculty from 15+ MIT departments through panels, discussions, and interactive workshops on water rights, Indigenous Knowledge Systems, spirituality, and climate writing. These small-group, open-ended dialogues allowed for community-building and discussion across disciplinary siloes. The initiative's holistic approach—which draws on creative methodologies such as poetry, design, and the humanities—also enabled reflective conversations on the connection between environmental awareness and community well-being. Discussions provided space for not only learning the "facts" of environmental change, but also understanding the affective responses that arise from these realities and exploring their power to fuel further action. Afterward, event participants reported feeling more "refreshed," "grateful/appreciative," and "hopeful and connected." This pilot series proposes collective dialogue as a creative method to co-create shared understandings of the climate crisis, and brainstorm alternative futures.

17

Sahar Rizwan 1,2, Anna Buchanan 1, Stefan Wheat 3,4

1 School of Medicine and Health Sciences, George Washington University
2 Milken Institute School of Public Health, George Washington University
3 School of Medicine, University of Washington
4 Department of Emergency Medicine, University of Washington

Empowering Medical Students to Address Climate Change and Health: Insights from the ClimateRx Badge Pilot Study

Objective: Gather quantitative and qualitative data on medical student engagement with climate change and health using the ClimateRx badge. Assess the ability of medical students to initiate discussions around climate health awareness in the clinical setting.
Methods: Third- and fourth-year medical students were recruited through email, in-person outreach, and campus flyers. Participants completed an initial survey, watched an orientation video, and received a ClimateRx badge to wear during clinical rotations. Follow-up surveys were emailed four months later.
Results: Preliminary findings indicate that medical students recognize climate change's impact on patient health and the importance of physicians addressing these health concerns. Barriers to the effective use of the ClimateRx badge included time constraints and limited knowledge. Use of the badge increased confidence and engagement, serving as a visible prompt for discussions with both patients and colleagues.
Conclusions: Medical students are willing and capable of engaging on climate health topics using the ClimateRx badge but require more time and knowledge to enhance their engagement. Limitations to this study include a low post-survey response rate and issues with badge visibility. Future work can explore pairing the badge with a brief educational intervention and evaluating its impact on patient and colleague engagement.

POSTER SESSION

IN PERSON
SESSION II: 4PM - 4:45PM

18

Margaret Tharp 1,2

1 John Hopkins Bloomberg School of Public Health, Baltimore, MD
2 Indiana University School of Medicine, Indianapolis, IN

In the Periphery

"In the Periphery" is a piece of mixed-media artwork utilizing discarded and expired medical supplies collected from ophthalmology cases at an outpatient surgical center in Southern Indiana to provide a visual representation of the growing issue of waste in healthcare. The piece utilizes items such as latex gloves, expired sutures, hard and soft plastic packaging, IV tubing, and sterile draping, arranged to form a three-dimensional human eye. The often overlooked environmental costs of the current US healthcare model are highlighted through repurposed materials otherwise destined for waste, now given beauty and renewed purpose. The viewer is challenged to consider the scale healthcare waste in the US and where avenues for change might be possible. Exact final weights and characterization of materials used will be recorded and provided at the time of presentation. "In the Periphery" invites medical professionals, administrators, and patients alike to shift one's focus, bringing healthcare waste and its impacts into a clearer view.

POSTER SESSION

VIRTUAL
SESSION I: 3PM - 3:45PM

01

Laura Budvytyte 1, Emma Willcocks 1

1 Mayo Clinic Alix School of Medicine Arizona, Mayo Clinic

Analyzing Planetary Health Curriculum Variations Across Mayo Clinic Medical Schools: The Impact of Planetary Health Report Card Results on Rochester and Arizona Campuses

Objective: To compare the planetary health curriculum at Mayo Clinic Alix School of Medicine's Rochester and Arizona campuses using Planetary Health Report Card (PHRC) results by evaluating curriculum focus, integration, and sustainability efforts.
Methods: Previously, PHRC analysis for Mayo Clinic combined all campuses, but Arizona and Rochester campuses were analyzed separately starting in 2023-204. Curriculum sections for both campuses were compared across topics such as climate change, environmental toxins, sustainable practices, health equity, and planetary health education. Additional data from elective courses, mandatory lectures, and sustainability initiatives were also analyzed.
Results: In total, Rochester scored 37/72, reflecting greater inclusion of planetary health topics in both core and elective courses, with stronger sustainability initiatives. Arizona scored 11/72, showing limited integration of planetary health topics and fewer sustainability practices. Differences were driven by variations in environmental justice coverage, sustainable clinical practices, and courses addressing climate change impacts on marginalized populations.
Conclusions: Curriculum design, faculty focus, and elective availability contribute to the disparities between campuses. Addressing these differences through expanded courses, standardized sustainability initiatives, and dedicated faculty oversight could promote consistency and enhance planetary health education across all campuses.

02

Anand Chundi 1, Song Liang 2, Xialong Li 3

1 Medical Student, Florida Atlantic University
2 Department of Environmental and Global Health, University of Florida
3 Department of Environmental and Global Health, University of Florida

Assessing environmental characteristics of emerging endemic areas for human Schistosoma spp. in East Africa

The authors have asked that the abstract not be published at this time.

03

Chris Gitter 1, Elizabeth Auckley, MD 1, Christa Wagner, PhD 2, Joanne Bernstein, MD, MSE 1

1 Department of Medicine, Medical College of Wisconsin
2 Center for Sustainability, Health and the Environment, Medical College of Wisconsin

Integrating Climate Change into Medical Education: A GI/Nutrition Lecture's Impact on First-Year Medical Students

Objective: To evaluate the impact of a 1-hr lecture on the impact of climate change's effects on gastrointestinal (GI) health and nutrition within the first-year medical student curriculum.
Methods: Pre- and post-surveys were distributed to 250 medical students, assessing perceptions of climate change on GI and nutritional health and comfort describing relationship of GI health and climate change using Likert scales. The Planetary Health Report Card (PHRC) was used to assess the impact on overall curriculum.
Results: 171 students completed the surveys. The percentage of students rating the topic as "somewhat" or "very important" increased from 68.7% to 91.1% after receiving this lecture. Comfort describing climate-related impacts on nutrition and GI health rose from 37.2% to 76.5% and 26.8% to 76.2%, respectively. Responses of "very comfortable" doubled for both. Notably, 40 (22%) respondents expressed interest in engaging in institutional climate advocacy.
Conclusions: This session was well-received by M1 students and increased students' knowledge and comfort level discussing each topic. Our institution PHRC score increased by 3 points, corresponding to in-depth coverage of metric 1.15 pertaining to the environmental and health co-benefits of a plant-based diet. Other institutions should consider integrating climate-focused GI/nutrition climate health lectures into their curricula to address this emerging public health concern.

04

Eva Gontrum 1, Noah Shepard 1, Taryn Hunt-Smith 1, Ellenor Chi 1, Kenzie Keeney 1, Keely Kringlen 1, Lilleana Rogers 1, Ria Kaddu 1, Michelle Culbertson 1, Forest Streeter 1, Puja Batchu 1, Alexa Gathman Ries 1

1 Sustainability Student Interest Group, Spencer Fox Eccles School of Medicine at the University of Utah

Planet-Forward Progress: Driving Sustainable Campus Events with the Planetary Health Report Card

Objective: To improve sustainability practices at the medical school by addressing two metrics from the Planetary Health Report Card: (1) developing sustainability guidelines for campus events and (2) applying sustainability criteria to campus food procurement.
Methods: A quality improvement approach was used to develop sustainability guidelines and present three goals to the SFESOM Student Affairs team: (1) standardize sustainability guidelines for events, (2) distribute these guidelines to campus organizations, and (3) pilot an intervention providing reusable utensils to incoming students. Emphasis was placed on climate hope and lessons from the NYU hospital system, which achieved substantial carbon emission reductions through plant-forward menu transitions.
Results: Two of the three goals were achieved. Sustainability guidelines for events were established, and reusable utensils were distributed to incoming students. Approval for disseminating guidelines to faculty and student leaders is ongoing.
Conclusions: Initial steps toward sustainability include implementing guidelines and distributing reusable utensils. With approximately 4,800 catered meals annually, a minor increase in plant-based meal options reflects potential for broader adoption of plant-forward menus. These efforts establish a foundation for further cultural and operational shifts. Future initiatives should expand plant-based food offerings, secure approval for guideline dissemination, and assess long-term impacts on institutional sustainability.

POSTER SESSION

VIRTUAL
SESSION I: 3PM - 3:45PM

06

Ruhi Kanwar, BS 1

1 Harvard Medical School, Boston, MA

Assessing the Landscape of Climate Change Advocacy in Oncology: A Cross-Sectional Analysis of Publicly Available Websites

Objective: The aim of this study was to evaluate climate change advocacy related to oncology by analyzing current publicly available websites. The study looked at advocacy types, geographic distribution, and key focus areas of these initiatives.
Methods: This was a cross-sectional study that used Google searched websites. The keyword of "climate change" and "oncology advocacy" were used. In total, 69 websites were included and analyzed for advocacy types, types of organizations, geographic distribution, and focus areas.
Results: Our study found that advocacy types included education, policy development, sustainability initiatives, research advocacy, and health equity promotion. The sustainability efforts included initiatives like green healthcare practices. Geographic distribution showed a focus on North America and Europe, with gaps in Africa and Latin America. Organizations were primarily professional societies (e.g., ASCO, ESMO), non-profits (e.g., OUCH-I), and task forces. Key focus areas included cancer risk from air pollution, care disruptions due to extreme weather, health equity, sustainability, and education.
Conclusions: Oncology climate advocacy efforts are growing. Further research in understanding trends and characterization of these initiatives is key, to understand gaps and future direction in cancer climate change work.

07

Mia Lauter 1, Jonathan Deck 1

1 Tulane University School of Medicine

The Impact of Climate Change and Flooding on Dermatologic Disease: A Literature Review

Objective: To review the dermatological consequences of climate change, with emphasis on flood-related skin conditions.
Methods: A literature review was conducted on PubMed. Search terms included dermatology OR climate change OR flooding. Included articles were written in English and published between 2010 – 2025.
Results: Flooding increases the risk of skin infections, first due to trauma, then due to exposure to contaminated water and associated vector-borne disease. Common pathogens include Staphylococcus and Streptococcus, but atypical bacteria like Vibrio vulnificus and Aeromonas species also pose significant risks. Fungal infections tend to be the most common causes of cutaneous morbidity associated with flood events. Indirectly related impacts of flood events arise from increased prevalence of vector-borne disease, such as arboviruses and malaria.
Conclusions: Healthcare providers responding to flooding events should be aware of the diverse infectious and non-infectious dermatological conditions that may arise. With expected increases in prevalence and severity of climate change-related flood events, dermatologists should be both involved and prepared for emergency treatment response, which includes prompt diagnosis and appropriate treatment. Further research is needed to better understand the long-term impacts of climate change-induced flooding on dermatological health.

08

Nadine Najah 1, Lawrence Huang 1, Joseph Reed Junkin 1, **Alex Jin 1**, Katherine Wainwright 1, Asghar Shah 1, Alexander Pralea 1, Gaurav Rathore 1, Bryce K. Perler, M.D. 1,2

1 The Warren Alpert Medical School of Brown University
2 Brown University Health Department of Gastroenterology

Sustainability on the Menu: Assessing the Role of Hospital Cafeteria Composting in Advancing Planetary Health Initiatives

Objective: U.S. hospitals generate substantial food waste, posing significant environmental and economic challenges. This cross-sectional study evaluated the acceptability and efficacy of a novel composting program at Rhode Island Hospital (RIH) over three months starting November 2024.
Methods: Compost bins were placed in the cafeteria with instructional signage, and research team members distributed surveys. The surveys assessed roles, knowledge, and attitudes about composting in healthcare settings. Collected waste was transferred to Bootstraps Compost, which provided weight reports, estimations of carbon emissions reductions, composting versus landfill disposal costs, and project annual benefits.
Results: Data collection is ongoing, with preliminary survey results (n=35) primarily from healthcare workers (83%). Despite most reporting low or no familiarity (66%) with the scale of U.S. hospital food waste, respondents overwhelmingly supported or strongly supported waste diversion (80%). Notably, participants overestimated food waste volumes, with 46% suggesting 50-55% waste, compared to the USDA's more conservative 30-40% estimate. During the 1 month study period, 249 pounds of compost were collected, which represents a reduction in greenhouse gas emissions equivalent to a vehicle traveling 247 miles.
Conclusions: By integrating quantitative waste metrics with qualitative participant insights, this study offers a comprehensive framework for assessing the scalability, operational challenges and cost-effectiveness of hospital composting initiatives.

POSTER SESSION

VIRTUAL
SESSION I: 3PM - 3:45PM

09

Riya Philip 1, Elise MacFarland 1

1 University of Glasgow

PHRC and The Need for Continuous Auditing

Objective: The Planetary Health Report Card was created in 2019 as a tool for students around the world to audit their university's performance in implementing planetary health into the curriculum and practices. From 2020, students at the University of Glasgow have undertaken this project annually and differences measured.
Methods: 32 metrics, divided into 5 domains (Curriculum, Interdisciplinary Research, Community Outreach & Advocacy, Support for Student-Led Initiatives and Campus Sustainability), were used to calculate an overall grade. Areas of improvement were targeted using information collated from the report through staff-student liaisons. Each report starting from the 2020/21 cycle was inspected, and assessed what changes, if any, the University had made after submission of that year's report.
Results: Since its adoption, the University's overall score has improved from 40.5% to 58.71% - an overall grade improvement from C- to C+. All five domains showed improvement, with the integration of planetary health content in the Curriculum showing a notable increase year after year.
Conclusions: There is a need for continuous auditing and the Planetary Health Report Card offers an opportunity to highlight areas for improvement.

10

Kelan Queenan 1*, Irene Laleye 1*, Amanda Cooper 1

1 Penn State College of Medicine
*These authors contributed equally

Reducing Biohazard Red Bag Waste in the Operating Room Setting

Objective: Red bag waste (RBW) bins are used to dispose of materials contaminated by blood or infectious waste. In our hospital's Operating Rooms (OR), non-biohazardous waste is discarded in RBW bins because they are the only receptacles present. This creates financial and environmental burdens due to high processing fees and increased greenhouse gas (GHG) emissions.
Methods: The Plan-Do-Study-Act (PDSA) quality improvement model was applied. Following implementation, the intervention will be evaluated with Lean Six Sigma.
Results: The proposed intervention is at the planning stage. Regular waste bins must be purchased and an OR taskforce will be formed. The taskforce will remove RBW bins from non-essential areas and add regular waste bins to the OR during the preoperative phase. RBW production will be analyzed.
Conclusions: Relocation of RBW containers will occur while ORs are idle, minimizing disruption to workflow. Rotation of waste receptacles may moderately impact workflow during the intraoperative phase. This will necessitate additional training and staff coordination. The reduction of biohazard RBW in ORs will save our hospital thousands of dollars in biohazard processing fees. With less RBW processed, GHG emissions will also decrease. Similar sustainability initiatives may be applied to other medical centers nationally.

11

Shay Nair Sharma 1, Dale Kim 2

1 Department of Human Biology, Stanford University
2. Stanford University School of Medicine

Implementing One Health and Climate Content into Medical Curriculum

Understanding the interconnectedness of human, animal, and environmental health is crucial for future physicians tackling global health challenges exacerbated by climate change. Collaborating with faculty at Stanford School of Medicine, we successfully integrated One Health and climate-related content into pharmacology course lectures. By sharing our journey of driving curricular change, we aim to inspire and empower students and faculty nationwide to incorporate similar interdisciplinary approaches into their own educational programs. Together, we can cultivate a generation of healthcare professionals equipped to address the complex realities of a changing world.

12

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Meeting clean air targets could reduce the burden of hypertension among women of reproductive age in India

Objective: Air pollution is one of the leading risk factors for hypertension globally. However, limited epidemiological evidence exists in developing countries, specifically with Indigenous health data and for fine particulate matter (PM2.5) composition. Here, we addressed this knowledge gap in India.
Methods: Using a logistic regression model, we estimated the association between hypertension prevalence among women of reproductive age (WRA, 15-49 years) from the 5th round of the National Family Health Survey and long-term exposure to PM2.5 and its composition, after adjusting for confounders. We also explored the moderating effects of socioeconomic indicators through a multiplicative interaction with PM2.5.
Results: Hypertension prevalence increased by 5.2% (95% UI: 4.8-5.7%) for every 10 μg/m³ increase in ambient PM2.5 exposure. Significant moderating effects were observed among smokers against non-smokers and for various sociodemographic parameters. Among PM2.5 species, every interquartile range increase in black carbon and sulfate exposure was significantly associated with higher odds of hypertension than for organic carbon and dust. We estimated that achieving the National Clean Air Program target and World Health Organization air quality guideline can potentially reduce hypertension prevalence by 2.42% and 4.21%, respectively.
Conclusions: Our results demonstrate that increasing ambient PM2.5 exposure is associated with a higher prevalence of hypertension among WRA in India. The risk is not uniform across various PM2.5 species and is higher with black carbon and sulfate. Achieving clean air targets can substantially reduce the hypertension burden in this population.

POSTER SESSION

VIRTUAL
SESSION I: 3PM - 3:45PM

13

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Projecting Livability from Heat Stress with Climate Change and an Aging Population

Anthropogenic climate change is causing extreme heat events to become more frequent, intense, and longer in duration, raising questions about humans' ability to live and work in a rapidly warming climate. Human physical activity is only safely sustainable under certain temperature and humidity conditions. This research seeks to understand how often physical activity will be safe for humans in a warmer world. This work uses new methods of physiological heat balance modeling introduced in Vanos et al (2023) to quantify "livability" as the maximum metabolic rate that humans can physiologically maintain a steady-state core temperature under the prevailing conditions. By applying PyHHB to state-of-the-art climate model projections, this project describes nuanced projections of livability under future heat stress. PyHHB is applied to historical and future time frames for a range of climate models, warming levels, and CMIP6 Shared Socioeconomic Pathways. Estimates of "livability" are then compared between young adult physiologies and old adult physiologies. Older adults are more vulnerable to heat, as their sweat glands have deteriorated over time. Our results show that the range of safe physical activity will shrink under climate change for both young and old age groups, necessitating extreme heat mitigation and adaptation strategies.

14

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1. School of Medicine, University of California, San Diego
2. University of California, San Diego
3. San Diego Pediatricians for Clean Air

Combining Youth, Art, and the Environment: A Safe Space for Concerned Students to Connect Through Creativity

Objective: The Tijuana Sewage Crisis in San Diego County disproportionately impacts vulnerable populations, including low-income and minority communities near the border. The Enviro Art: Youth Climate Art Exhibition provides a platform for youth to share their perspectives on this issue.
Methods: Students in San Diego border communities were invited to submit artworks in response to the Tijuana Sewage Crisis. Winning art pieces were displayed throughout San Diego in local fine arts galleries, public libraries, and professional medical conferences, inviting engagement from physicians and climate advocates.
Results: This year, we received 30+ applications from students aged 0-18 in the categories of 2D/3D Art, Photography, and Poetry. Of the participants, 4 (12.9%) were aged 0-6, 12 (38.7%) were aged 7-10, 5 (16.1%) were aged 11-13, and 10 (32.3%) were aged 14-18. Themes of the submitted pieces included beach and ocean pollution, unhealthy living conditions for sea life, and poor respiratory health.
Conclusions: Since children are the ones growing up in the climate crisis, and often have limited advocacy opportunities, it is important to highlight and empower their voices in established systems. The Youth Climate Art Exhibition offers an easily replicable model to do so.

15

Michael Xie 1, Selena Guo 1, Daniel Mahoney 2

1 Baylor College of Medicine
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Planetary Health Report Card for Baylor College of Medicine: Existing Policies and Progress One Year In

Objective: The Planetary Health Report Card (PHRC) is an international evaluation tool for planetary health content at health professions schools. This report card is crucial to understanding BCM's role in planetary health in the domains of curriculum, community outreach, support for student advocacy, research opportunities, and campus sustainability efforts.
Materials: Each domain was assigned a letter grade based on the PHRC template. Data was solicited from BCM faculty involved in curriculum design, local leaders in planetary health, BCM's sustainability office, and BCM's public website.
Results: BCM's overall grade was a C-, on par with other American medical schools. The highest-performing sections were in curriculum and community outreach and advocacy (at C), while the worst-performing section was campus sustainability (at D). There were limited resources available to students to engage with planetary health.
Conclusions: Medical student engagement and advocacy in planetary health should be incorporated into BCM's curriculum. Our recommendations include a new preclinical curricular thread on climate change and health, increased efforts to help students match with planetary health research mentors, publishing a public-facing blog post regarding climate change and health, incorporating sustainable quality improvement (QI) into the already-existing QI pathway, and an institutional net zero plan.

POSTER SESSION

VIRTUAL
SESSION II: 4PM - 4:45PM

01

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4 Herff College of Engineering, The University of Memphis, TN, USA

Urban Heat Islands and Health Disparities: A Case Study from Birmingham, Alabama

Objective: This study is focused on detecting heat-related vulnerability and developing some strategies to reduce UHI impacts in Birmingham, Alabama.
Methods: Three models including the Principal Component Analysis (PCA) Index to assess vulnerability, an Exposure Risk Index (E) for environmental risks like Land Surface Temperature (LST), and a Heat Risk Index (R) combining these factors, were employed. Additionally, Spatial Autoregression (SAR) modeling evaluates geographical relationships to identify areas needing intervention.
Results: The results showed that areas with significant African American populations near industrial facilities face heightened risks from air pollution and extreme heat, exacerbating health disparities. Birmingham's urban core is identified as a high-risk zone, with vulnerability concentrated in economically disadvantaged Black and Hispanic communities, immigrants, children, and the elderly. The PCA results highlighted health factors such as stroke, diabetes, asthma, obesity, and poverty as the key contributors to vulnerability.
Conclusions: The study emphasized the necessity of strategically combining parks and green areas to increase air quality, reduce heat exposure, and promote community well-being. Maps generated using climate data, vegetation cover, and infrastructure locations guide urban planning for resilient developments. Accessible online via UAB's webpage, these findings underscore the value of green infrastructure in mitigating heat effects, reducing health disparities, and improving resilience.

02

Sarah Bokaee 1

1 The George Washington University School of Medicine and Health Sciences

Decreased Micronutrients in Crops: A Rising Concern for Atopic Dermatitis

Objective: Climate change has been linked to the reduction of the nutritional content of crops and the decreased availability of essential vitamins and minerals in food. This review seeks to synthesize current research findings of the impact of such micronutrient deficiencies in Atopic Dermatitis (AD).
Methods: The study used PubMed, MEDLINE, CINAHL, and Scopus to search for peer-reviewed studies, meta-analyses, and original research focused on AD and micronutrient deficiencies. Abstract and full-text reviews were conducted for articles and findings were recorded.
Results: The forty-three included studies suggest that vitamins A, D, E, and K play significant roles in the management and severity of AD. Deficiencies in vitamin A and D, particularly in children, were associated with AD and increased inflammation. Moreover, both low zinc and selenium levels correlated to more severe forms of AD.
Conclusions: Vitamins A, D, E, and K play pivotal roles in reducing inflammation and modulating immune responses in AD. On the mineral front, zinc and selenium deficiencies are commonly observed in AD patients. This review highlighted the significant impact of micronutrient deficiencies in the development of AD. The nutritional content of crops and decreased availability of micronutrients to consumers could place vulnerable populations at risk.

03

Allison Chhor 1, Anthony Goodings 2, Stephanie Howe 1, Alex Sy 1, Sydney Ruller 3, Husein Moloo 1

1 University of Ottawa, Faculty of Medicine
2 University College Cork, School of Medicine
3 Ottawa Hospital Research Institute

Seeds of Change: A Longitudinal Evaluation of the Planetary Health Report Card's Impact on Institutional Action

Objective: The primary objective is to assess the three-year impact of the Planetary Health Report Card (PHRC) on promoting institutional changes at the Faculty of Medicine, University of Ottawa. The secondary objective is to identify facilitators and barriers to planetary health work.
Methods: A retrospective design was used to collect quantitative data from the PHRC's published in 2022, 2023, and 2024. We examined outcomes in five domains: Curriculum, Interdisciplinary Research, Community Research and Advocacy, Support for Student-Led Initiatives, and Campus Sustainability.
Results: Over three years, there was a 13.9% increase in overall PHRC score. In the Curriculum domain, there has been a sustained effort to implement a longitudinal planetary health program. Progress in the Interdisciplinary Research domain has occurred by establishing the Planetary Health Research Lab. The Community Outreach and Advocacy domain improved through new community partnerships. Support for Student-Led Initiatives has declined due to lack of student engagement. The Campus Sustainability domain has remained stagnant. Increased student-faculty collaboration through the Planetary Health Director role has facilitated institutional improvements, while a lack of faculty awareness of planetary health is a barrier.
Conclusions: This analysis highlights the effectiveness of the PHRC in driving change and informs future efforts to enhance the institution's planetary health contributions.

04

Ryan Scheinkman 1, Leah Farhadi 1, **Garrett Kraft 1,** Sheila Sharifi 1, Alex Pedowitz 1, Mascha Korsch 1, Keyvan Nouri 1

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Investigating Sustainable Energy Production For Artificial Intelligence Implementation In Dermatology

The authors have asked that the abstract not be published at this time.

POSTER SESSION

VIRTUAL
SESSION II: 4PM - 4:45PM

05

Samira Mehta 1, Sanjana Kannikeswaran 1

1 University of Michigan Medical School

A Narrative Evaluation of the Impacts of Climate Change on the Health of the Unhoused Population in Washtenaw County, Michigan

Unhoused individuals are disproportionately affected by the adverse health and safety implications of climate change due to their increased exposure to extreme temperatures, air pollution, and precipitation, and their pre-existing high rates of chronic disease. While there are existing accounts from climate scientists and providers detailing the effects of these extreme weather events on human health, there is a lack of attention in the literature to the unique challenges faced by the unhoused population, especially in Michigan. Additionally, there are no published first-hand narratives of the impacts of these weather events on health outcomes and chronic health conditions from this community. We aim to address this gap by conducting a narrative interview series with key stakeholders in Washtenaw County, including members of the unhoused population and administrators of shelters, warming centers, and cooling centers. A qualitative, thematic analysis highlighting the needs of the unhoused community in the face of increasing extreme weather events will be generated, with the intention of using resulting data to drive education, policy, and health interventions on local and statewide scales.

06

Anna Mulhern 1

1 Harvard Medical School

Promoting Environmental Health Equity in the Arctic: A Community-Based Research Approach

Objective: To address the disproportionate health impacts of climate change on Arctic Indigenous communities, a partnership between Alaska Community Action on Toxics and Sivuqaq (St. Lawrence Island) Indigenous leaders serves as a powerful model for equitable collaboration between scientists and communities impacted by environmental injustices.
Methods: Tribal leaders and scientists co-lead an annual Field Sampling Institute, equipping community members with skills in biomonitoring, understanding the links between environmental contamination and health, and conducting community-based environmental sampling. This approach fosters shared knowledge and empowers local action.
Results: Over 27 years, this collaborative model has revealed high levels of Persistent Organic Pollutants in ecosystems, traditional foods, and residents' blood. These findings have driven policy advocacy and local health measures, demonstrating the effectiveness of combining scientific expertise with community-led research.
Conclusions: Arctic Indigenous communities face unique health risks from climate change due to pollution, land displacement, and biomagnification in traditional foods. This partnership exemplifies how scientists and communities can work together to address environmental health inequities, generating critical knowledge while building advocacy and resilience. Insights from community-based collaborative research in the Arctic can inform efforts to address the disparate health impacts of climate change worldwide.

07

Dev Shah 1,2, Nikhil Jaganathan 1, **Tej Murudkar 2**

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2 Augusta University, Augusta, GA

The Impacts of Inhalational Anesthetic Management on Environmental Sustainability

Objective: To determine the impact of anesthetic management on the environment and understand the impacts of anesthesia beyond patient care.
Methods: We conducted a literature review synthesizing and analyzing literature regarding impacts of volatile anesthetic agents on the environment, focusing on prevalence and environmental burden, barriers to anesthetic-environmental compatibility, and potential solutions and alternatives utilizing selected databases.
Results: Volatile anesthetics (desflurane, sevoflurane, isoflurane) and nitrous oxide were found to be potent greenhouse gasses and impact our environment. Desflurane was found to be the most harmful of the three volatile anesthetics when comparing their global warming impacts. Nitrous oxide was unique because it impacted global warming while also contributing to ozone depletion. Inhaled anesthetics such as nitrous oxide and desflurane are potent greenhouse gasses that contribute to global warming and ozone depletion, in the case of nitrous oxide. Desflurane was found to have a global warming potential of 2540, approximately ~17 times higher than sevoflurane and ~5 higher than isoflurane.
Conclusions: Utilizing alternatives to potent greenhouse gases, (including intravenous/regional anesthetics), conserving gas utilization, and promoting environmental-based anesthesia advocacy can provide the patients with similar levels of care while minimizing environmental impacts.

POSTER SESSION

VIRTUAL
SESSION II: 4PM - 4:45PM

08

Shreyas Rajesh 1, David Shumway Jones 1

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Heatwaves as Anomalies or Continuities: Understanding how public perceptions of rising climate have shifted in India over the last two decades

In 2002, the city of Mumbai witnessed an unprecedented heatwave, leading to temperatures six degrees above normal, correlated with a notable increase in viral and respiratory tract infections. The 2002 crisis was to become the norm in Mumbai; the city has experienced seven distinct heatwaves in the last two decades. Unprecedented rises in urban temperatures in cities such as Mumbai continue to take India by storm. When, however, did people in the country begin to understand that rising temperatures were a serious consequence of climate change and therefore a cause for concern? I surveyed over 1,000 articles available in the ProQuest archive from prominent Indian newspapers to characterize the coverage of heat crises in India. What emerges is a stark disparity between scientific understandings of climate change and coverage on the climate crisis: between 1998 and 2007, abnormal heat patterns in Mumbai were not attributed to global warming in popular news outlets. It was only during the Swine Flu epidemic of 2007 that the relationship between virus, heat, and climate change was described in common news media. This medical humanities project thus underscores a "lag time" between scientific discourse and public perception, with political and health implications in India.

09

Jessica Riad 1, Sara Guilcher 1, Mina Tadrous 1,2 , Kristina Lee 3, Jenna Rines 3

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2 Women's College Hospital, Toronto,
3 Strategy for Patient-Oriented Research (SPOR) Alliance

Effects of Climate Change on Patients with Chronic Conditions and their Healthcare Providers– Knowledge, Perceptions, and Attitudes: a Scoping Review.

Objective: People living with chronic conditions are at heightened risk from climate change impacts. Patients, healthcare providers (HCPs), and policymakers must be aware of these effects to ensure optimal care. This study aims to synthesize knowledge on the perceptions, attitudes, and understanding of climate change's health impacts among Canadian HCPs and patients.
Methods: A scoping review was conducted to identify studies published between January 2010 and June 2024. We searched MEDLINE, EMBASE, and PsycINFO. Eligible studies included those reporting on the knowledge, perceptions, or attitudes of Canadian HCPs or patients with chronic conditions regarding climate change. Two reviewers independently screened and extracted data.
Results: A total of 5,948 citations were screened, with 3 studies meeting the inclusion criteria. Two were international cross-sectional studies including Canadians, and one was specific to Canada. One study examined HCPs' knowledge and attitudes about the link between climate change and kidney health. Reported outcomes varied in perceived risks, personal control, and acceptable risk levels. While concern about climate change's health impact was mixed, all studies indicated a high awareness of its negative effects on patients with chronic conditions. However, two of three studies found that fewer than half of HCPs felt adequately informed to support patients. No studies had data on patients living with chronic conditions.
Conclusions: This review highlights gaps in Canadian literature and a need for more research in the space.

10

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Bridging the Gap: Trialing a community-led active learning approach to environmental health education

Objective: Living near petrochemical industrial complexes is correlated with adverse health outcomes and excess mortality. However, healthcare professionals and students lack adequate training and awareness on critical environmental health topics. We describe here an educational-interventional excursion to address this gap in Port Arthur, TX – a small urban center with numerous refineries.
Methods: The two-day event focused on a tour of local polluting facilities, expert-led lectures, and hands-on health fair led by local, state, and national environmental advocacy organization representatives to educate participants about the health-harming pollutants produced in Port Arthur and to encourage advocacy efforts against the petrochemical industry.
Results: 71% of participants (n=18) found the tour to be the most impactful. 94% expressed wanting to participate again and recommend the experience to others. Participants planned to integrate event knowledge into their careers through research, article-writing, and advocacy projects.
Conclusions: Community collaboration was crucial to increase health fair turnout to 65. Scholarships engaged cost-limited groups like medical students. Suggestions for future health fairs included expanding patient education materials, Spanish-language interpreters, and building relationships with more local health organizations. We'll continue working with local advocates and organizations to replicate this model in other underserved areas with environmental health concerns around the nation.

POSTER SESSION

VIRTUAL
SESSION II: 4PM - 4:45PM

11

Aghna Wasim 1, Avani Bhalla 1, Zelke Tutagiel 1, Mehak Gul Khan 1, Ebun Dawodu 1, Shama Maliha 1

1 School of Medicine, Keele University, UK

Planetary Health Education at Keele University School of Medicine, 2024-2025

Objective: We assessed the status of planetary health education at Keele University School of Medicine in the 2024-2025 academic year.
Methods: Six medical students at Keele University assessed and compiled information on planetary health integration in the medical curriculum and broader campus practices using university websites, faculty contacts, and institutional resources. Five key areas were assessed: curriculum, interdisciplinary research, community advocacy, support for student-led initiatives, and campus sustainability. Scores were assigned to each section and summed to compute an overall grade.
Results: Keele university received an A (91.5%) grade this year on their medical-school-specific PHRC, an increase from last year's 89.3%. Campus sustainability was identified as the highest performing area (96.9%), followed by community outreach and advocacy (92.8%), planetary health curriculum (88.9%), and support for student-led initiatives (86.7%). Interdisciplinary research received the lowest score (88.2%). Similar performance was noted across the evaluated areas compared to last year, except support for student-led initiatives with a 6.7% increase, owing to more opportunities for student engagement in planetary or sustainable healthcare-related projects.
Conclusions: Keele university demonstrated excellent planetary health integration in their medical school. Future initiatives should focus on hosting planetary health conferences and establishing student groups for planetary health engagement and advocacy.

12

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Perfluorodecanoic acid (PFDA) exposure impacts cell viability and initiates markers of autophagy in a human granulosa cell line.

Objective: Perfluorodecanoic acid (PFDA) is a member of the per- and polyfluoroalkyl substances (PFAS) family, chemicals that are widely used in industrial applications such as water- and stain-repellent coatings, fire-fighting foams, and other chemical manufacturing processes. While the use of other PFAS have decreased, PFDA concentrations are increasing in human serum, raising concerns due to its persistence in the environment and potential for bioaccumulation. This study investigates the effects of PFDA exposure on cell viability and autophagy-related markers in a human granulosa cell line (HGrC1).
Methods: Cells were exposed to (0-.01-.1-1-10uM) concentrations of PFDA for 24, 48, 72, and 96 hours, followed by assessments of cell viability by MTT. The results revealed dose-dependent changes in cell viability beginning at 24 hours. Autophagy was assessed at 48 hours via immunoblotting by examining the levels of key markers such as p62, KEAP1, HO-1, ULK, phospoULK, and LC3A/B.
Results: 10uM PFDA exposure led to a notable accumulation of P62 ($p<0.001$) and HO-1 ($p<0.05$). Concurrently, a significant decrease in KEAP1 ($p<0.05$) protein levels was observed.
Conclusions: These findings suggest that PFDA exposure not only compromises cell viability but also alters autophagic processes in HGrC1 cells, potentially contributing to the observed cytotoxicity. The upregulation of p62 and HO-1 and downregulation of KEAP1 also indicate an imbalance in autophagic flux and cellular stress responses, providing further insight into the potential mechanisms through which PFDA exerts its toxic effectsFurther studies should be done on the long-term impact of PFDA exposure on reproductive health and granulosa cell function.

13

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Global and National Policy, Research, and Implementation Gaps in Clinical Sustainability Measures across Healthcare Fields

Objective: The World Health Organization (WHO) has named climate change as the leading health threat of this century. We aimed to address: What is the evidence right now? What additional evidence is needed for clinical interventions so that clinicians can take action immediately?
Methods: We researched eleven healthcare specialties: anesthesia, gastroenterology, nephrology, dentistry, pulmonology, radiology, emergency medicine, surgery, pediatrics, nursing, and primary care by completing a rapid narrative review using PubMed for articles published until the end of 2023. Search terms were each specialty AND "climate change" or "sustainability."
Results: Anesthesia, primary care, and pulmonology had the most amount of evidence for taking clinical actions pertaining to improving sustainability. Many specialties focused on improving sustainability within specific procedures (e.g., endoscopy for gastroenterology). Researchers also typically offered generic advice that did not directly pertain to clinical practice. Research from low- and middle-income countries (LMICs) into interventions that may already minimize resource usage while optimizing patient care is lacking.
Conclusions: Closing the identified gaps could increase the breadth of the uptake of sustainable clinical actions, helping avert the worst of the global climate emergency—part of our mission to "do no harm."