HOW TO TEACH CLIMATE MEDICINE

AME Grand Rounds – September 13, 2022

Bhargavi Chekuri, MD
Assistant Professor, Family Medicine
Director of CME, CUSOM Climate and Health Program

Beth Gillespie, MD, FACP
Assistant Professor, CUSOM
Director of UME, CUSOM Climate and Health Program
Hospitalist, Denver Health and Hospital Authority

Caitlin Rublee, MD, MPH
Assistant Professor, Emergency Medicine
Director of GME, CUSOM Climate and Health Program
Disclosures

• None
Objectives

1. Define planetary health and climate medicine.
2. Understand how climate medicine addresses inequities in our local and global communities.
3. Provide examples of systems-level learning opportunities in planetary health education.
4. Identify potential areas of engagement at the intersection of climate change and health in undergraduate, graduate, and continuing medical education.
5. Discuss areas of climate leadership development for academic physicians.
It takes a village, and visionaries

Jay Lemery, MD
Fellowship Director

Rosemary Rochford, PhD
Co-Director, Climate & Health Program

Terry O'Connor, MD
• Director, Diploma in Climate Medicine

George Luber, PhD
• Visiting Scientist, CU Climate & Health Program
• Visiting Professor at the Center for the Study of Human Health at Emory University

Margaret Power
• Program Administration

Climate and Health Program
SCHOOL OF MEDICINE
UNIVERSITY OF COLORADO
ANSHUTZ MEDICAL CAMPUS
What is climate change?

Image from: https://www.un.org/sw/node/143022
Communities of Color:

Some communities of color living in risk-prone areas face cumulative exposure to multiple pollutants. Adaptation plans that consider these communities and improve access to healthcare help address social inequities.

Children:

Children have a higher risk of heat stroke and illness than adults. Adults can lessen risk by monitoring exertion and hydration.

Older Adults:

Older adults are vulnerable to extreme events that cause power outages or require evacuation. Checking on elderly neighbors and proper emergency communication can save lives.

Low Income Communities:

Low income families are at risk of physical and mental illnesses during flooding and in crowded shelter conditions. Comprehensive disaster management can improve resiliency for people with limited resources.

Source: 4th National Climate Assessment from Globalchange.gov
Denver-Aurora

- Heat
- Poor air quality – ozone, PM2.5
- Drought
- Extreme weather
- Immigrant health, food security, water security
Go to PollEv.com/bc511

• Describe how you feel about practicing medicine amidst heatwaves, wildfires, and drought here in Colorado?
Go to PollEv.com/bc511

• How comfortable are you teaching about climate change and health?
Definitions:

- **Climate medicine** is a critical new approach that aims to educate and prepare health professionals, hospitals, and communities to manage the health impacts of climate change.

- **Planetary health** is “a solutions-oriented, transdisciplinary field, focused on analyzing and addressing the impacts of human disruptions to Earth’s natural systems on human health and all life on Earth”
Planetary health recognizes the health of the planet as a system.
Needs assessment
Frameworks for education

- Global Consortium for Climate Health Education
- Planetary Health Alliance
- International Journal of Environmental Research and Public Health
<table>
<thead>
<tr>
<th>Knowledge and Analytical Skills</th>
<th>Planetary Health Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is climate change, and what are its health impacts?</td>
<td>Clinical Practice</td>
</tr>
<tr>
<td>How do we manage climate impacts at the bedside, and in our hospital systems?</td>
<td>Public Health Practice</td>
</tr>
<tr>
<td>How do we manage underlying socio-ecological determinants of health?</td>
<td>Policy and Advocacy</td>
</tr>
<tr>
<td>How do we manage climate impacts at the population health level?</td>
<td>Communication and Collaboration</td>
</tr>
<tr>
<td>How do we do all of the above effectively</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Core Competencies published by the GCCHE
Picture this…

<table>
<thead>
<tr>
<th>Planetary Health Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and Analytical Skills</td>
</tr>
<tr>
<td>Clinical Practice</td>
</tr>
<tr>
<td>Public Health Practice</td>
</tr>
<tr>
<td>Policy and Advocacy</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
</tr>
<tr>
<td>Planetary Health Domain</td>
</tr>
<tr>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Knowledge and Analytical Skills</td>
</tr>
<tr>
<td>Clinical Practice</td>
</tr>
<tr>
<td>Public Health Practice</td>
</tr>
<tr>
<td>Policy and Advocacy</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
</tr>
<tr>
<td>Planetary Health Domain</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Knowledge and Analytical Skills</td>
</tr>
<tr>
<td>Clinical Practice</td>
</tr>
<tr>
<td>Public Health Practice</td>
</tr>
<tr>
<td>Policy and Advocacy</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
</tr>
<tr>
<td>Planetary Health Domain</td>
</tr>
<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Knowledge and Analytical Skills</td>
</tr>
<tr>
<td>Clinical Practice</td>
</tr>
<tr>
<td>Public Health Practice</td>
</tr>
<tr>
<td>Policy and Advocacy</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
</tr>
<tr>
<td>Planetary Health Domain</td>
</tr>
<tr>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Knowledge and Analytical Skills</td>
</tr>
<tr>
<td>Clinical Practice</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Public Health Practice</td>
</tr>
<tr>
<td>Policy and Advocacy</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
</tr>
</tbody>
</table>
Picture this…

<table>
<thead>
<tr>
<th>Planetary Health Domain</th>
<th>Pre-clinical</th>
<th>Clinical</th>
<th>Residency</th>
<th>Fellowship</th>
<th>CME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and Analytical Skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Practice</td>
<td></td>
<td>Clinical</td>
<td>Residency</td>
<td>Fellowship</td>
<td>CME</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Bedside</td>
<td>-Bedside</td>
<td>-Health systems</td>
<td>Health systems</td>
</tr>
<tr>
<td>Public Health Practice</td>
<td></td>
<td></td>
<td></td>
<td>Fellowship</td>
<td>CME</td>
</tr>
<tr>
<td>Policy and Advocacy</td>
<td></td>
<td></td>
<td></td>
<td>Fellowship</td>
<td>CME</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>←All →</td>
</tr>
</tbody>
</table>
Graduating students will become physician leaders capable of transforming the health of diverse communities.
CUSOM leadership

• Climate and Health Program (2021) – UME, GME, CME
  • CU Climate and Health Science Policy Fellowship
  • Diploma in Climate Medicine
• Colorado Consortium on Climate Change and Health
• Medical student leadership
  • CU-CHASE
  • Medical Students for a Sustainable Future – local chapter
  • Environmental Health Assessment (Denver Health LIC)
  • Mentored Scholarly Project 1 2nd year student
  • Climate change and health equity community project 2 (at least) 2nd year students
  • Planetary Health Report Card
2022 Planetary Health Report Card

**University of Colorado**

- Overall: C+
- Curriculum: C+
- Research: A
- Community Outreach: D-
- Support for Students: B-
- Campus Sustainability: C-

<table>
<thead>
<tr>
<th>Planetary Health Report Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emory University</td>
</tr>
<tr>
<td>UC Berkeley-UCSF Joint Medical Program</td>
</tr>
<tr>
<td>University of California San Francisco</td>
</tr>
<tr>
<td>University of Arkansas for Medical Sciences</td>
</tr>
<tr>
<td>University of Hawaii</td>
</tr>
<tr>
<td>University of Washington</td>
</tr>
<tr>
<td>Georgetown University</td>
</tr>
<tr>
<td>Boston University</td>
</tr>
<tr>
<td>Columbia University</td>
</tr>
<tr>
<td>University of Colorado</td>
</tr>
</tbody>
</table>

+23 more (33 total)

Source: PHreportcard.org
PHRC - Curriculum

• General – elective offerings
• Health Effects of Climate Change
• Environmental Health & Effects of Anthropogenic Toxins on Human Health
  • community effects, Indigenous knowledge, health inequities
• Sustainability
  • Carbon footprint of healthcare
• Clinical Applications
  • Strategies for discussing climate change with patients, environmental health history-taking
• Administrative Support for Planetary Health
CUSOM Momentum for PH Integration

- Core curriculum (1 lecture Health and Society)
- Global Health preclinical curriculum
- 4th year elective: Climate Medicine (EMED 8010)
- 1st year elective: Look Up and Lead in Planetary Health (IDPT 5042)
- CUSOM-Fort Collins & One Health Institute
- Other examples? Survey to come

- ABME changes (in the pipeline)
Integration Examples and Tools

Examples

- Student Orientation workshop/lecture
- Pre-clinical slides
- Clinical case examples
- Problem-based learning materials
- Service learning projects
- Expanded content: global health

Tools/Resources

- CUSOM Climate and Health Program - Experts
- C4H - Experts
- GCCHE Knowledge Bank
- PHRC
- Curricular Map
- Interested Faculty & Students
- (?) Student Representative to Curriculum Committee
Climate change is a threat multiplier

- Climate change is increasing the frequency and intensity of extreme weather events (e.g., droughts, hurricanes, heat waves), leading to:
  - Direct health effects
    - Disaster-related injury or death
  - Indirect health effects
    - Climate-related migration, displacement, and relocation
    - Interpersonal and gang violence, PTSD, depression, suicide
    - Other: decreased access to clean water and food, disrupted healthcare services, changing disease ecology
- Climate migrant: “Someone who moves to a new country or area because climate change has made it very difficult for them to continue to live or work where they are.”
- Climate refugee is sometimes used, but has no legal meaning under international or U.S. law

Slide courtesy of Elizabeth Gillespie, MD
Next Steps

- Course Director Survey (Core curriculum)
- Addition to CUSOM student orientation (didactics, workshops, printed materials)
- Other orientation opportunities (e.g. wards bootcamp)
- CSC position(s) - Faculty and/or Student Representative in Planetary Health
GME - Residency
Sample Elective

50% Clinical

- Clinical work at the resident’s home institution (i.e. 3-4 sessions of continuity clinic per week).
- Consulting with CU Climate Medicine faculty on how to apply a ‘climate lens’ to the resident’s patient panel.

50% Climate and Health Education

- Didactics (can be offered asynchronously).
- Deliverable focused on health communication, advocacy or quality improvement based on resident interest. (i.e. Op-ed, testimony at state legislature, creating a climate health quick-text bank, QI proposal focused on greening the clinic/hospital.)
- Opportunities for connectivity with local, regional or national experts (i.e. Healthy Air and Water Colorado)
- Conference attendance (funding must be acquired by resident).
Goal: To train highly credible, knowledgeable health leaders in clinical, basic science, and policy settings
• Learn climate sciences (didactics, readings)
Research | Education | Policy

- Longitudinal experiences with government agencies/offices
- Learn climate sciences (didactics, readings)
Research | Education | Policy

- Convene and organize
- Participate with non-governmental organizations
- Longitudinal experiences with government agencies/offices
- Learn climate sciences (didactics, readings)
Research | Education | Policy

- Expand climate and health network (conferences)
- Convene and organize
- Participate with non-governmental organizations
- Longitudinal experiences with government agencies/offices
- Learn climate sciences (didactics, readings)
Research | Education | Policy

- Apply knowledge in policy and educational arenas
- Expand climate and health network (conferences)
- Convene and organize
- Participate with non-governmental organizations
- Longitudinal experiences with government agencies/offices
- Learn climate sciences (didactics, readings)
• Lead scholarly activities/research
• Apply knowledge in policy and educational arenas
• Expand climate and health network (conferences)
• Convene and organize
• Participate with non-governmental organizations
• Longitudinal experiences with government agencies/offices
• Learn climate sciences (didactics, readings)
Research | Education | Policy

- **TRANSFORM SYSTEMS**
- Lead scholarly activities/research
- Apply knowledge in policy and educational arenas
- Expand climate and health network (conferences)
- Convene and organize
- Participate with non-governmental organizations
- Longitudinal experiences with government agencies/offices
- Learn climate sciences (didactics, readings)
Communication Examples

**Recent Events at COP-26 - Glasgow**
On November 6, 2021, members of our team presented at the COP26 Health Pavilion, sponsored by WHO.

**Fourth National Climate Assessment**
*Volume II*
Impacts, Risks, and Adaptation in the United States

**Health Care Without Harm**

**Policy Forum**
Climate change and women's health: Impacts and policy directions
Cecilia Sorensen1, Virginia Murray2, Jay Lemery3, John Balbus4

**Invited Article**
At Ground Zero—Emergency Units in Low- and Middle-Income Countries Building Resilience for Climate Change and Human Health
Caitlin Rublee, Corey Bills, Cecilia Sorensen, Jay Lemery, Emilee Calvello Hynes

**CLIMATE CHANGE AND HEALTH**
A year in emergency medicine focused on climate change will give you the tools to advocate to patients and take steps to address the root causes of the problems that face our planet today.

**Office of Climate Change and Health Equity**

**Lancet Countdown: Tracking Progress on Health and Climate Change**

**The Medical Society Consortium on Climate & Health**
One word to describe: **Changemakers**
One word to describe: Changemakers
CME

- Faculty development: rate limiting step for CCH education
- Ad-lib virtual resources from Project Echo, GCCHE, Medical Society Consortium, and more.
- Here at CU…Diploma in Climate Medicine
Diploma in Climate Medicine

5 Certificates:
- Foundations and Updates in Climate Medicine
- Developing Sustainable Hospital Systems
- Disaster Response and Recovery
- Community Resilience: Energy Innovation & Healthy Infrastructure
- Global Challenges
Conclusion

• Use the following QR code to pull up a list of resources focused on climate change and health education.

• Share with the group how you might start teaching climate medicine in your programs. (Drop ideas in the chat or raise hand and unmute!)
References

- Planetary Health Alliance. What is Planetary Health? https://www.planetaryhealthalliance.org/planetary-health
- A Commission on climate change. The Lancet, Volume 373, Issue 9676, 1659
Questions?

Thank you!

Bhargavi.Chekuri@cuanschutz.edu
Elizabeth.Gillespie@cuanschutz.edu
Caitlin.Rublee@cuanschutz.edu