

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
ANSCHUTZ MEDICAL CAMPUS

What is climate change?



Image from: <https://www.un.org/sw/node/143022>

Impact of Climate Change on Human Health

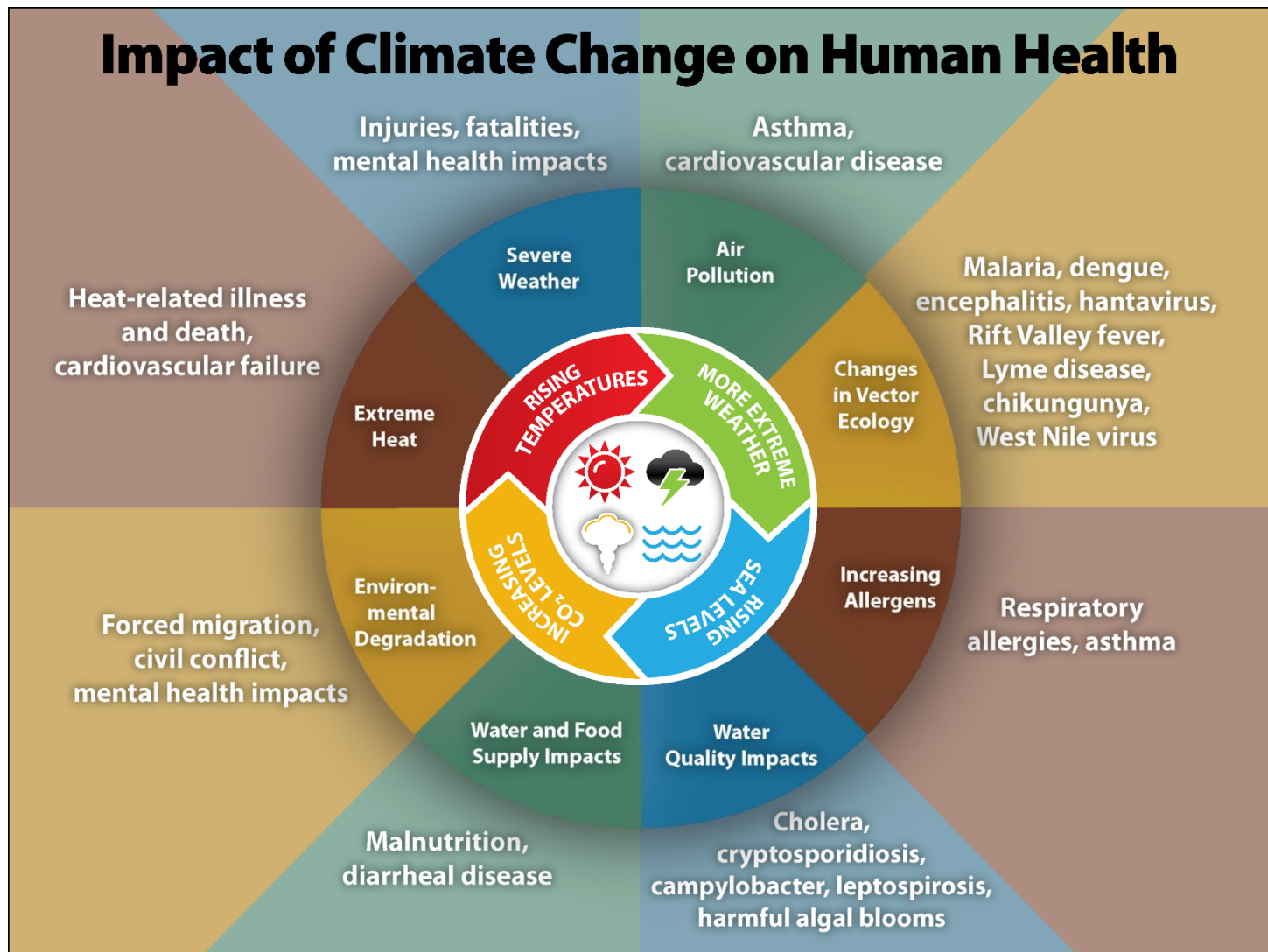


Image from CDC

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.

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.

CHILDREN

Children have higher risk of heat stroke and illness than adults.

Adults can lessen risk by monitoring exertion and hydration.

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.

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



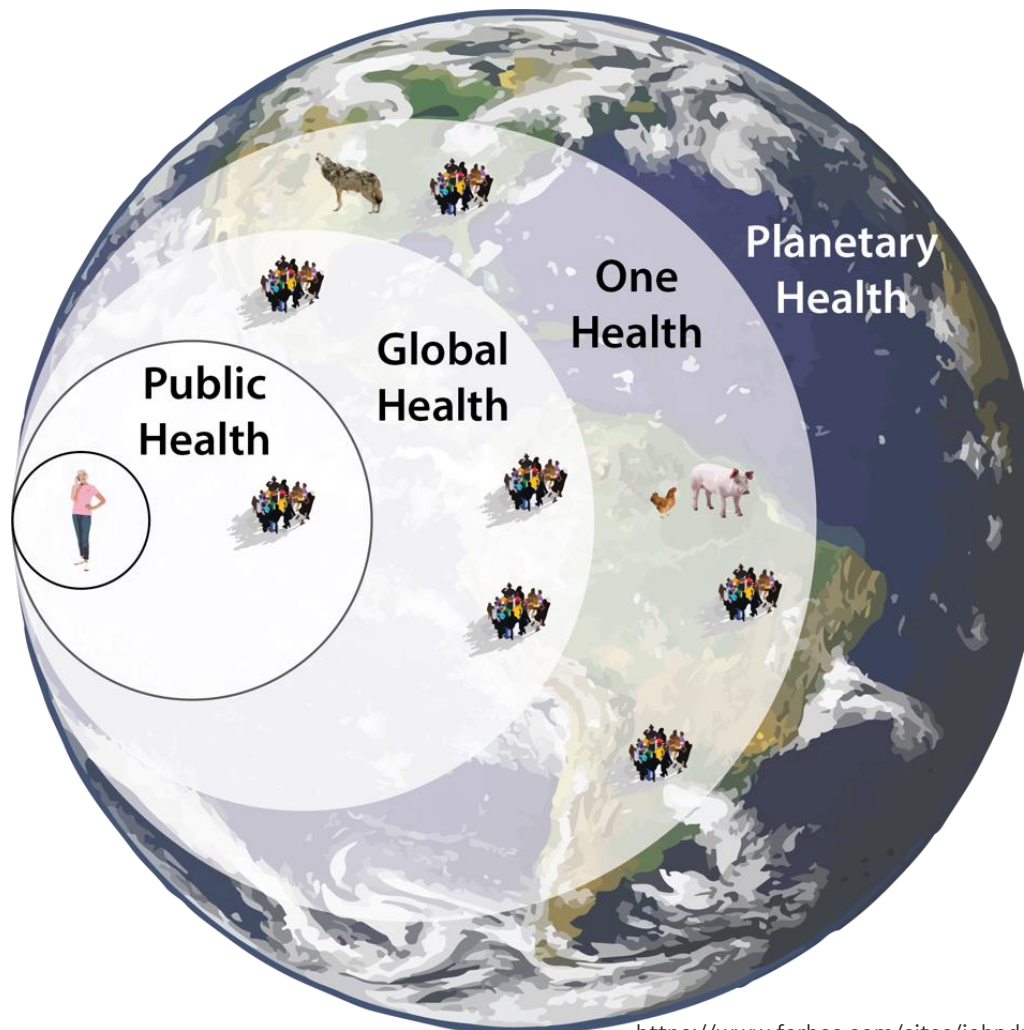
- How comfortable are you teaching about climate change and health?

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

APRIL 2022

PLANETARY HEALTH REPORT CARD



2021-2022 SUMMARY REPORT
AN INTERNATIONAL HEALTH STUDENT
INITIATIVE

Prepared by:

Medical students and faculty from 74 medical schools
in the U.S., UK, Ireland, Canada, Germany, Malaysia, and Japan

Frameworks for education



Global Consortium for Climate Health Education



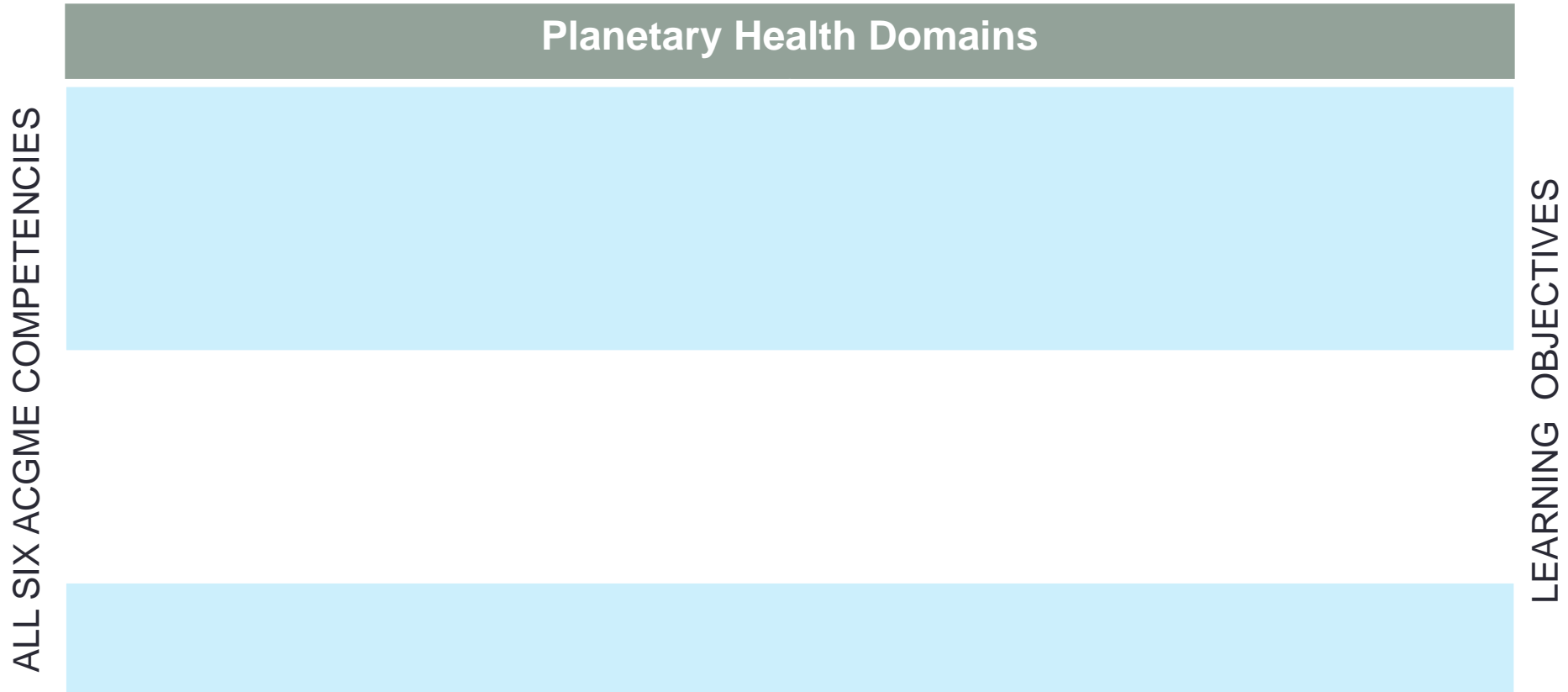
Planetary Health Alliance



International Journal of Environmental Research and Public Health



Sample (abridged) curricular map



Adapted from Core Competencies published by the GCCHE

Picture this...

Planetary Health Domain					
Knowledge and Analytical Skills	Pre-clinical				
Clinical Practice					
Public Health Practice					
Policy and Advocacy					
Communication and Collaboration					

Picture this...

Planetary Health Domain					
Knowledge and Analytical Skills	Pre-clinical	Clinical			
Clinical Practice		Clinical -Bedside			
Public Health Practice					
Policy and Advocacy					
Communication and Collaboration					

Picture this...

Planetary Health Domain					
Knowledge and Analytical Skills	Pre-clinical	Clinical	Residency		
Clinical Practice		Clinical -Bedside	Residency -Bedside -Health systems		
Public Health Practice					
Policy and Advocacy					
Communication and Collaboration					

Picture this...

Planetary Health Domain					
Knowledge and Analytical Skills	Pre-clinical	Clinical	Residency	Fellowship	
Clinical Practice		Clinical -Bedside	Residency -Bedside -Health systems	Fellowship -Health systems	
Public Health Practice				Fellowship	
Policy and Advocacy				Fellowship	
Communication and Collaboration					

Picture this...

Planetary Health Domain					
Knowledge and Analytical Skills	Pre-clinical	Clinical	Residency	Fellowship	CME
Clinical Practice		Clinical -Bedside	Residency -Bedside -Health systems	Fellowship -Health systems	CME -Health systems
Public Health Practice				Fellowship	CME
Policy and Advocacy				Fellowship	CME
Communication and Collaboration					

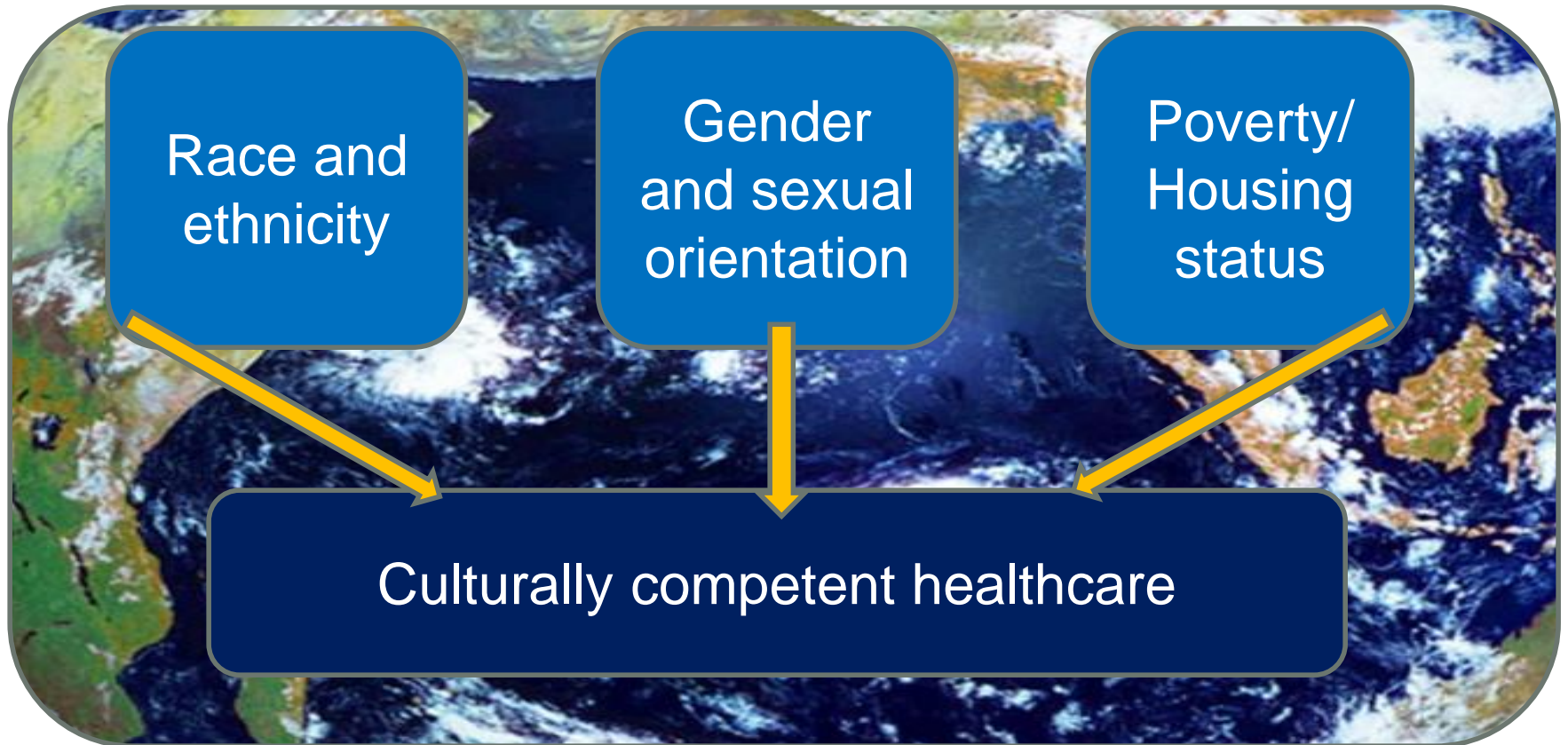
Picture this...

Planetary Health Domain					
Knowledge and Analytical Skills	Pre-clinical	Clinical	Residency	Fellowship	CME
Clinical Practice		Clinical -Bedside	Residency -Bedside -Health systems	Fellowship -Health systems	CME -Health systems
Public Health Practice				Fellowship	CME
Policy and Advocacy				Fellowship	CME
Communication and Collaboration	←All →				



UME

Trek Vision



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



2021-2022 Summary Report
United States

Planetary Health Report Card

Emory University	A	A-				
UC Berkeley-UCSF Joint Medical Program	A-	B				
University of California San Francisco	B+	B-				
University of Arkansas for Medical Sciences	B-	B				
University of Hawai'i	C+	C				
University of Washington	C+	D				
Georgetown University	C+	C				
Boston University	C+	D				
Columbia University	C+	C	A	D-	B	C+
University of Colorado	C+	C+	A	D+	B-	C-

- Research
- Community
- Support
- Campus

University of Colorado

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

+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.”*
<https://dictionary.cambridge.org/dictionary/english/climate-migrant>
- **Climate refugee** is sometimes used, but has no legal meaning under international or U.S. law



Hurricane Damage, Boy Outside a Destroyed House in Flood Water, Central America, 11/23/20
Photo credit: D Membreno/ EU Civil Protection and Humanitarian Aid
Creative Commons (climatevisuals.org)

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. (ie. 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 (ie. Healthy Air and Water Colorado)
- Conference attendance (funding must be acquired by resident).



GME Fellowship



Climate Change & Health Science Policy Fellowship

SCHOOL OF MEDICINE

UNIVERSITY OF COLORADO **ANSCHUTZ MEDICAL CAMPUS**



Goal: To train highly credible, knowledgeable health leaders in clinical, basic science, and policy settings

Research | Education | Policy



Research | Education | Policy



- 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)

Research | Education | Policy



- 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)

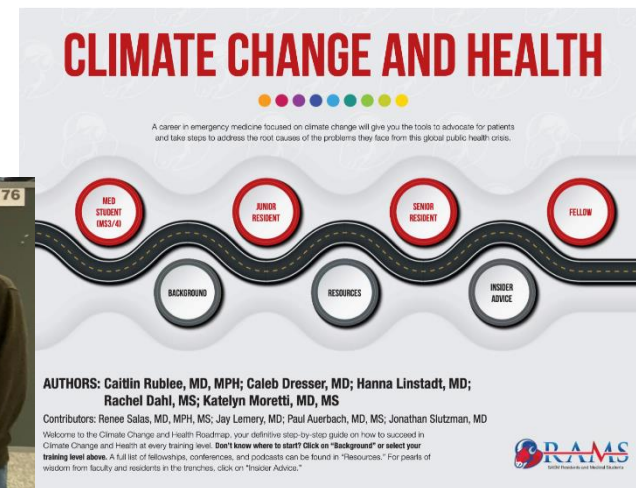
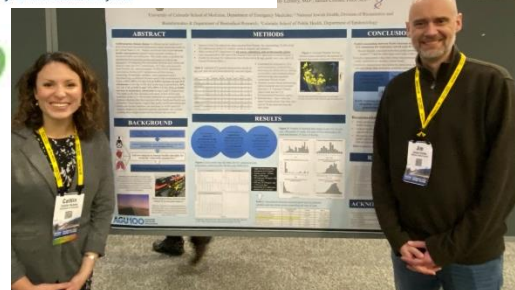
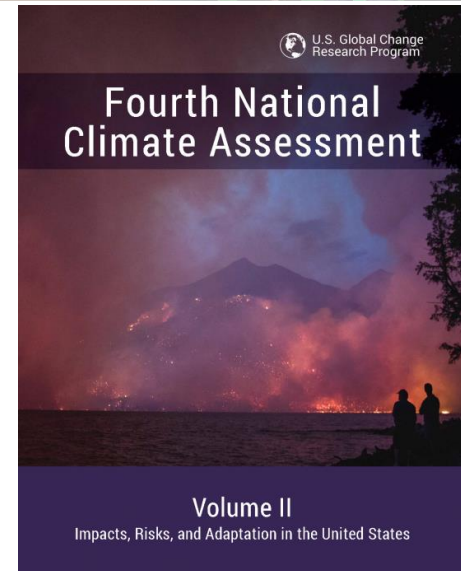
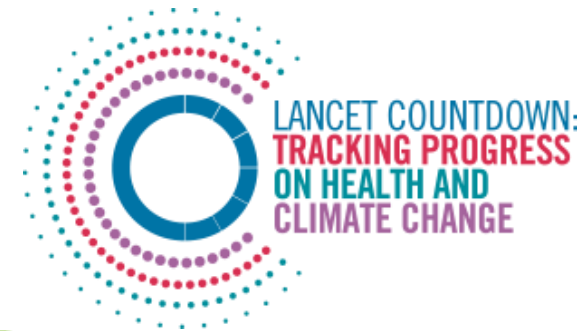
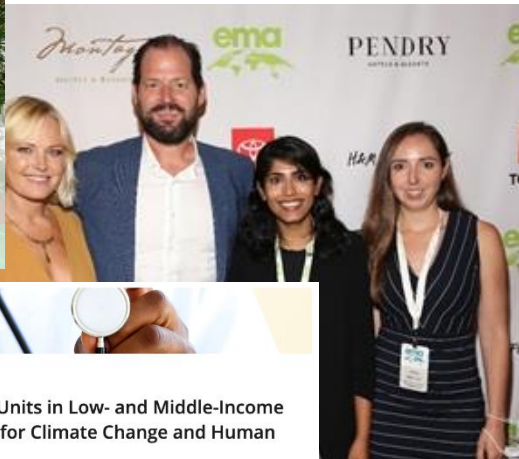
Communication Examples



POLICY FORUM

Climate change and women's health: Impacts and policy directions

Cecilia Sorensen¹*, Virginia Murray², Jay Lemery¹, John Balbus³



Office of
Climate Change
and Health Equity

One word to describe: **Changemakers**

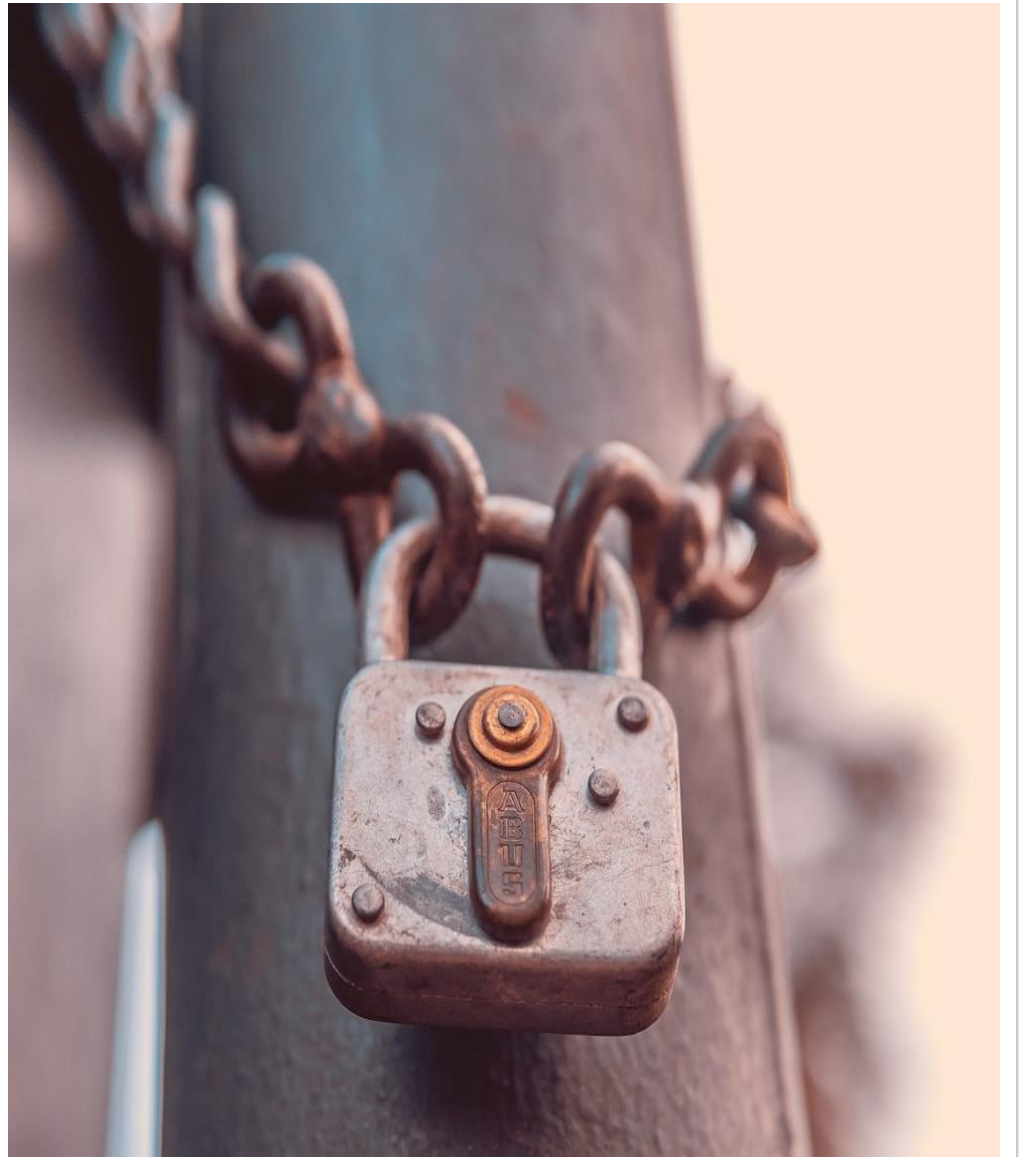


One word to describe: **Changemakers**



CME

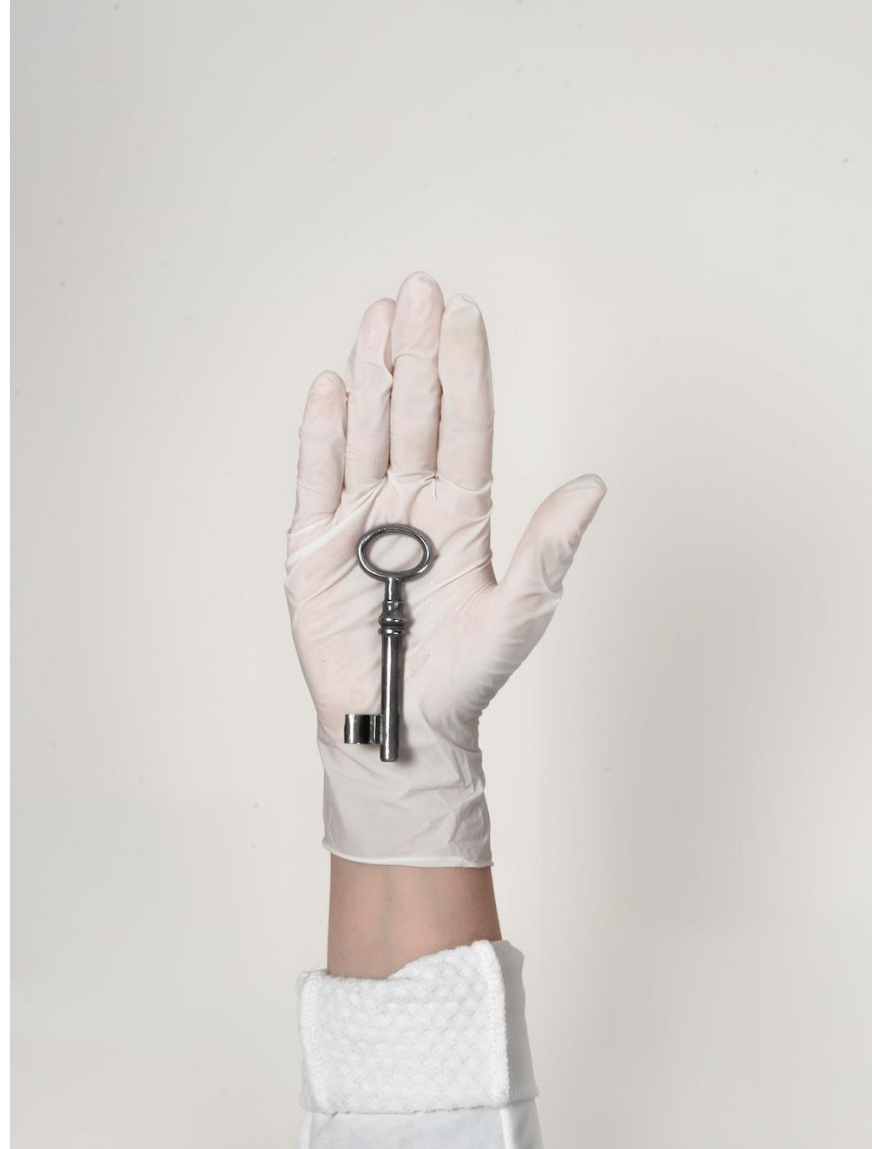
- **Faculty development: rate limiting step for CCH education**
- Ad-lib virtual resources from Project Echo, GCCHE, Medical Society Consortium, and more.
- Here at CU...Diploma in Climate Medicine



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

- United Nations. What is Climate Change? <https://www.un.org/sw/node/143022>
- CDC. Climate Effects on Health. <https://www.cdc.gov/climateandhealth/effects/default.htm>
- Reidmiller, D. R., Avery, C. W., Easterling, D. R., Kunkel, K. E., Lewis, K. L. M., Maycock, T. K., & Stewart, B. C. (2019). Fourth National Climate Assessment. *Volume II: Impacts, Risks, and Adaptation in the United States*. U.S. Global Change Research Program, Washington, DC, USA, doi: 10.7930/NCA4.2018.
- Planetary Health Alliance. What is Planetary Health? <https://www.planetaryhealthalliance.org/planetary-health>
- Drake, J., (2021). What is Planetary Health? *Forbes*. <https://www.forbes.com/sites/johndrake/2021/04/22/what-is-planetary-health/?sh=40704de52998>
- Hampshire, K., Islam, N., Kissel, B., Chase, H., & Gundling, K. (2022). The Planetary Health Report Card: a student-led initiative to inspire planetary health in medical schools. *The Lancet Planetary Health*.
- Columbia University Mailman School of Public Health. Global Consortium on Climate and Health Education. <https://www.mailman.columbia.edu/research/global-consortium-climate-and-health-education>
- Guzmán, C. A. F., Aguirre, A. A., Astle, B., Barros, E., Bayles, B., Chimbari, M., ... & Zylstra, M. (2021). A framework to guide planetary health education. *The Lancet Planetary Health*, 5(5), e253-e255.
- Jagals, P., & Ebi, K. (2021). Core competencies for health workers to deal with climate and environmental change. *International Journal of Environmental Research and Public Health*, 18(8), 3849.
- A Commission on climate change. *The Lancet*, Volume 373, Issue 9676, 1659
- Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Belesova, K., Boykoff, M., Byass, P., Cai, W., Campbell-Lendrum, D., Capstick, S., Chambers, J., Dalin, C., Daly, M., Dasandi, N., Davies, M., Drummond, P., Dubrow, R., Ebi, K. L., Eckelman, M., ... Montgomery, H. (2019). The 2019 report of The Lancet Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. *The Lancet*, 394(10211), 1836–1878. [doi.org/10.1016/s0140-6736\(19\)32596-6](https://doi.org/10.1016/s0140-6736(19)32596-6)

Questions?

Thank you!

Bhargavi.Chekuri@cuanschultz.edu

Elizabeth.Gillespie@cuanschultz.edu

Caitlin.Rublee@cuanschultz.edu