Goals for Participants

1. **Learn** about climate and health programs
2. **Understand** challenges and strategies for success
3. **Create** short and long-term plans for program integration
4. **Have fun!**

Tag the event on social media

#VAClimateMedEd, @VA_Clinicians
<table>
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<tr>
<th>Time</th>
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*Each presentation with Q&A at the end*
Speakers

Rebecca Philipsborn, MD, MPA
Emory University School of Medicine, GA

Perry Sheffield, MD, MPH | Lindsay Clark, M2
Icahn School of Medicine at Mount Sinai, NY
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1:30pm -      Hiking Activity
Climate Change and Medical Education
AMA Policy: CLIMATE CHANGE EDUCATION ACROSS THE MEDICAL EDUCATION CONTINUUM

(American Medical Association resolution #A19-302, adopted as official policy June 2019)

1. That our American Medical Association (AMA) supports teaching on climate change in undergraduate, graduate, and continuing medical education such that trainees and practicing physicians acquire a basic knowledge of the science of climate change, can describe the risks that climate change poses to human health, and can counsel patients on how to protect themselves from the health risks posed by climate change; and

2. That our AMA will make available a prototype presentation and lecture notes on the intersection of climate change and health for use in undergraduate, graduate, and continuing medical education; and

3. That our AMA will communicate this policy to the appropriate accrediting organizations such as the Commission on Osteopathic College Accreditation and the Liaison Committee on Medical Education.
Global Climate Change and Children’s Health

“…Failure to take prompt, substantive action would be an act of injustice to all children.”

1. Work to promote medical educational opportunities regarding the effects of climate change on the environment and child health. Programs during medical school and residency, as well as continuing medical education, can inform pediatricians on current and anticipated effects.

5. Work to ensure that concepts related to the pediatric health implications of climate change are part of pediatric training and curricula.

November 2015

November 2007

https://pediatrics.aappublications.org/content/136/5/992
Urgency and the balance of time

To limit to 1.5°C -
Reduce global emissions by 45% below 2010 levels by 2030 and be “net zero” by 2050.

—IPCC Special Report on Global Warming of 1.5°C
Engagement in sustainability initiatives and climate action go hand-in-hand with wellness.

“Climate Trauma”
Volume: 11 Issue 1: February 25, 2019

Burnt out
On fire

Image; verywellmind.com
Physician image: Athena health
Earth image: vox.com
Attention to the climate crisis is integral—and essential—to the missions of our organizations.
**Big themes**

- Acknowledge the value of time
- Start in your realm
- Partner (co-create!) with your students and residents
- Link to existing structures and topics (and events!)
Overview

Pediatrics global health track

M3-M4 elective

Residency ed framework

M1-M2 foundations

Development

Implementation
• Major themes each week
  • Climate change and emerging challenges
  • Health equity and social justice
  • Natural disasters, climate impacts, and solutions for the healthcare sector
  • Climate communication
• 17 lectures by all-star guest lecturers (live-virtual with recordings available)
• Opened up to students across the country
  • 230 registrants
  • 30 institutions represented

April 2020
Small groups and student engagement

Small Group Topics
• Adapting your differential to a changing climate
• Climate change and ethics in medicine
• Climate disasters and resilient healthcare
• Speaking climate to patients
• Student-led presentations

Student Projects
• Climate by systems “chalk talks”
• Final project
  • Heat sensitive medications table
  • Patient resources/recourses for environmental determinates of health
  • Recommendations for Emory’s healthcare sustainability plan
• 55 word reflections
The augmenter of all things unequal
It begins the moment you’re not but 200 cells.
But you’re strong.
Who knew it permeated the air you breath,
the water you drink, the food you eat, the
school you learn in?
But you are resilient.
Yet, you see, you shouldn’t have to be
anything other than you.

~Emaline Laney

How has climate change imprinted on our consciousness?
Emaciated bears clinging to a solitary ice float.
Dumpsters drifting through flooded boulevards.
Family odysseys through Aegean islands to makeshift cities.
Urate crystals on microscopy, silica transported across alveoli.
A groundswell, not of water, but of doctors, patients, and those who care for justice and a livable planet.

~ Benjamin Rabin
Overview

2017

Pediatrics global health track

2018

M3-M4 elective

Residency ed framework

M1-M2 foundations

2019

2020

2021
Climate Change and the Practice of Medicine
Essentials for Resident Education

Philipsborn, Rebecca Pass MD, MPA; Sheffield, Perry MD, MPH; White, Andrew MD; Osta, Amanda MD; Anderson, Marsha S. MD; Bernstein, Aaron MD, MPH  

Author Information

Academic Medicine: September 8, 2020 - Volume Publish Ahead of Print - Issue - 
doi: 10.1097/ACM.0000000000003719
Collaborators

• Perry Sheffield – Icahn School of Medicine at Mt. Sinai

• Andrew White – Washington University School of Medicine

• Amanda Osta – University of Illinois

• Marsha Anderson – University of Colorado School of Medicine

• Ari Bernstein – Harvard Medical School & Boston Children’s Hospital
A curricular framework linked to ACGME core competencies, detailing how climate change harms health…
Requires adaptation in our clinical practice…

BEAT THE HEAT: Extreme Heat

Heat-related deaths are preventable

WHAT:

Extreme heat or heat waves occur when the temperature reaches extremely high levels or when the combination of heat and humidity causes the air to become oppressive.

WHO:

- Children
- Older adults
- Outside workers
- People with disabilities

More males than females are affected

https://www.cdc.gov/cpr/infographics/beattheheat.htm

Additional Items to Consider Adding to an Emergency Supply Kit:

- Prescription medications and glasses
- Infant formula and diapers
- Pet food and extra water for your pet
- Important family documents such as copies of insurance policies, identification and bank account records in a waterproof, portable container
- Cash or traveler’s checks and change
- Emergency reference material such as a first aid book or information from www.ready.gov
- Sleeping bag or warm blanket for each person. Consider additional bedding if you live in a cold-weather climate.
- Complete change of clothing including a long sleeved shirt, long pants and sturdy shoes. Consider additional clothing if you live in a cold-weather climate.
- Household chlorine bleach and medicine dropper – When diluted nine parts water to one part bleach, bleach can be used as a disinfectant. Or in an emergency, you can use it to treat water by using 16 drops of regular household liquid bleach per gallon of water. Do not use scented, color safe or bleaches with added cleaners.
- Fire Extinguisher
- Matches in a waterproof container
- Feminine supplies and personal hygiene items
- Mess kits, paper cups, plates and plastic utensils, paper towels
- Paper and pencil
- Books, games, puzzles or other activities for children

Hospitals face critical shortage of IV bags due to Puerto Rico hurricane

Hurricane Maria crippled a key maker of fluid bags, and as ‘wellness’ clinics pay a 600% markup, hospitals unable to afford them scramble to make do without

...and disrupts healthcare delivery.
Appendix 1
(Continued)

<table>
<thead>
<tr>
<th>Learning objectives</th>
<th>ACGME competency*</th>
<th>Core or advanced objective*</th>
<th>Learning formats*</th>
<th>Assessment strategies</th>
<th>Curricular points and notes</th>
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<tr>
<td>Identify individual-specific risk factors for climate-related illnesses.</td>
<td>MK, PC</td>
<td>Core</td>
<td>Small group, Clinical rotations, Standardized patients</td>
<td>Standardized patient checklist, Oral presentations (rounds), Clinical evaluations, Chart audits</td>
<td>Individual factors that put patients at greater risk for climate-related illnesses include the following: Young or older age, Pregnancy, Sports participation or outdoor occupation, Exertion, Chronic medical conditions, Linguistic isolation, Structural inequities in the built environment and structural racism, Lack of family resources (poverty, homelessness: lack of reliable, safe transportation), Lack of community resources (lack of shelter, no warning systems for severe weather or air quality), and Family displacement and/or separation from family members.</td>
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Create patient-tailored heat action plans, asthma/chronic lung disease action plans, disaster preparedness plans, and/or other appropriate guidance with consideration of local climate risks. | PC | Core, advanced | Small group, Clinical rotations, Standardized patients | Review of drafted plans, Oral presentation (rounds), OSCE, Chart audits | Disaster preparedness plans should be tailored based on climate risk, health status of family members, food and water supplies, medication supplies, need of a generator (for loss of power), location of shelters, etc. |

A lever on causes of child death

Chart: UN Inter-agency Group for Child Mortality Estimation (UN IGME), 'Levels & Trends in Child Mortality: Report 2019

EMORY PEDIATRIC GLOBAL HEALTH TRACK PRESENTS:
FOOD FOR THOUGHT:
GLOBAL CHILD HEALTH WEEK 2021
FOOD SECURITY AND CHILD NUTRITION

JOIN US!

JANUARY 13 8:00AM EGGLESTON GRAND ROUNDS
NATHANIEL UTCMTANN, MD, JD, MS
Natividad Medical Center
"Healthy Children, Healthy Food, Healthy Planet: Planting Seeds of Stewardship for a Just and Sustainable Future"
To register, CLICK HERE:

JANUARY 14 8:00AM RESIDENT GRAND ROUNDS
5-7PM RESIDENT CORE CURRICULUM - OPEN TO ALL
PRANAY SINHA, MD BOSTON UNIVERSITY
"Meals as Medicines: Addressing undernutrition to end the TB epidemic"

KHALIAH JOHNSON, MD EMORY UNIVERSITY
"Food insecurity and serious illness: Considering the Impact in Pediatric HIV Patients and Families"

For more information and to sign up for the week’s Food Waste Challenge Click Here:
Contact: Preethi Rajan prajan@emory.edu

STEP 1: START ANEW! GET RID OF THOSE OLD LEFT OVERS, THE WAY EXPIRED CONDIMENTS!

FOOD FOR THOUGHT: IMAGINE THROWING AWAY 1 BAG OF GROCERIES OUT OF EVERY 3! THAT IS OUR SITUATION IN THE US!

How often do you throw away leftovers that you didn’t eat

WEEKLY 58%
MONTHLY 42%
Overview

- Pediatrics global health track: 2017-2020
- M3-M4 elective: 2021
- Residency ed framework: 2017-2020
- M1-M2 foundations: 2017-2019
Timeline for development

Climate and Environmental Health Curriculum Development Timeline (2019)

- **February**: Identified climate and health mentor
- **May–June**: Brainstormed and outlined curriculum proposal
- **June–August**: Real-time identification of longitudinal climate curricular links
- **September**: Presented proposal to faculty-led curriculum subcommittee.
- **November**: Met with Pre-clinical Curriculum Director to plan implementation

**May**: Held climate and health interdisciplinary event for students

**June**: Met with senior faculty member to discuss curricular feasibility

**August**: Presented proposal to Student Curriculum Committee

**October**: Proposal shared and approved by Executive Curriculum Committee

**November**: Ongoing implementation

**At present**: It’s a process…and that’s OK.

Graphic thanks to: Emaline Laney and Ben Rabin
Climate change intensifies drivers of common illnesses

- Assess for environmental determinants of health
- Talk to patients about exposures
- Know & refer to services in your community
- Advocate for big-picture change

Learn the details of medicine. Don’t forget the big picture.
Process for implementation

Support with:

• Slide or small group content
• References
• Talking points
• Tailored to each lecturer
• Sensitive to time
Pulmonology Module

• Small group – pulmonary function tests, environmental determinants, redlining and racial justice

• Lectures
  • Asthma - Learning objective: Illustrate how particulate matter air pollution affects respiratory health in children and adults.
  • Pediatric respiratory disorders - Learning objective: Describe how environmental pollution compromises pulmonary function and lung development.
  • COPD - List sources of particulate matter pollution and differentiate between coarse (PM10) and fine (PM2.5) particulate matter.

• Next round: student test questions and evaluations
Lessons learned for M1-M2 curriculum

- Form partnerships early on
- Space is tight
- Focus on pathophysiology is paramount
- Content should be adaptable
- Prioritize the evidence base
- Engage faculty and student leaders in social justice

Graphic thanks to: Ben Rabin and Emaline Laney
Robert S. Hascall Student Sustainability Innovator Award

Emaline Laney
Doctor of Medicine
Emory University ‘22

Benjamin Rabin
MD/MPH
Emory University ‘23

@EmoryMSCA
The way forward

- Adapt as we go
- Continue with co-creation of knowledge framework
- The process is important
- Evaluation
Realms of synergy across the academic medical center

• Sustainability & wellness initiatives
• Social medicine and racial justice
• Patient quality and safety, quality improvement
• Antibiotic stewardship
• Research efforts and programs
• Pediatrics & Global Health
• State professional societies and advocacy
• ??Recruitment
It takes a village...
Resources referenced

Resident Curriculum Framework:

Perspective on M1-M2 Curricular Implementation @Emory:

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1:30pm -  Hiking Activity
Climate Changes Health

Perry Sheffield, MD, MPH and Lindsay Clark, MS2
Icahn School of Medicine at Mount Sinai
New York, NY
May 8, 2021
Introducing the Climate Change Curriculum Infusion Project

• Climate change…the greatest threat AND opportunity to health of the 21st century

• New disciplines like planetary health are emerging

• The CCCIP project addresses the gap in medical education linking the global environment to human health
Climate Change Curriculum Infusion Project

• Climate change concepts and specific health examples will enhance existing didactic content

• Unique footer on slides designate content that is part of the CCCIP
How will this work?

Existing content

Climate and health content added in between

Existing content
Association of American Medical Colleges (AAMC) supports a database in its Curriculum Inventory (CI) that aggregates institution reported curricular activity and allows queries through specific search terms…

…search indicated that schools do not report any explicit inclusion of climate change education in their curriculum.

Fortunately, many health topic areas already exist in medical school curricula where climate change education can be incorporated into the discussion simply by broadening the horizon within which these topics are taught. The querying of the AAMC’s database described above did reveal educational activities that touched on topics of concern to climate change education, including basic disease entities such as asthma and Lyme disease.
Our road map...

Guidelines Aim to Bridge the Education Gap on Climate Change and Health

The Global Consortium on Climate and Health Education (GCCHE), an international forum for developing curricula related to the health impacts of climate change, has announced a set of core competencies for students of public health, nursing, and medicine.
CC cross walked with med school competencies…
Sampler of CCCIP slides from a selection of courses…
Art & Science of Medicine

Introduction
The Social Determinants of Health & Climate Change

What does structural racism have to do with climate change and health equity?
In 2014, researchers conducted a survey of Black physician members of the National Medication Association (NMA)\(^1\), who care for a disproportionately high number of Black patients

- 86% said that climate change was relevant to direct patient care
- 61% said that their own patients were already being harmed by climate change

Most commonly occurring climate-related health issues:

- injuries due to severe weather (88%)
- air pollution-related increases in severity of chronic disease (88%)
- increased allergic symptoms (80%)
- heat-related effects (75%)

“I had a patient who had a severe respiratory infection. His family had the same infection. They were housebound due to Hurricane Sandy. This delayed their medical care."

“Extreme weather (heat and dry climate) causing heat strokes and brush fires, with subsequent smog (and) worsening of asthma symptoms”

“In New Orleans there are a lot of patients who experience severe symptoms from asthma. This was a prevalent concern since we are surrounded by two large bodies of water. However following Katrina and its damage now mold has become an unwelcome presence in a lot of patients’ lives.”

“Weather related increases in COPD exacerbation, cardiac failure exacerbations, Sickle crises, asthma…”

“My patient experienced atrocities during hurricane Katrina. As a result, she had PTSD and severe depression that prevented her from holding a stable job. I do believe that with climate change and global warming, we should expect more hurricanes of Katrina’s severity and such resultant mental health issues.”
For reflection:
Consider these Determinants of Vulnerability to the health impacts of climate change.²

Why might the patients of the physicians in the NMA survey carry a high vulnerability burden?
Structural racism exposes Black patients to a high burden of climate and environmental risk factors which adversely affect maternal and fetal outcomes.

Correlations disproportionately strong for Black patients:

- Heat exposure and risk of preterm birth
- Air pollution exposure and risk of low birth weight

**Exposure is high in majority-Black zip codes**

**Heat exposure:**
- intra-urban heat islands and heat injuries during summer months track with historical redlining

**Air pollution exposure:**
- air quality and respiratory illnesses track with deliberate placement of industrial plants and transportation depots

"Climate change is not the Great Equalizer. It is the Great Multiplier."

-Mary Annaişe Heglar, Climate Journalist

The New York Times

Climate Change Tied to Pregnancy Risks, Affecting Black Mothers Most

Original Investigation | Environmental Health
June 18, 2020

Association of Air Pollution and Heat Exposure With Preterm Birth, Low Birth Weight, and Stillbirth in the US
A Systematic Review

Bruce Delisio, MD; Susan Pechacek, MD; Roger Barnes, PhD; et al.
What does **structural racism** have to do with **climate change** and **health equity**?

**FLOODING**

Exposures and Impacts
FEMA flood maps: systemic neglect and exposure to flood-related health risks

An independent 2020 study revealed hidden flood risk across the U.S. which FEMA had failed to identify.

In ⅔ of states, the burden of hidden risk fell disproportionately on communities of color.

Example: Chicago neighborhood of Englewood

https://drrobertbullard.com/

When you start peeling the onion and uncovering layers and layers of inequity that have been subsidized by government, it makes a lot of people uncomfortable.

-Dr. Robert Bullard, “The Father of Environmental Justice”
References


Art & Science of Medicine

The Patient as a Person:
Obtaining an Effective Social History
Thinking about environmental factors:

- **Heat waves/Extreme cold**
  - Do you have enough air conditioning and heat?
  - Do you work outdoors?
  - Do you have trouble paying the fuel bill in winter or electric bills in summer?
  - Do you have someone you could call if it feels too hot or too cold in your home?

- **Disasters**
  - Is your home vulnerable to flooding?
  - If you have life support equipment, are you registered with the electric utility?
Immunology

Lecture: Immunology of Allergic Responses
Ragweed is the primary allergen trigger of fall hay fever.

Ragweed grows faster, produces more pollen per plant, and has higher allergenic content under increased carbon dioxide levels. (Ziska and Caulfield, 2000)

More airborne allergens could mean more asthma attacks.
Medical Microbiology

Lecture: Bacterial biology, mechanisms
Host Factors: Climate Change, Malnutrition, and Immunocompetence

- Extreme weather can destabilize food supply and high CO2 can decrease nutritional content.

- 200 million may be at risk of hunger and zinc deficiency by 2050 (IPCC 2013 and Myers et al Lancet GH 2015)...

- Both are major contributors to immunodeficiency and diarrhea and pneumonia morbidity.
Medical Microbiology

Lecture: Other bacterial GI pathogens
Urban, rural, and agricultural runoff contaminate drinking water, recreational water, and fish/shellfish, especially after more intense precipitation.

As climate changes, the risk of human exposure to water-related pathogens will increase.

For example, the cholera vibrio harbors in algae and copepods (a group of small crustaceans), whose proliferation is affected by sea-surface temperature and other environmental factors.
Medical Microbiology

Lecture: Global perspective
Crop pests and pathogens move polewards in a warming world

Published observations of 612 crop pests and pathogens:

Fitted values (solid line) and standard errors (dashed lines) derived from generalized additive mixed models of latitude against year of observation.

The observed latitudinal trends in many taxa support the hypothesis of global warming-driven pest movement.
Climate change 'will create world's biggest refugee crisis'

Experts warn refugees could number tens of millions in the next decade, and call for a new legal framework to protect the most vulnerable.

---

Matthew Taylor
Thu 2 Nov 2017
02.01 EDT

This article is over 6 months old

---

Tens of millions of people will be forced from their homes by climate change in the next decade, creating the biggest refugee crisis the world has ever seen, according to a new report.

---

Photograph: Peter Caton/Tearfund
Refugee crisis: Is climate change affecting mass migration?

Beyond the fighting and fanaticism, another long-term threat menaces the world's troubled regions.
Brain and Behavior

Lectures:
Child Development
ADHD and Autism
Nutritional and Metabolic Disorders of the CNS
Climate Change and Malnutrition

Extreme weather can destabilize food supply and high CO2 can decrease nutritional content. Changes in rainfall could affect both crop quality and quantity.
Increasing evidence linking air pollution to altered brain development

Particulate air pollutants, APOE alleles and their contributions to cognitive impairment in older women and to amyloidogenesis in experimental models

US wide cohort study with 3647 older women with APOE alleles

Women who had the APOE-e4 variant were nearly three times more likely to develop dementia if they were exposed to high levels of air pollution than APOE-e4 carriers who were not.

Animal models

Transgenic mice with APOE exposed to urban nanosized particulate matter (nPM) over 15 weeks showed increased cerebral β-Amyloid deposits and selective atrophy of hippocampal neurites.

In vitro studies

In vitro nPM exposure of neuroblastoma cells increased the pro-amyloidogenic processing of the amyloid precursor protein.
Progress to date…

First Year

- Fall 2018
- Structures
- Molecular, Cellular, and Genomic Foundations

Second Year

- Fall 2018
- Brain and Behavior
- Cardiovascular
- Pulmonary

Winter Break

Spring Break
About us

We are an international collaboration of medical students and medical school faculty members engaged in implementing climate and sustainability education at our own institutions.

Our Mission

To empower healthcare students and faculty members worldwide to integrate climate and sustainability education into their curricula. We will do this by creating open source educational content and guides for implementation.

Who are we?

We’ll be launching our open source education materials in May 2021!

Coming soon at IMECCS.com
Summary

Clinician-researcher in climate and health +

Med students with sustainability training and/or climate justice interest +

(special sauce) leveraging a groundswell of effort creating novel curriculum interventions

= Mt Sinai Climate Change Curriculum Infusion Project (CCCIP)
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Planting the Seed for Climate and Health Education Efforts at VCU

Sustainable Pharmacy Project

Presented by: Ladan Karim-Nejad & Kelly Pratt
Targeting Student Involvement

- Connecting with larger student organizations
  - Advocacy meeting with SPPAA
- Direct student outreach with monthly General Body Meetings and guest speakers
  - “What questions do you have?”
- Hosting SPP’s first in-person event
  - Less Litter, More Health
- Instagram and Newsletter outreach
  - Sustainable Spotlight Newsletter
Currently

VCU Planetary Report Card: D

Met with Dr. Alice Gahbauer from University of Charleston WV School of Pharmacy and mentioned working with Accreditation Council for Pharmacy Education (ACPE) to integrate topics related pharmaceutical waste into curriculum

Previously had a sustainability elective that was discontinued once the faculty member left the university
Proposal Method

Using a method that’s previously been successful by Georgetown med students, we are aiming to work with a similar method:

- By provident initial framework, it decreases workload for the faculty
- Not changing the current material, only an addition

We also have materials from MS4SF as a starting point ([Climate Change and Health Web Documents](#))

Identify relevant climate and health topics that impact patient health

Prepare proposals and lecture materials

Present proposals to module coordinators and gather dean support for curriculum integration
Room in Curriculum

- **Infectious Diseases Clinical Therapeutics Module:**
  - Vector ecology, parasitic diseases, antimicrobial resistance as a result of mismanaged pharma waste/manufacturing

- **Respiratory Clinical Therapeutics Module:**
  - Air pollution, allergens, inhaler propellants and the environment

- **Foundations Lab:**
  - Medication disposal counseling, advertising disposal services, accepted items, reducing PRN medications, asking about patient home meds

- **Biopharmaceutics:**
  - Inhaler component disposal (MDIs vs. DPIs/SMIs), medication containers and their disposal (#5 plastic, PP), FDA Environmental Risk Assessment as part of NDA process

- **Medicinal chemistry:**
  - Green chemistry, degradation by design (ACS Green Chemistry Institute)

- **IPEC:** interprofessional responsibility

Photo from "Hyderabad's pharmaceutical pollution crisis: Heavy metal and solvent contamination at factories in a major Indian drug manufacturing hub"
Questions?

QR Code: SPP Newsletter
Email: prattkf@vcu.edu karimnejadl@vcu.edu
Instagram: sustainablepharmacyproject
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11:45-12:30 pm Large group discussions on shared insights and VCCA’s role going forward
12:30-1:30 pm  Lunch
1:30pm -  Hiking Activity
Student Clinicians for Climate Action at UVA

Leah Reichle, SOM 2022
Amelia Kirby, SON 2022
Our Organization

- Student Clinicians for Climate Action
  - Chapter of Medical Students for a Sustainable Future: *a network of medical students in the United States who recognize climate change as an urgent threat to health and social justice. Motivated to protect our future patients and the communities we love, we catalyze action to prevent and address the health harms of climate change.*
  - Mulholland club → UVA CIO (Contracted Independent Organization)

- 39 general members
  - 11 members working on PHRC
  - 2 nursing students
Implemented and Ongoing Initiatives

- #trashtag challenge
- SOM and SON conference: Protecting Human Health in a Changing Climate
- UVA Center for Global Health Equity Fireside Chat
- 3 students on the UVA Health System Sustainability Committee
- 1 student on UVA Student Council Sustainability Committee
- Planetary Health Report Card completion
- Meeting between SON students, SOM students, and original creators of PHRC
### UVA Planetary Health Report Card Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>C</td>
</tr>
<tr>
<td>Planetary Health Curriculum</td>
<td>D-</td>
</tr>
<tr>
<td>Interdisciplinary Research in Health and the Environment</td>
<td>B-</td>
</tr>
<tr>
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<td>D+</td>
</tr>
<tr>
<td>Support for Student-Led Initiatives</td>
<td>B</td>
</tr>
<tr>
<td>Sustainability</td>
<td>B</td>
</tr>
</tbody>
</table>
UVA School of Medicine Current Curriculum
Planetary Health Curriculum: Topics **NOT** Covered

- Sustainable healthcare or planetary health elective courses
- Changing patterns of infectious diseases
- Mental health effects of climate change
- Ecosystem health/food and water security
- Disproportionate burden of climate change and toxins on marginalized populations
- Environmental threats to local community
- Climate health challenges impacting Indigenous communities
- Environmental and health co-benefits of a plant-based diet
- How to have conversations with patients about health effects of climate change
- How to take an environmental history or exposure history
Planetary Health Curriculum: Topics Covered

- Optional lecture by Dr. Enfield in Pulmonary System block: Climate Change and Pulmonary Disease
  - Impacts of extreme heat exposure
  - Impacts of extreme weather events
  - Cardiorespiratory health effects of climate change
- Lecture in Reproductive block: Birth Defects with Prenatal Diagnostic Testing
  - Reproductive health effects of industry-related toxins
- DxRx and High Value Care courses: efficient use of healthcare
  - Waste generated by the healthcare system
Climate Change and Pulmonary Disease: Lecture LO’s

1. Discuss how the evolving nature of climate change and pollution impact human health. Specifically, discuss the impact on human respiratory health.

2. Describe how climate change and pollution influence the utilization of health care.

3. Describe how global warming impacts and influences the role of health care systems.

4. Explain the contributions of health care agencies on climate change.

5. Describe the Acclimatization Thermal Strain Index and its impact on respiratory illness.
Top Priorities

1. Create and incorporate at least 1 learning objective in each preclinical block
2. Organize a Social Issues in Medicine course - possibly community-facing
3. Create a website
   a. Documentation/sustainability of organization
   b. Publicity
   c. Collaboration
   d. Education
Other Goals

- Including climate health topics in clinical vignettes and clinical skills course
- Increased mentorship and collaboration across UVA
  - Center for Global Health Equity
  - Environmental Resilience Institute
  - UVA Sustainability
- Research
- Climate smart healthcare
- Community partnership and engagement
- Environmental justice
Questions?
Agenda

8:00-8:15 am  Welcome, Overview, Introductions
8:15-8:45 am  Climate and Health Curriculum at Emory, GA
8:45-9:15 am  Climate and Health Curriculum in Icahn SOM, NY
9:15-9:35 am  Current Virginia & DC health program initiatives - VCU Pharmacy
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11:45-12:30 pm Large group discussions on shared insights and VCCA’s role going forward
12:30-1:30 pm  Lunch
1:30pm -       Hiking Activity
Climate Health & Medical Sustainability Curriculum Integration
Mission

- Integrate climate and environmental determinants of health into our medical curriculum across preclinical and clinical years
- Approach climate change related health challenges as prospective medical professionals
- Recognize the intersectionality of climate change and environmental justice
- Amplify the importance of climate health in medicine
- Maintain evidence based information and remove any political slants from environmental and climate health
Preclinical and Clinical Curriculum Integration Goals

- Emphasize the direct health effects of climate change and environmental health
- Highlight the disparities and environmental injustices
- Incorporate environmental history taking strategies
- Consolidate existing Georgetown University opportunities
- Develop Environmental Health Longitudinal Track
Student-led Approach to Integration

**IDENTIFY**
relevant topics in climate change and environmental health that directly impacts human health

**RESEARCH**
Using evidence-based strategies and sources for the most up-to-date information on the topic

**PREPARE**
One-page research proposal and lecture material slides with references

**PRESENT**
The research and material to the appropriate module directors and faculty members the research and explain the importance of integration

**INTEGRATE**
Success Stories...

Module Co-Directors: Dr. Cihlar and Dr. Cole

Integrating ID and IRD in our discussion of how climate change impacts health:
Both the range and duration of risk for contracting vector-borne diseases are expanding with changes in precipitation and temperature caused by climate change. In addition, many vector-borne diseases have skin manifestations, requiring a higher index of suspicion for dermatological and water-borne diseases in patients presenting with skin lesions and rashes in previously unaffected geographical regions. Ocean warming, rising sea levels, and the increasing intensity of extreme weather and flooding are associated with waterborne diseases with dermatologic presentations such as Vibrio and harmful algae exposures.

1. Enterics 1 and 2 lectures taught by Dr. Fonzi/

- **Hand Foot Mouth Disease** — As temperatures increase, epidemic viral diseases such as hand-foot-and-mouth disease caused by Coxsackievirus may develop transmission seasons that are longer and more intense. Hand-foot-and-mouth disease is a classic seasonal entervoiral infection in temperate climates. The incidence positively correlates with average temperature and average humidity (Coates et al. 2019).

- **Vibrio species** — Vibrio-related diseases appear to correlate with higher water temperatures and sea-level rise with changes in salinity (Deeb et al. 2018). Vibrio parahaemolyticus and *V. vulnificus* reproduce and proliferate more rapidly in warmer waters (Deeb et al. 2018). Even small changes in peak water temperature have been correlated with local hospital admissions for *V. vulnificus*-associated wound infections, cellulitis, and sepsis (Deeb et al. 2018). Higher than average temperatures in the Gulf of Mexico contribute to higher numbers of *V. vulnificus* illnesses from consuming raw oysters (Deeb et al. 2018). These have numerous clinical implications, including recommending individuals to avoid areas where outbreaks have been reported, reduce oyster consumption, and avoid swimming especially if high risk (Trtanj et al. 2016).
Success Stories...

Dietary Implications of Climate Change

The unprecedented rise in carbon dioxide (CO₂) levels has become the hallmark of the climate change crisis and is associated with increased heat-trapping, rising sea levels, and extreme weather patterns. We often hear about the medical implications of climate change in the context of rising rates of infectious disease, pulmonary diseases from air pollution, or even food insecurity due to drought or changes in seasonal patterns, however, relatively recent research has shown a change in the biochemical distribution of carbohydrates and proteins in crops. This change is significant as it impacts our nutrition and food supply.

As with any change, the shift in the biochemical distribution of nutrients in our food is a result of the laws of thermodynamics. Increased atmospheric CO₂ levels have led to increased photosynthesis in plants, which has impacted the carbohydrate to protein ratio. Agricultural producing countries have noticed changes in the quality of their crops, and these changes have implications for our health and nutrition.

Dietary Implications of Rising CO₂ Levels

More CO₂ + More Heat = More Photosynthesis

- Rising CO₂ levels are expected to change the biochemical distribution of nutrients in rice and wheat grain.
- Increased photosynthesis and carbon fixation will increase carbohydrates but leave less room for proteins and nutrients.
- If atmospheric CO₂ continues to rise as expected (based on current trajectories) food will become less nutritious.

The New York Times

How More Carbon Dioxide Can Make Food Less Nutritious

Carbon dioxide helps plants grow. But a new study shows that rise in carbon dioxide has lowered amounts of several important nutrients.

Climate Change and Cardiovascular Health

Aging, Heat and the Heart

- Fastest growing age group are the elderly -- people are living longer!
- Average temperatures have been steadily increasing.
- Extreme weather patterns leading to increased severity and frequency of heat waves

When exposed to heat for a period of 30 minutes the older age group of 64-81 years (red dots) had:
- Attenuated cardiac output
- Decreased stroke volume
Student-led Curriculum Integration Progress Report

Proposals in-progress:
- Climate change and infectious disease (4 lectures)
- Respiratory health and air pollution (2 lectures)
- Respiratory infections
- Environmental history taking
- Allergies and climate change
- Water intake: Climate change and renal diseases
- Water shortage
- Effects of high temperatures on renal health
- Climate change and mental health
Speaking Engagements

- Invite climate health thought leaders to increase awareness and motivate action among student body members
- One speaker featured every month during the academic year
- Representation ranges from environmental lobbyists to climate change communication experts
IMECCS

An international collaboration of medical students intent on making climate and sustainability education accessible at every medical institution.

Mission

● Empower healthcare students and faculty members worldwide to integrate climate and sustainability education into their curricula
● Create open source educational content and guides for implementation

Long Term PM Exposure and Stroke Incidence

- Prediction for Atherosclerotic Cardiovascular Disease Risk in China (China-PAR) project
- Study >1 million men and women over 15 years
- Long term exposure to ambient PM$_{2.5}$ at relatively high ambient concentrations in China is positively and almost linearly associated with an increased risk of stroke(1)
- Evidence for both hemorrhagic and ischemic strokes(1)

Displaced Populations and Infectious Diseases

- Diphtheria in Bangladesh – 2017
  - Between November 8 and December 25, 2017, a total of 2,204 cases of diphtheria suspected among Rohingya refugees in Cox’s Bazar, Bangladesh (1)
- Cholera in Kenya – 2017
  - 3,976 confirmed cases between January 1 and November 29, 2017 among refugee camps, namely Dadaab and Kakuma (1)
- Cholera in Haiti - 2010
  - Reported to have been imported by Nepalese soldiers as part of a UN peacekeeping mission (1)
  - Spread due to poor sanitation
In the 2020-2021 PHRC, GUSOM scored a...

C overall,
C for curriculum,
B for support for student-led initiatives.

2. Does your medical school curriculum address the relationship between extreme temperature health risks and climate change, as well as the socioeconomic/racial disparities in extreme heat exposure?

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>This topic was explored in depth by the core curriculum.</td>
</tr>
<tr>
<td>2</td>
<td>This topic was briefly covered in the core curriculum.</td>
</tr>
<tr>
<td>1</td>
<td>This topic was covered in elective coursework.</td>
</tr>
<tr>
<td>0</td>
<td>This topic was not covered.</td>
</tr>
</tbody>
</table>

Score explanation: As part of the M1 core curriculum at Georgetown “Environmental Health and Climate Change Workshop,” led by Dr. D.
An extensive discussion on the effects of rising temperatures on heat stress specifically among young athletes.

7. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?

<table>
<thead>
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<tbody>
<tr>
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</tr>
<tr>
<td>0</td>
<td>This topic was not covered.</td>
</tr>
</tbody>
</table>

Score explanation: During the M1 Nutrition & Patient Health Intersession, there were several lectures on food security led by Dr. Yumi Harries, Dr. Kofi Essel, and Katherine Donnelly. The lectures covered “An Approach to Food Insecurity Screening in a Clinical Setting” and “Food Insecurity Identification Management.” However, these lectures did not discuss the relationship between climate change and food security.
Next Steps: Environmental Health Longitudinal Track

- Propose the research and development of a new longitudinal academic track
- Allow medical school students with a vested interest in climate change and environmental health to expand their scholarly repertoire
- Provide environmental health focused research opportunities
- Connect with local and national interest groups
- Provide opportunities for advocacy
- Take advantage of the proximity to the nation’s capital
- Lead a campus sustainability project
Break
Agenda

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1:30pm -    Hiking Activity
Medical Students for a Sustainable Future
VCU School of Medicine
Who We Are

Bobby Scott - rising M2

Danny Walden - rising M3

Lillian Singer, soon to be Dr. Singer!

Gennie Gilson, soon to be Dr. Gilson!
Why does VCU SOM need an environmental group?

Planetary Health Report Card

- 24 schools in North America
  - curriculum
  - research
  - community outreach and advocacy
  - support for students
  - campus sustainability
<table>
<thead>
<tr>
<th>University</th>
<th>Overall</th>
<th>Curriculum</th>
<th>Research</th>
<th>Community Outreach &amp; Advocacy</th>
<th>Support for Student-led Initiatives</th>
<th>Campus Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emory University</td>
<td>A-</td>
<td>B+</td>
<td>A-</td>
<td>B</td>
<td>A</td>
<td>A-</td>
</tr>
<tr>
<td>UC Berkeley-UCSF Joint Medical Program</td>
<td>A-</td>
<td>C+</td>
<td>A-</td>
<td>A</td>
<td>A+</td>
<td>A</td>
</tr>
<tr>
<td>University of California San Francisco</td>
<td>B+</td>
<td>B</td>
<td>A+</td>
<td>B</td>
<td>A-</td>
<td>B+</td>
</tr>
<tr>
<td>Stanford Medical School</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Perelman SOM at University of Pennsylvania</td>
<td>B+</td>
<td>C-</td>
<td>A-</td>
<td>B</td>
<td>B+</td>
<td>B+</td>
</tr>
<tr>
<td>Harvard Medical School</td>
<td>B</td>
<td>C+</td>
<td>B+</td>
<td>A-</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Brown University</td>
<td>B-</td>
<td>C-</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>B-</td>
</tr>
<tr>
<td>University of Washington</td>
<td>B-</td>
<td>D</td>
<td>A-</td>
<td>B</td>
<td>B</td>
<td>B-</td>
</tr>
<tr>
<td>University of California Los Angeles</td>
<td>C+</td>
<td>C-</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>A-</td>
</tr>
<tr>
<td>University of Massachusetts Medical School</td>
<td>C+</td>
<td>B-</td>
<td>D</td>
<td>B</td>
<td>B</td>
<td>C+</td>
</tr>
<tr>
<td>Boston University</td>
<td>C+</td>
<td>D</td>
<td>B+</td>
<td>D</td>
<td>A-</td>
<td>B-</td>
</tr>
<tr>
<td>Georgetown University</td>
<td>C+</td>
<td>C</td>
<td>D+</td>
<td>A-</td>
<td>B</td>
<td>B-</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>C</td>
<td>D-</td>
<td>B-</td>
<td>B</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>University of Arkansas for Medical Sciences</td>
<td>C</td>
<td>B</td>
<td>D-</td>
<td>C</td>
<td>F</td>
<td>A+</td>
</tr>
</tbody>
</table>

Scores within top or bottom 5% awarded + or -, respectively.
School that participated in the 2019-2020 PHRC.
# Planetary Health Report Card

Virginia Commonwealth University

<table>
<thead>
<tr>
<th>Overall</th>
<th>Curriculum</th>
<th>Research</th>
<th>Community Outreach &amp; Advocacy</th>
<th>Support for Student-Led Initiatives</th>
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</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>F</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D+</td>
</tr>
</tbody>
</table>
Medical Students for a Sustainable Future
MS4SF @ VCU

- Mission and values adapted from VCCA and national MS4SF
Our Mission is...

- **Peer Education:** ...to educate ourselves and share our knowledge about the health impacts of climate change with our peers, empowering them to act as agents of positive change regarding climate health.

- **Curriculum:** ...to educate ourselves and share our knowledge about the health impacts of climate change with our professors, and work towards the adoption of climate and health information into our curriculum longitudinally, throughout the four years.

- **Advocacy & Action:** ...to elevate the voices of our patients and neighbors impacted by climate health, by backing sustainable policy and energy choices at VCU, in local government, and in the federal government...to provide space for members to collaborate and generate creative solutions addressing issues of sustainability and to enact them in our VCU and Richmond communities.

- **Research:** ...to use the scientific method to better understand the health impacts of climate change, to keep current with climate health research and resulting advances in technology, and to promote climate health research being undertaken by VCU students.

- **Community Outreach:** ... to familiarize ourselves with the climate health issues specifically facing our local communities, and to engage and partner with them to combat negative health impacts of climate change in ways that are equitable, sustainable, and respectful.
So far...

- ~30 people interested

- 10 students at our first club meeting last week

- Plans to apply for funding in the coming months
Committees

- **Peer Education**: to educate and involve our peers
- **Curriculum**: to bring climate health effects into the curriculum
- **Advocacy & Action**: to back sustainable choices at VCU Health and beyond
- **Research**: to learn from and contribute to the literature on sustainability in healthcare
- **Community Outreach**: to combat local health impacts of climate change
Curriculum Committee

- Develop up to date content to provide **course directors** to increase climate health content within longitudinal curriculum.

- Enable relatively **quick**, valuable **additions** to existing preclinical curriculum.
M4 Climate Health Elective
What other steps can we take to grow MS4SF @ VCU?
Agenda

8:00-8:15 am  Welcome, Overview, Introductions
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1:30pm -     Hiking Activity
Promoting EcoMedical Literacy at GW SMHS

Virginia Clinicians for Climate Action Meeting

8 May 2021
Outline

01 What is EcoMedical Literacy?
EcoMedical literacy (EML) & related competencies

02 Curriculum Evaluation
EML in the current MD Program

03 Recommendations
How to promote EML at GW SMHS

04 Next Steps
Future Steps at GW SMHS
“The ability to access, understand, integrate, and use information about the health-related ecological effects of climate change to deliver and improve medical services.”

(Bell, 2010)
EML Competencies

1. The health impacts of environmental change
2. Sustainable and healthy lifestyles on an individual level
3. Sustainable and healthy societies and communities on a population level
4. The environmental footprint of health services
5. The bioethics of sustainability
Curriculum Evaluation: Methodology

Planetary Health Report Card (PHRC)
- Grades medical schools in 4 domains:
  - Curriculum
  - Research
  - Community Outreach & Advocacy
  - Support for Student-Led Planetary Health Initiatives
- **GWU SMHS 2020 PHRC score of 71%** (Planetary Health Report Card, 2020)

Preclinical curriculum evaluation
- Developed EML search-term list based on peer-reviewed competencies (Rabin, Laney, Philipsborn 2020)
- Applied search term list to database of learning objectives for organ systems, POM, PPS via Python algorithm
- Documented matched results
Where does GW SMHS stand?

Planetary Health Report Card School Results (2020)

The following table presents the individual section grades and overall institutional grade for the GW SMHS on this medical-school-specific planetary health report card.

<table>
<thead>
<tr>
<th>Section</th>
<th>Raw Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planetary Health Curriculum</td>
<td>15 / 28 = 53%</td>
<td>C</td>
</tr>
<tr>
<td>Interdisciplinary Research in Health and Environment</td>
<td>9 / 10 = 90%</td>
<td>A</td>
</tr>
<tr>
<td>Community Outreach and Advocacy in Environment and Health</td>
<td>8 / 13 = 62%</td>
<td>B-</td>
</tr>
<tr>
<td>University Support for Student-led Planetary Health Initiatives</td>
<td>8 / 10 = 80%</td>
<td>A-</td>
</tr>
<tr>
<td>Institutional Grade</td>
<td>Average of four scores above 71%</td>
<td>B</td>
</tr>
</tbody>
</table>

Scores within top or bottom 5% awarded + or -, respectively
Curriculum Evaluation

- **Results**
  - Identified **5 preclinical course objectives** that include EML search terms

- **Limitations**
  - Authors only had access to MS1 and MS2 course materials -- have not evaluated MS3 and MS4 materials fully
  - Lack of access to OME database of session objectives

### Table 1: Course Objective Analysis for EML-related Content

<table>
<thead>
<tr>
<th>Course</th>
<th>Year</th>
<th>Course Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Medicine</td>
<td>MS1</td>
<td>Discuss the biological, psychological, social, environmental, cultural and spiritual aspects of health and disease among individuals and populations. MK3, MK5, ICS1, ICS2, SBP5, P5</td>
</tr>
<tr>
<td>GI/Liver</td>
<td>MS1</td>
<td>Demonstrate how diet, metabolism, genetic and environmental processes work in digestive and health disorders</td>
</tr>
<tr>
<td>PPS1: Domain A (Public Health and Population Health)</td>
<td>MS1</td>
<td>Describe the socio-cultural, environmental, economic, legal, and political determinants of health as well as their role in the health, health behaviors, and health disparities of individuals and populations MK3, MK5, ICS1, SBP5, P5</td>
</tr>
<tr>
<td>PPS2: Domain A: Public Health and Population Health</td>
<td>MS1</td>
<td>Discuss socio-cultural, environmental, economic, legal, and political determinants that impact healthcare and their applications to clinical settings MK3, MK5, ICS1, SBP5, P5</td>
</tr>
<tr>
<td>Repro/Endo</td>
<td>MS2</td>
<td>Describe the impact of genetic, environmental, nutritional, occupational, and psychological factors on endocrine and reproductive function.</td>
</tr>
</tbody>
</table>
Current Initiatives

Medical Students for a Sustainable Future (MS4SF)

- 82 Represented Medical Schools
- Climate Curriculum Proposals for Medical Schools
- MS4 2 week Elective
- Online Climate Change Education

https://drive.google.com/file/d/1L07yOa5CIY3H4rmTyuEo3QGCFQ6WmHjC/view
MD Program Recommendations

A **four-year longitudinal climate & health curriculum** within the MD Program
Integrating EML: A two-pronged approach

**Top-down**
(Faculty-Driven)

- Develop EML-related learning objectives & competencies
- Periodic assessment of EML competencies
- Curriculum development & revision

**Bottom-up**
(Student-Driven)

- Climate & health committee (students & faculty)
- Climate Health Interest Group (CHIG) curriculum support
MD Program Snapshot

**MS1**
- **PPS:** Principles of Planetary Health
- **Organ systems:** EML lecture integration
- **POM:** Environmental history taking
- **Committee:** Elect students to EML committee

**MS2**
- **PPS:** Climate health summit
- **Organ systems:** EML lecture integration
- **POM:** Climate-smart healthcare
- **Committee:** Biannual review

**MS3**
- **Theme:** EML in clinical practice
- **Electives**
- **Advocacy Committee:** Biannual review

**MS4**
- **Theme:** EML on the wards & intersession
- **Electives**
- **Advocacy Committee:** Biannual review
# EML Topics in Preclinical Years

<table>
<thead>
<tr>
<th>Organ Systems</th>
<th>Climate change effects on: elderly populations, infectious disease, diarrheal illness, renal disease, maternal &amp; child health, mental health, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>POM</td>
<td>Environmental history-taking, identifying environmentally-induced illness, climate-smart health care</td>
</tr>
<tr>
<td>PPS</td>
<td>Planetary health principles, environmental justice &amp; racism, forced migration, EML Summit</td>
</tr>
</tbody>
</table>
Sample EML Objectives

<table>
<thead>
<tr>
<th>MODULE</th>
<th>TEACHING FORMAT</th>
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</thead>
<tbody>
<tr>
<td>Introduction to the Health Sciences</td>
<td></td>
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</tbody>
</table>

*Climate and Environmental Health Introduction*

- Define the Anthropocene, planetary health, and climate change. Lecture
- Explain the unequal burden of climate change on the poor, the young, the elderly, communities of color, and those who have contributed least to carbon pollution.
- Outline a climate change-environmental exposure pathway through which climate change affects human health or disrupts healthcare delivery. Small Group

*Discussion of the Climate Crisis and Human Health*

- Delineate the relative contribution of aspects of healthcare delivery to healthcare's carbon footprint.
- Discuss how medical professionals advocate climate solutions among patients and colleagues.

*Rabin et al (2020)*
### Sample EML Objectives

**Cardiology**

- **Congenital Heart Disease**
  - Outline the risk of maternal ambient heat exposure for fetal development and congenital heart disease.  
  - Lecture

- **Atherosclerosis**
  - Describe how air pollution exposure contributes to vascular remodeling and atherosclerosis through oxidative stress and inflammation.  
  - Lecture
  - Interpret how environmental stressors affect cardiovascular mortality and disease burden.

- **End-Stage Congenital Heart Failure and Cardiac Transplant**
  - Examine how natural disasters disrupt healthcare delivery.  
  - Lecture
  - Propose methods to support patients reliant on medical devices (e.g., left ventricular assist device (LVAD) and hemodialysis) in extreme weather scenarios.

*Rabin et al (2020)*
<table>
<thead>
<tr>
<th>Neurology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cerebrovascular Disease</strong></td>
</tr>
<tr>
<td>• Identify temperature extremes as risk factors for acute cerebrovascular accident.</td>
</tr>
<tr>
<td>• Identify heat exposure and pollution as risk factors for cerebrovascular disease.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psychiatry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mental Health and Climate Change</strong></td>
</tr>
<tr>
<td>• Illustrate the consequences of population displacement, food insecurity, and trauma on mental health.</td>
</tr>
<tr>
<td>• Identify the mental health benefits of climate solutions (e.g., bike and walk commuting, green space expansion, and reduced air pollution from clean energy).</td>
</tr>
<tr>
<td>• State how antipsychotic medications influence thermoregulation.</td>
</tr>
<tr>
<td>• Propose ways for communities to cultivate resilience in the face of climate change.</td>
</tr>
</tbody>
</table>
EML on the Wards

- **Intersession**
  - Lectures, small group discussions on EML topics (new research, patient education)

- **Clerkships**
  - Identifying & managing EML-related cases

- **Electives**
  - Focused topics in EML offered to MS3s/MS4s

- **Advocacy**
  - EML-related community engagement (i.e. health promotion initiatives)
Potential Next Steps

01 Establish Climate & Health Committee & assign roles

02 Develop & implement EML objectives & competencies for preclinical and clinical curricula

03 Assess competencies, conduct research, & revise curriculum as needed
Our Team

Advisors
Dr. Hana Akselrod
Dr. Jerome Paulson
Dr. Neelu Tummala

Students
Taylor Brewer, MS1**
Sam Duffy, MS2*
Alexander Dick, MS2*
Chelsea Holbrook, MS1**
Alison Hong, MS1**
Harleen Marwha, MS4
Anna Mattson, MS2*
Rohan Patil, MS1
Savita Potarazu, MS2*
Emily Youner, MPH, MS2*

*Founding members of Climate and Health Interest Group (CHIG)
**Current Executive Board of CHIG
References


Thank you!
8:00-8:15 am  Welcome, Overview, Introductions
8:15-8:45 am  Climate and Health Curriculum at Emory, GA
8:45-9:15 am  Climate and Health Curriculum in Icahn SOM, NY
9:15-9:35 am  Current Virginia & DC health program initiatives - VCU Pharmacy
9:35-9:55 am  Current Virginia & DC health program initiatives - UVA SOM
9:55-10:15 am Current Virginia & DC health program initiatives - Georgetown SOM
10:15-10:30 am Break
10:30-10:50 am Current Virginia & DC health program initiatives - VCU SOM
10:50-11:10 am Current Virginia & DC health program initiatives - GW SOM
11:15-11:45 am Break-out groups on next steps
11:45-12:30 pm Large group discussions on shared insights and VCCA’s role going forward
12:30-1:30 pm  Lunch
1:30pm - Hiking Activity
1) What are challenges and opportunities at your institution?
2) Who are partners at your institution?
3) What climate and health education could your program introduce in fall 2021?
4) What climate and health education might your program introduce in fall 2022?
Agenda

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1:30 pm -      Hiking Activity
Discussions and Next Steps!

1) Connect with partners within your institution
2) Plan for fall 2021
3) Consider opportunities for 2022
4) Stay tuned for VCCA follow-up event this fall!
Tag the event on social media
#VAClimateMedEd, @VA_Clinicians
VA Climate & Health Education Summit

• VCU School of Pharmacy
• VCU School of Medicine
• UVA School of Nursing
• UVA School of Medicine
• Lynchburg University Physician Assistant Program
• VA Tech/Carilion School of Medicine
• Georgetown School of Medicine
• George Washington School of Medicine
• Emory School of Medicine
• Icahn School of Medicine at Mount Sinai
• Shenandoah University Physician Assistant Program
• Eastern Virginia Medical School
VA Climate & Health Education Summit

VCCA faculty - Samantha Ahdoot, Homan Wai
MS4SF - Harleen Marwah
Emory SOM - Rebecca Philipsborn
Icahn SOM - Perry Sheffield, Lindsay Clark
Current Virginia & DC health program initiatives
  • VCU Pharmacy
  • UVA SOM
  • Georgetown SOM
  • VCU SOM
  • GW SOM
Breakout Groups on Next Steps
Large Group Discussion

Student interest groups
Electives
Schools of Public Health Offerings
Integration into curriculum
  • Lectures
  • Lecture slides
  • Workshops/Small Groups
  • OSCE
Research and Scholarship
VA Climate & Health Education Summit

Top-down
(Faculty-Driven)

Bottom-up
(Student-Driven)

Graphics from presentation from GW SOM
Thank you for your enthusiasm and participation

Planning Committee
• Samantha Ahdoot
• Nick Snow
• Homan Wai
• Tammy Moscovich
• John Bagwell

Tag the event on social media #VAClimateMedEd, @VA_Clinicians
Hiking Activity Location

Museum of the Shenandoah Valley

901 Amherst Street
Winchester, VA 22601