Climate Medical Education in Virginia

Creating the future of medicine

Samantha Ahdoot, MD, FAAP
Chair, Virginia Clinicians for Climate Action
Assistant Professor, University of Virginia School of Medicine
Pediatric Associates of Alexandria
Climate Subspecialty by 2035?

Revising the Internal Medicine Program Requirements Using Scenario Planning Internal Medicine 2035 Executive Summary May 2018. Accreditation Council for Graduate Medical Education (ACGME)

• “What residency programs should do to prepare internal medicine residents to practice in 2035? The Program Requirements will need to be flexible to allow programs to individualize residents’ experience, depending on interests and post-residency plans.”

• “New subspecialties will develop, some in response to technological advancements (bio-sensor stress or tech-related anxieties/disorders), others in response to global changes (climate-change medicine), and programs will need to allow residents to pursue such options.”
Climate change is here and impacting our health today.

So why aren’t future health professionals learning about it?

The Virginia Climate and Health Education Collaborative (VCHEC) was established in 2021 to introduce climate education into the curriculum of schools of health training in the Commonwealth. The health of people is intimately connected, across disease and organ systems, with our changing climate reality. Future doctors, nurses, pharmacists and other allied health professionals must be prepared to recognize, diagnose, and treat climate-related health conditions if they are to adequately care for patients in our changing world.

The VCHEC is a collaborative of healthcare trainees, faculty, academic administrators and practicing clinicians who understand the need to incorporate climate education into schools of health training. Members are leading initiatives at institutions across the Commonwealth to bring climate education into the curriculum. This collaborative provides support, resource sharing, and inspiration to health trainees working to ensure that they are prepared clinicians of the future.
Inaugural Summit of Virginia Climate and Health Education Collaborative

May 7-8, 2021
The George Washington Hotel, Winchester, VA

In May of 2021, VCCA sponsored the Inaugural Summit of the VCHEC. This hybrid event included 24 student and faculty representatives who attended either in-person or remotely from seven different schools of health training in Virginia and Washington, D.C.

Goals for the summit included learning about successful models for climate and health programs at other institutions, understanding challenges and strategies for success, creating short and long-term plans for program integration and networking to build a community in Virginia working together towards a common goal.

The Summit was a tremendous success! Students and faculty were inspired by presentations from regional institutions already incorporating climate education into health training. Current Virginia students highlighted the status of progress at their health education institutions, shared lessons learned from their experiences and enjoyed camaraderie with their fellow Virginia students.

We look forward to further development of programs in Virginia and a follow-up convening in the fall of 2021!
Shenandoah University Elective

The Impact of Climate Change on Human Health

- Summer 2021, to repeat 2022
- 10-week elective
- Course Instructor Dr. Nick Snow
- Open to any graduate SU student in the health professions (School of Nursing, School of Pharmacy, School of Health Professions)
Climate Change and Health Elective
1/24/-2/4/2022, to repeat in 2023
4th year medical students
Vital student leadership role
Filled immediately
26 students enrolled (approx. 17% of class)
# UVA SOM Climate and Health Elective

## Week 1 1/24-1/28/2022

<table>
<thead>
<tr>
<th>Monday 1/24</th>
<th>Tuesday 1/25</th>
<th>Wednesday 1/26</th>
<th>Thursday 1/27</th>
<th>Friday 1/28</th>
</tr>
</thead>
</table>

### 8a-9a:
- Opening remarks by elective supervisors
- Register for 1/27 webinar, 2/3 advocacy day

### 9a-12p:
- Preparatory readings and videos (1)
- Introduction to the Science of Climate Change - Dr. Scott Doney

### 1-2p:
- Group discussion

### 3-3:30p:
- Environmental Allergens - Dr. Neelu Tummala

### 3:30-4p:
- Group discussion

### 8-10a:
- Preparatory readings and videos (2)
- Group work on capstone project

### 10-11a:
- Water Quality and Sea Level Impacts - Dr. Kimberly Reece

### 11a-12p:
- Preparatory readings and videos (3)

### 1-2p:
- Climate Change and Infectious Diseases - Dr. Rebecca Dillingham

### 2-4p:
- Work on capstone project

### 2-3p:
- Group discussion

### 3-4p:
- Office Hour by Dr. Lawrence

### 8-10a:
- Preparatory readings and videos (4)

### 10-11a:
- Webinar - Climate, health care and the Race to Zero: A call to action (link provided after registration)

### 11a-12p:
- Charlottesville Heat Mapping Project - Susan Elliott

### 1-2p:
- Extreme Heat and Severe Weather - Dr. Kyle Enfield

### 2-3p:
- Group discussion

### 3-4p:
- Office Hour by Dr. Ahdoott/Capstone project /reading time

## Week 2 1/31-2/4/2022

<table>
<thead>
<tr>
<th>Monday 1/31</th>
<th>Tuesday 2/1</th>
<th>Wednesday 2/2</th>
<th>Thursday 2/3</th>
<th>Friday 2/4</th>
</tr>
</thead>
</table>

### 8-12p:
- Preparatory readings and videos (6)

### 1-2p:
- Office Hour by Dr. Ahdoott/Capstone project /reading time

### 2-3p:
- Sustainability in Healthcare - Dr. Matthew Meyer

### 2-3:30p:
- Climate Change Issues in Global Health - Dr. Marcel Durieux

### 3-3:30p:
- Forced Migration - Dr. Kristie Hadley

### 3-4p:
- Group discussion - led by Dr. Shroeder

### 8-10a:
- Preparatory readings and videos (7)

### 11-12p:
- Climate Change and Mental Health - Kelsey Hudson

### 1-2p:
- Capstone project /reading time

### 2-3p:
- Hospital Sustainability - Chip Goyette

### 3-4p:
- Group discussion - led by Dana Shroeder

### 8-12p:
- Briefing for advocacy training and overview (separate zoom link to come)

### 9-12p:
- Virtual legislative meetings (separate zoom link to come)

### 12-1p:
- Legislative meetings lunch debrief - zoom link here

### 1:30-2:30p:
- Local Advocacy - Susan Kruse from Community Climate Collaborative (C3) in Charlottesville

### 2:30-4p:
- Capstone project /reading time
General Assembly Advocacy Day
Capstone Projects

- Sustainability in Healthcare
- Air Pollution
- Intensifying Allergy Seasons
- Severe Weather
- Extreme Heat
- Environmental Degradation
- Water and Food Supply Impacts
- Mental Health Impacts
Capstone Projects

**THE CHANGING POLLEN SEASON & HOW IT IMPACTS YOU!**

Climate change is making our allergy seasons longer and worse. Here’s what you need to know.

**POLLEN & YOU**

High pollen counts have been associated with asthma exacerbations, seasonal allergy symptoms like runny nose, itchy eyes, and cough, and even difficulty with breathing. The impact of climate change on pollen may affect many patients.

**SPRING IS COMING SOONER**

The peak of the pollen season now occurs 20 days earlier, on average, than it did in 1980. This shift is largely due to rises in global temperature & CO2.

**LONGER POLLEN SEASONS**

The pollen season lasts 8 days longer, on average, than it did in 1980.

**POLLEN COUNTS ARE RISING**

Historically, higher temperatures and carbon dioxide (CO2) levels let plants grow bigger and faster, which increases the amount of pollen they produce. Climate Change Action in Richmond, VA, according to unpublished data from the Science Museum of Virginia.

**ASK YOUR HEALTHCARE PROVIDER**

Research shows that pollen allergies can be prevented by taking allergy medications, like antihistamines and nasal sprays, 2–4 weeks before the allergy season begins.

**WANT MORE INFORMATION?**

Visit www.climateactionproject.org for more information on climate change & how it impacts your health.

---

**Climate Change & Our Changing Allergy Season**

Tomasz Dobrzenski, Lauren Goldbeck, Becca Kowalski

Climate Health in Medicine Elective 2022

---

Virginia Clinicians for Climate Action
Capstone Projects

CAPSTONE PROJECT: ENVIRONMENTAL DEGRADATION
Amaal Bhaloo, Thomas Quisenberry, & Iman Richie
University of Virginia School of Medicine

TABLE OF CONTENTS

01 RHONDA’S STORY
Short story of a woman and her child, experiencing changes in their community’s water supply

02 CRISIS TIMELINE
Recounting the events that lead to the Flint Water Crisis, a violation to human rights

03 CLIMATE CHANGE, OCEAN ACIDIFICATION, & PIPE CORROSION
Exploration and discussion of how climate change and, consequently, ocean acidification contribute to water pipe corrosion

04 VA LEAD EXPOSURE + TAKING ACTION
Discussion of lead exposure in the state of Virginia, as well as cities and counties within the Commonwealth. Discussion of ways we can contribute to cleaner water sources.

KEY POINTS
1. This was not an inevitability
   a. Proper water treatment and early recognition of issue could have mitigated much of the economic and human damage

2. This can happen elsewhere
   a. Flint is not unique – lead pipes are still in place across the USA. The only way to completely prevent this is removal of the pipes.
   b. Ensuring proper water treatment is paramount in every municipality

LEAD CORROSION

- Lead can enter drinking water when plumbing materials that contain lead corrode, especially where the water has high acidity or low mineral content that corrodes pipes and fixtures.
- Higher water temperatures increase the rate of corrosion as well.
**Capstone Projects**

**Extreme Weather in Virginia is becoming more common**

Tornado events in Virginia have doubled over the past two decades, with over 200 tornados in the past 20 years in Virginia. These tornados have caused 441 injuries, 11 deaths, over $250 million in property damage, and over $2 million in crop damage. While studies are ongoing, tornado incidence and a warming climate may indeed have a link.

Flooding has increased in the past century, and will continue to increase. Flooding increases the risk of water contamination, which can cause gastrointestinal, respiratory, and skin infections. Additionally, fast-moving waters can be extremely dangerous.

Extreme heat in Virginia is also becoming much more frequent. Average daily summer high temperatures in parts of Richmond are 3°F greater than averages from the 1960s. Cities experience worse environmental heating due to asphalt (absorbs heat), tall buildings (hinder airflow), and lack of trees (limited shade). Impoverished communities are more vulnerable to extreme heat events.

Preparedness is key when surviving these extreme weather events.

---

**EXTREME WEATHER PREPAREDNESS IN VIRGINIA**

David Watts  
Leah Reichle  
Leah Shabo  
University of Virginia  
Charlottesville, VA

---

**TORNOADES**

- **BEFORE**
  - Have supplies ready in a safe area, in case you get trapped. A flashlight, batteries, whistle, blanket, first aid kit, water, thick-soled boots and a radio are useful. If you have essential medications, create a “go bag” by stashing some in your basement or safe area.

- **DURING**
  - You may be alerted of a tornado by your TV, phone, sirens, or a radio. If these alert you, seek shelter immediately.
  - If you are in a building with a basement, seek shelter in the basement.
  - If you are in a building without a basement, go to a safe room without windows such as a closet, stairwell, or a bathroom with a mattress over the tub.
  - If it is not safe to evacuate, keep a battery-operated AM/FM radio tuned to a local station and follow emergency instructions.
  - If you are stuck inside by rising water, move to a higher floor.
  - Do not use appliances connected to the building’s electrical wiring or plumbing system.
  - Do not travel into areas where water covers the roadway.

- **AFTER**
  - Stay in shelter until the area is clear.
  - Visit for more information: https://www.spc.nose.gov/faqs/tornado/

---

**FLOODING**

- **BEFORE**
  - Know your flood risk using the FEMA Flood Map: https://msc.fema.gov
  - Make an emergency plan with evacuation routes

- **DURING**
  - Wear loose, lightly colored clothes
  - Stay hydrated
  - Take cool showers and baths
  - Check-in with family and friends consistently
  - Avoid high-energy tasks during the day such as yardwork or exercise
  - Make sure your pets have appropriate shade, cooling, and water

---

**EXTREME HEAT**

- Learn the signs of heat-related illness
- Identify public buildings with air conditioning you can access
- Set up an attic, ventilator or fan to reduce hot air accumulation

---

Virginia Clinicians for Climate Action (VCCA)
Capstone Projects

Intensifying Mold Allergies
Impact of Climate Change and Implications for Vulnerable Populations
Ryan Duong, Adrienne Doebrich, and Daniel Rounds

Patient Case: Hurricanes, Mold, & Asthma
Drew is an 8-year-old boy coming to your clinic for an initial visit. He and his family just moved to the area from Houston, Texas.

Drew’s past medical history is notable for asthma. Over the past 4 years, his asthma exacerbations have become more frequent and more severe. During this time frame he has been hospitalized 5 times, requiring intubation twice.

His parents mention that they were living in Houston during Hurricane Harvey in 2017. Their rented house was severely damaged by the storm and flooding. Although they were assured by their landlord that the house was adequately repaired, they continued to experience problems with mold for years following the storm. They did not have the means to leave the area at the time, but say that this was eventually the driving factor for their move away from Houston.

They ask if you Drew’s declining health could be related to his mold exposure.

Vulnerability After Hurricanes and Floods
The Looming Consequences of Breathing Mold
Flooding means health issues that unfold for years.
By James Hamblin

How to Advocate as a Provider
- Identify the issue
  - Understand the effect of climate on health
  - Recognize vulnerable populations
    - Medically & socially vulnerable
- Know your local legislation
  - To inform your patients as well as advocacy efforts
- Understand what interventions can impact change
  - Mitigation & Adaptation
Dear Dr. Kent,

As future physicians being trained at the University of Virginia, we write to you to urgently bring your attention to the pressing topic of climate change and health— a universal issue that currently affects our own patients and is perpetuated by the healthcare industry.

While we understand that the COVID-19 pandemic has guided most of our efforts for the past two years, this is as important, if not a more important issue, that demands our attention now. As you may already know, climate change is arguably one of the most important issues facing our generation today and is cited by many medical groups as the greatest threat to global public health. Unfortunately, a major contributor to this situation is our own healthcare industry as it has been found that the US healthcare system is responsible for 8.5% of national carbon emissions. Globally, this makes our sector the highest contributor to greenhouse gas emissions.

Health system organizations have come to realize that adopting a sustainability plan is not only beneficial for the environment but also has significant economic and health benefits, such as reducing costs, improving patient outcomes, and enhancing staff satisfaction. We applaud the University of Virginia’s current efforts towards environmental change and believe that the next crucial phase will involve honing in on the UVA Health System with interventions on the issues described above. We appreciate your help and hope that you will be able to send a response detailing your thoughts on this topic. As engaged medical students and future physicians, we continue to do our best in advocating for the families and children of Virginia. Thank you for your time and consideration.

Sincerely,

Sara Hauptman
Bharath Rama
Tania Rodriguez-Carpio

References:
2. https://lancet.com/cimate
5. https://www.providence.org/articles/eva_sets_aggressive_sustainability_goals_even_as_it_expands
Dear Senator Deeds,

As future physicians being trained at the University of Virginia and constituents of your district, we write to you to urgently bring your attention to the pressing topic of climate change—a universal issue that currently affects our own patients and all the residents of Southwest Virginia.

We understand that the health care industry is one of the largest contributors to greenhouse gas emissions and is responsible for 8.5% of national carbon emissions. Globally, this makes our sector the highest contributor to greenhouse gas emissions. We stress that the impacts of these increasing emissions are significant and include, but are not limited to cardiovascular disease, increased and more severe asthma, and malnutrition. In a vicious cycle, these conditions will all lead to more healthcare utilization and hence more pollution. However, there are many opportunities for intervention that we can turn to now including focusing efforts on reducing hospital emissions, pursuing clean energy options, and progressing towards a sustainable healthcare supply chain.

As individuals and organizations, there are solutions and tangible examples of how to make progress. For example, the Providence Health & Services hospital network has been successful at implementing policies and frameworks to reach a carbon negative goal by 2030. Similarly, Kaiser Permanente has achieved a carbon neutral status by adopting the Carbon Neutral Protocol developed by Natural Capital Partners.

More locally, the INOVA healthcare system has committed itself towards sustainability in their food supply and in reducing their emissions. These strides toward progress, along with recent legislation and policies such as the Virginia Clean Economy Act of 2020 and the Virginia Carbon Rule, demonstrate the willingness and capacity for coordinated efforts to limit our effects on climate change and therefore protect the health of our state as a whole. As physicians, we have an obligation to do no harm in treating our patients. However, in delivering treatment we cannot ignore the environmental impact, as by extension this affects the health of all our patients. To ensure we may continue to treat all patients and protect the health of all Virginians, we bring to light the pressing need for statewide policy and changes that will curb further environmental pollution and, in doing so, promote future patients’ health. We applaud the state of Virginia’s current efforts towards environmental change and we believe that the next crucial phase will involve honing in on the healthcare sector with interventions on the three scopes described above.

We appreciate your help and hope that you will be able to send a response detailing your thoughts on this topic. As engaged civilians and future healthcare providers, we will continue to do our best in advocating for the families and children of Virginia. Thank you for your time and consideration.

Sincerely,

Sam Hauptman  Dharan Rana  Tania Rodriguez-Carnio
Capstone Projects

A WORLD OF CHANGE

It was so hot last night I couldn’t sleep

I heard mom and dad trying to fix the airconditioning, I don’t think they slept either.
“This was an engaging and powerful elective that offered me elevated confidence both understanding the subject matter and also understanding my role as a physician who can advocate for my patient's health.”

“It was fantastic. The speakers were great as they were from diverse backgrounds. The ability to speak with government leaders and affect change was excellent.”

“This was the first year Climate Change and Health was an elective, yet it felt like it was an elective that had already been running for years.”

“It was an amazing elective. I enjoyed learning about the multiple different aspects of health affected by climate change and diving into specific topics each day.”
Climate and Health Education in VA

VIRGINIA CLIMATE AND HEALTH EDUCATION COLLABORATIVE
Some Personal News!

April Fool’s!!!