Our Approach

1. Pre-clinical Integration
   a. Work directly with Course Directors
   b. Course Companions

2. Interdisciplinary M4 Elective
Pre-clinical Integration

Pre-clinical Integration Process

1. Pick a block
2. Learn the material
3. Present to Course Director
4. Course Companion

Students get immediate access to important learning points

Curriculum integrated

Existing content

New content

medschool.vcu.edu/md
How we approach presentations to Course Directors

- The following slides with a gray background are example slides from our meetings with our Course Directors.
MS4SF: An international Organization

Our Mission

Medical Students for a Sustainable Future is a network of medical students 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.

More About Us

MS4SF: Network of over 410 students, from 105 medical schools, in 36 different countries & states. Aligned by the will to:

- Recognize climate change as an urgent threat to health and social justice
- Work to prevent and address the health harms of climate change
EDUCATE: equip ourselves and our peers with the knowledge to protect our patients from the health impacts of climate change and related environmental hazards

CONNECT: collaborate with fellow students, faculty, and groups within our institution as well as partners in the community to drive Richmond towards a healthier, more equitable, and sustainable future

ACT: the projects we undertake in each committee that move us closer to the future we believe possible
MS4SF @ VCU: Who We Are

- Founded: September 2020
- Students engaged M1-M3
  - 5 Committees M1-M3
    - 18 students
  - We are the curriculum Committee!
    - 9 students
- Student interest M1-M3
  - 78 listserv members
Climate Change: Why Is This A Big Deal?

“The life of every child born today will be profoundly affected by climate change, with populations around the world increasingly facing extremes of weather, food and water insecurity, changing patterns of infectious disease, and a less certain future.” - The Lancet Commission, 2019

AMA, 2019 Policy: "Supports...incorporating the health implications of climate change into the spectrum of medical education..."

"The Medical Society of Virginia supports educating the medical community on the adverse effects of global climate change and incorporating the health implications of climate change into the spectrum of medical education and policymaking." - Policy 40.8.03, 10/16/16
How our group thinks about Climate & Health?

- "Climate change is the greatest global health threat facing the world in the 21st century, but it is also the greatest OPPORTUNITY to redefine the social and environmental determinants of health."

  -Lancet Commission on Health and Climate Change.
### Other Medical Schools

<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>A</td>
<td>B</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>B</td>
</tr>
<tr>
<td>Brown University</td>
<td>B-</td>
<td>C+</td>
<td>B</td>
<td>B</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>C</td>
<td>D</td>
<td>B+</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>C</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>C</td>
<td>D-</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>University of Arkansas for Medical Sciences</td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td>McGill University</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C-</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>University of Hawaiʻi</td>
<td>C</td>
<td>C-</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>University of North Carolina</td>
<td>C</td>
<td>C-</td>
<td>B+</td>
<td>D</td>
<td>B-</td>
<td>D</td>
</tr>
<tr>
<td>Columbia University</td>
<td>C</td>
<td>D</td>
<td>A-</td>
<td>D</td>
<td>B-</td>
<td>B</td>
</tr>
<tr>
<td>University of Utah</td>
<td>C-</td>
<td>C-</td>
<td>D+</td>
<td>B-</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>C-</td>
<td>C-</td>
<td>F</td>
<td>B</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>University of Rochester</td>
<td>C-</td>
<td>C-</td>
<td>D+</td>
<td>B</td>
<td>B-</td>
<td>C</td>
</tr>
<tr>
<td>Creighton University</td>
<td>C-</td>
<td>C-</td>
<td>D+</td>
<td>B</td>
<td>D</td>
<td>B</td>
</tr>
<tr>
<td>Indiana University</td>
<td>D+</td>
<td>C-</td>
<td>D</td>
<td>F</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Geisel School of Medicine at Dartmouth</td>
<td>D</td>
<td>D-</td>
<td>D</td>
<td>F</td>
<td>A-</td>
<td>D</td>
</tr>
<tr>
<td>Loyola Stritch School of Medicine</td>
<td>D</td>
<td>D-</td>
<td>D</td>
<td>F</td>
<td>A-</td>
<td>D</td>
</tr>
<tr>
<td>Virginia Commonwealth University</td>
<td>D</td>
<td>F</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>
VCU Students Want to Learn About the Health Effects of Climate Change

2022 - 15 respondents

- Yes: 86.7%
- No: 13.3%
- Don't care: 0%
- Yes as long as it is strong evidence-based medicine and not generalized statements: 0%

2023 - 44 respondents

- Yes: 81.8%
- No: 15.9%
- Don't care: 2.3%
- Maybe, can you provide sample topics? Climate and health sounds very broad: 0%

2024 - 22 respondents

- Yes: 95.2%
- No: 4.8%
- Don't care: 0%

2025 - 21 respondents

- Yes: 84.6%
- No: 15.4%
- On my own time: 0%
- 7.7%
VCU Students Are Interested*
*as long as material is brief, relevant, and not political

- **Student interests:**
  - 32 students specified specific areas of interest within climate and health, ranging from air pollution to the social determinants underlying who is most impacted by climate change.

- **Student concerns**
  - 2 comments concerned this is a political topic
  - 2 comments concerned about additional academic burden and stress new material would cause
Our Approach

Provide you with brief, relevant, strong evidence about the health effects of climate change

- Learning objectives
- Lecture slides
- Test questions, if you want

A few points:

1. Most of this is epidemiology
2. We appreciate current efforts to limit extraneous information in our packed curriculum
3. What you and your colleagues include is up to you and them
Who We’ve Worked With So Far

- **Dr. Jefferson**- Immunity and Infection Course (I&I)
  - Integration of changing zoonotic disease patterns due to climate change

- **Dr. Pahuja**- Patient, Physician, & Society (PPS)
  - Two part overview lecture on Climate and Health
    - Part 1- Big picture- introduction to pathways in which climate impacts health
    - Part 2- Localize- introduction to how climate change is impacting health here in Richmond and its entangled relationship with social determinants of health.
Why talk climate in the behavioral sciences block?

New England Journal of Medicine’s page devoted to Climate & Health
End of example slides

- The rest of the presentation consists of the items we are proposing to be integrated in each block.
  - Evidence in the form of **sample slides** and **learning objectives** - make it easy for them!
    - Include specifically where within each lecture this new material might fit.
  - Include citations on slide as well in notes section & at conclusion of presentation.
Blocks Completed

1. Immunity & Infection (I&I)
2. Behavioral Sciences (Psych)
3. Patient, Physician, & Society (PPS)
Lyme Disease

- Most common vector-borne disease in the U.S.¹
- Changing climate means wider *Ixodes* tick range², more tick activity³

---

¹ CDC Surveillance, 2019
² CDC Surveillance, 2019
³ CDC Surveillance, 2019
⁴ CDC Surveillance, 2019
Acute Disasters

- Severe weather events are increasing due to climate change, including heat waves, floods, extreme droughts, and wildfires.

- 25-50% of people will have negative mental health outcomes during disasters.
  - In the year following Hurricane Maria, suicides went up by 16%.

- Catastrophic loss and trauma caused by climate disasters puts individuals at risk for PTSS & PTSD with long-term symptoms like flashbacks and sleep disturbances.
Blocks Completed: Patient Physician Society (PPS)

- 2 hour Lecture
- Part 1
  - Overview of the major pathways by which climate impacts health.
- Part 2
  - Localize these health effects to Richmond, Virginia.
  - Explore the historical and structural factors contributing to the inequitable distribution of climate stressors.
Blocks Completed: Patient Physician Society (PPS)

Part 1: Dr. Bhargavi Chekuri, M.D.

Climate Change and Human Health: A Call to Arms for Health Professionals

Bhargavi Chekuri, MD (Family Medicine)
National Climate and Health Science Policy Fellow
University of Colorado School of Medicine
bhargavi.chekuri@cuanschutz.edu

Part 2: Dr. Jeremy Hoffman, Ph.D.

Jeremy S. Hoffman, Ph.D.
David and Jane Cohn Scientist, Science Museum of Virginia
Virginia Commonwealth University
With a lot of help from a lot of other amazing people
Blocks Completed: Patient Physician Society (PPS)

Pre-Session Survey (n=91)

Post-Session Survey (n=176)
Blocks Completed: Patient Physician Society (PPS)

**Pre-Session Survey (n=91)**

- Q4 - I am able to identify populations that are more vulnerable to health impacts of climate change
- Q5 - I know enough to advocate in my community to reduce inequitable environmental impacts on health
- Q6 - I feel motivated to advocate for environmental justice in my community

**Post-Session Survey (n=176)**

- Q4 - I am able to identify populations that are more vulnerable to health impacts of climate change
- Q5 - I know enough to advocate in my community to reduce inequitable environmental impacts on health
- Q6 - I feel motivated to advocate for environmental justice in my community
Course Companions

**Goal:** Expose students to the climate impacts relevant to the body system they are studying in real time.

**How:** Give students multiple ways to engage with the material

- **Guest Speaker/Lunch Lecture**
- **High yield Infographic**
- **Resources for a deeper dive**
Course Companions: GI Example

- **Guest speaker:**
  - Dr. Snow
- Thank you!
M4 Elective

- Coming next January!
- Interdisciplinary! With VCU School of Pharmacy
- 4 weeks:
  - 2 weeks of climate knowledge, including effects of climate change, healthcare’s contribution, changing diseases
  - Advocacy Day
  - ~2 weeks of independent project: advocacy, hospital QI, etc
Questions?