Promoting EcoMedical Literacy at GW SMHS

Virginia Clinicians for Climate Action Meeting

8 May 2021
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)

<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>
<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/1L07y0s5CYnH4m7yuE03QEQQSwmHjC/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

**PPS:** Principles of Planetary Health

**Organ systems:** EML lecture integration

**POM:** Environmental history taking

**Committee:** Elect students to EML committee

**Theme:** EML on the wards & intersession

**Electives Advocacy Committee:** biannual review

---

**MS1**

**PPS:** Climate health summit

**Organ systems:** EML lecture integration

**POM:** Climate-smart healthcare

**Committee:** biannual review

---

**MS2**

**Theme:** EML in clinical practice

**Electives Advocacy Committee:** biannual review

---

**MS3**

---

**MS4**
EML Topics in Preclinical Years

- **Organ Systems**: Climate change effects on: elderly populations, infectious disease, diarrheal illness, renal disease, maternal & child health, mental health, etc.
- **POM**: Environmental history-taking, identifying environmentally-induced illness, climate-smart health care
- **PPS**: Planetary health principles, environmental justice & racism, forced migration, EML Summit
Table 1. Climate and health learning objectives for preclinical medical education: linked to existing content.

<table>
<thead>
<tr>
<th>MODULE</th>
<th>TEACHING FORMAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to the Health Sciences</td>
<td></td>
</tr>
<tr>
<td><strong>Climate and Environmental Health Introduction</strong></td>
<td></td>
</tr>
<tr>
<td>• Define the Anthropocene, planetary health, and climate change.</td>
<td>Lecture</td>
</tr>
<tr>
<td>• 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.</td>
<td></td>
</tr>
<tr>
<td>• Outline a climate change-environmental exposure pathway through which climate change affects human health or disrupts healthcare delivery.</td>
<td></td>
</tr>
<tr>
<td><strong>Discussion of the Climate Crisis and Human Health</strong></td>
<td></td>
</tr>
<tr>
<td>• Delineate the relative contribution of aspects of healthcare delivery to healthcare’s carbon footprint.</td>
<td>Small Group</td>
</tr>
<tr>
<td>• Discuss how medical professionals advocate climate solutions among patients and colleagues.</td>
<td></td>
</tr>
</tbody>
</table>
# Sample EML Objectives

**Cardiology**

*Congenital Heart Disease*
- Outline the risk of maternal ambient heat exposure for fetal development and congenital heart disease.  
  
  **Atherosclerosis**
- Describe how air pollution exposure contributes to vascular remodeling and atherosclerosis through oxidative stress and inflammation.  
  
  - 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.
- Propose methods to support patients reliant on medical devices (eg, left ventricular assist device (LVAD) and hemodialysis) in extreme weather scenarios.

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

## Neurology

**Cerebrovascular Disease**
- Identify temperature extremes as risk factors for acute cerebrovascular accident.
- Identify heat exposure and pollution as risk factors for cerebrovascular disease.

## Psychiatry

**Mental Health and Climate Change**
- Illustrate the consequences of population displacement, food insecurity, and trauma on mental health.
- Identify the mental health benefits of climate solutions (e.g., bike and walk commuting, green space expansion, and reduced air pollution from clean energy).
- State how antipsychotic medications influence thermoregulation.
- Propose ways for communities to cultivate resilience in the face of climate change.

*Rabin et al (2020)*
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 Marwah, 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!