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# Planetary Health Report Card (Medicine): *Geisel School of Medicine*

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Dartmouth  
GEISEL SCHOOL OF  
MEDICINE

2022-2023 Contributing Team:

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## Summary of Findings

Overall	C+
<u>Curriculum</u>	C
<ul style="list-style-type: none"> <li>Planetary health (PH) is inadequately covered in the core curriculum, but efforts are being made to incorporate it. Electives focused on planetary health have been proposed at Geisel, which is an exciting development. Ways that climate change is impacting specific health outcomes is where Geisel has focused its curricular attention, but the overall environmental impact of the healthcare system itself and aspects of sustainable clinical practice require incorporation.</li> <li><b>Recommendations:</b> Topic areas where planetary health could be incorporated are noted in the score explanations. Discussing aspects of planetary health with patients should be added to the <i>On Doctoring</i> Curriculum. PH connections should be added to core course objectives.</li> </ul>	
<u>Interdisciplinary Research</u>	B-
<ul style="list-style-type: none"> <li>Dartmouth lacks an institute for planetary health research, yet has some research underway in this area. Research related to PH (i.e. waste audits, impacts of air pollution, or climate change modeling) is led by independent researchers in various departments and is not centralized or easily accessible.</li> <li><b>Recommendations:</b> The medical school should commit to recruitment of researchers interested in PH and identify researchers at the institution who are already doing work in this area. Forming a centralized website for projects related to PH and healthcare sustainability would help to increase transparency in this area.</li> </ul>	
<u>Community Outreach and Advocacy</u>	C
<ul style="list-style-type: none"> <li>Healthcare sustainability is not transparent within the medical school or at our affiliated hospitals, but the MS4SF chapter at Geisel is working to expand connections within sustainability across the campus. We hosted a public Earth Day celebration to bridge the gap between climate change and health in our community in April 2022. Several Grand Rounds speakers at DHMC also focused on PH topics in 2022.</li> <li><b>Recommendations:</b> Continued administrative support of student involvement in healthcare sustainability efforts and direct partnership with community organizations such as NH Healthcare Workers for Climate Action to further educate about planetary health within the Dartmouth community is needed.</li> </ul>	
<u>Support for Student-Led Initiatives</u>	A-
<ul style="list-style-type: none"> <li>Dartmouth College has a number of established resources available to undergraduates and medical students, including funding for projects and sustainability initiatives. Most medical students are unaware of these opportunities, however, and Geisel does not have active relationships with departments hosting these grants.</li> <li><b>Recommendations:</b> The medical school administration could further support student initiatives by ensuring medical students are aware of existing opportunities and developing a student fellowship dedicated to PH.</li> </ul>	
<u>Campus Sustainability</u>	D
<ul style="list-style-type: none"> <li>Dartmouth College has a well integrated Sustainability Office that is involved in green construction, sustainable food and supply procurement, initiatives related to divestment, and community engagement around sustainability. However, they operate separately from the medical school.</li> <li><b>Recommendations:</b> Geisel could benefit from enhanced communication with the Sustainability Office to increase green practices including sustainable purchasing, transportation initiatives, laboratory sustainability, and waste management.</li> </ul>	

# Statement of Purpose

*Planetary health is human health.*

The Planetary Health Alliance describes planetary health as “a solutions-oriented, transdisciplinary field and social movement focused on analyzing and addressing the impacts of human disruptions to Earth’s natural systems on human health and all life on Earth.” This definition is intentionally broad, intended to encompass the multitude of ways that the environment can affect health, including water scarcity, changing food systems, urbanization, biodiversity shifts, natural disasters, climate change, changing land use and land cover, global pollution, and changing biogeochemical flows. The health of humanity is dependent on our environment, and our environment is changing rapidly and in disastrous ways. Although the World Health Organization has called climate change “the greatest threat to global health in the 21st century,” many medical school’s institutional priorities do not reflect the urgency of this danger to human health.

As future health professionals, we must be prepared to address the impacts of human-caused environmental changes on our patients’ health. This preparation is in the hands of the institutions providing our medical training. It is imperative that we hold our institutions accountable for educating medical students about the health impacts of climate change and other anthropogenic environmental changes, generating research to better understand health impacts and solutions, supporting related student initiatives, embracing sustainable practices as much as possible, and engaging with surrounding communities that are most affected by environmental threats. Because climate change and environmental threats disproportionately affect vulnerable populations (for example, communities of color, older adults sensitive to health threats, and individuals in low-resource settings), these issues are inherently ones of equity and justice.

With the purpose of increasing planetary health awareness and accountability among medical schools, we have created a Planetary Health Report Card that medical students internationally can use to grade and compare their home institutions on an annual basis. This medical-student-driven initiative aims to compare medical schools nationally and internationally on the basis of discrete metrics in five main category areas: 1) planetary health curriculum, 2) interdisciplinary research in health and environment, 3) university support for student planetary health initiatives, and 4) community outreach centered on environmental health impacts 5) medical school campus sustainability.

# Definitions & Other Considerations

## Definitions:

- **Planetary Health:** is described by the Planetary Health Alliance as “the health of human civilization and the state of the natural systems on which it depends.” For example, topics such as climate change, declining biodiversity, shortages of arable land and freshwater, and pollution would all fall under the realm of planetary health. Both planetary health and traditional ‘environmental health’ examine the relationship between human health and the external environment, including extreme temperatures, chemicals, vector-borne diseases, etc. Planetary health explicitly concerns itself with the potential health harms associated with human-caused perturbations of natural systems. Therefore, the human health focus of planetary health makes the field well-adapted for the context of medical school education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term “planetary health” to satisfy the metric.
- **Sustainable Healthcare:** As defined by the Academy of Royal Colleges, sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental, and social constraints and demands within health care settings. A sustainable healthcare system maintains population health, reduces disease burden and minimizes use of healthcare services.
- **Education for Sustainable Healthcare (ESH):** is defined as the process of equipping current and future health professionals with the knowledge, attitudes, skills and capacity to provide environmentally sustainable services through health professional education, thus working to decrease the enormous environmental impact of the healthcare industry. Planetary Health Education is an integral part of this education rather than an end in itself. This is because knowledge on Planetary Health is required to be able to fully understand the necessity of sustainable healthcare as well as being part of the broader knowledge needed to fully protect and promote health. In summary, ESH is covered by the three Priority Learning Outcomes of the Centre of Sustainable Healthcare below, and Planetary Health Education is embraced in the first learning objective and is a fundamental requirement to achieve learning outcomes 2 and 3:
  1. Describe how the environment and human health interact at different levels.
  2. Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems.
  3. Discuss how the duty of a doctor to protect and promote health is shaped by the dependence of human health on the local and global environment.
- **Medical School vs. Institution:** When “medical school” is specified in the report card, this only refers to curriculum and resources offered by the School of Medicine and does not include offerings from other parts of the university (e.g. undergraduate departments (USA), other related departments (e.g. Public Health, Population Health departments). In contrast, when “institution” is specified in the report card, we are referring to the university more

broadly. Any resource reasonably accessible by medical students, no matter where in the institution the resource comes from or if it is specifically targeted for medical students, can meet this metric.

- **Environmental history (Metric #19 in Curriculum Section):** This is a series of questions providers are taught to ask during medical encounters that elicits patients' exposures and environmental risk factors. Historically, this has included consideration of exposures like pesticides, asbestos, and lead, though in the modern era shaped by climate change, it can be expanded to include things like wildfire smoke exposure, air pollution and mold after flooding. Key components include place of residence over the lifecourse, occupational history, food and water sources (e.g. meat from industrial feeding operations, regular fishing in contaminated water, access to clean drinking water), and exposure to air pollution.
- **Elective:** The word "elective" refers to an optional course or lecture series that a medical student can opt to take part in but is not a requirement in the core curriculum. Generally, these elective courses take place in the preclinical curriculum but vary by school.
- **Clerkship:** This is a term used in the USA to refer to placements that medical students go on e.g. Pediatrics, General medicine, Psychiatry. In the UK these are referred to as rotations or placements.

**Other considerations:**

- If there are more than one "tracks" at your medical school with two different curricula (for example, Harvard Medical School has a Pathways and HST curriculum track), you can choose to fill out a report card for each track, or fill out just one report card and average the scores received by each track in cases where the scores are different (see the 2021 Harvard or Oxford report cards as examples).

**Added to our resources last year, the Planetary Health Report Card [Literature Review by Metric](#) collates the evidence behind each of the metrics in the Planetary Health Report Card. It serves as a collection of references for further learning and a resource for those advocating for increased planetary health engagement at their institutions.**

# Planetary Health Curriculum

***Section Overview:*** This section evaluates the integration of relevant planetary health topics into the medical school curriculum. Today's medical students will be on the frontlines of tackling the health effects of climate and other environmental changes. Therefore, it is critical that medical students are trained to understand the health effects of these changes, as well as planetary health issues and principles more broadly. Topics like the changing geography of vector-borne diseases, the health consequences of air pollution, environmental health inequities, and disaster response principles must be part of every medical school's core curriculum.

## *Curriculum: General*

1. Did your <u>medical school</u> offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
3	Yes, the medical school has offered <b>more than one</b> elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered <b>one</b> elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does <b>not</b> have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a <b>lecture</b> on planetary health.
0	No, the medical school has <b>not</b> offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation:</i> In Spring and Fall 2022, the elective “Health and Climate” was offered. Only one student registered for the elective, and it therefore did not take place.</p> <p>An opportunity for improvement in this area would be to remove the restriction placed on students during elective selection. Currently, students are only able to sign up for one elective. When faced with the decision between developing clinical skills in electives such as Ultrasound Basics vs learning about planetary health, students often choose the former. Allowing multiple enrollments would enable students to more holistically pursue their interests.</p>	

## *Curriculum: Health Effects of Climate Change*

2. Does your <u>medical school</u> curriculum address the relationship between extreme heat, health risks, and climate change?	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* The course *Infection, Inflammation, & Immunity* had a two-hour dedicated lecture entitled “Planetary Health and Infectious Disease.” Heat was one topic that was discussed in this lecture. Related to heat, this lecture addressed the learning objective “Apply knowledge of health and climate to clinical management of patients.” This was further integrated into a small group case, in which students discussed climate-related factors affecting a patient’s afflictions and management.

Although aptly timed in the *Infection, Inflammation, & Immunity* course, there remain underutilized areas for integration: e.g. connection to climate change when discussing the intersection of extreme heat and worse outcomes for those with cardiovascular or renal diseases in those respective course areas.

**3. Does your medical school curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* The course *Infection, Inflammation, & Immunity* had a two-hour dedicated lecture entitled “Planetary Health and Infectious Disease.” During this lecture, group discussion of major weather events and natural disasters was used as an ice breaker to the topic, and examples were given of the ways in which these events disproportionately affect already marginalized communities. In a small group case, extreme weather events impacting patient management was discussed at the end of this lecture.

The course *Respiratory Medicine* had an hour-and-a-half dedicated lecture entitled “Environmental Injustice and the Effects on Cardiovascular and Pulmonary Disease.” This lecture addressed extreme weather in the contexts of redlining, air pollution, urban environments, etc, specifically addressing the learning objective “Describe the relationships between indoor and outdoor air pollution and cardiopulmonary health effects.”

**4. Does your medical school curriculum address the impact of climate change on the changing patterns of infectious diseases?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* In the “Planetary Health and Infectious Disease” lecture during the *Infection, Inflammation, & Immunity* course, the concept that infectious diseases are impacted by a variety of factors, including climate, was introduced. It was emphasized that changing climate can bring about changes in the distribution of infectious diseases, such as changes in vector habitat (for example,

increasing incidence of Zika virus in New Hampshire and Lyme Disease in North America as the natural habitat of the disease vector *Ixodes scapularis* extends) and global-scale changes in weather (for example, changes in the distribution of malaria with changing precipitation patterns).

**5. Does your medical school curriculum address the respiratory health effects of climate change and air pollution?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* The course *Respiratory Medicine* had an hour-and-a-half dedicated lecture entitled “Environmental Injustice and the Effects on Cardiovascular and Pulmonary Disease,” which discussed environmental factors that impact pulmonary diseases and health disparity issues that impact the burden of respiratory disease in under-resourced environments. The associated testing objectives are: “Describe the relationships between indoor and outdoor air pollution and cardiopulmonary health effects” and “Analyze the impact of structural inequity on individual and population level exposures to air pollution and associated negative health impacts.”

**6. Does your medical school curriculum address the cardiovascular health effects of climate change, including increased heat?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* Cardiovascular outcomes in relation to air pollution (the effect of chronic inflammatory due to air pollution on the heart) was briefly covered by the two-hour lecture in the M1 *Respiratory Medicine* course entitled “Environmental Racism: Impact of Air Pollution Exposure on Cardiovascular and Pulmonary Outcomes.” The course *Infection, Inflammation, & Immunity* had a two-hour dedicated lecture entitled “Planetary Health and Infectious Disease.” Heat was one topic that was briefly discussed in this lecture. Extreme heat was not a focus, however.

**7. Does your medical school curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.



0	This topic was <b>not</b> covered.
<p><i>Score explanation:</i> This topic is not currently covered. While climate anxiety was briefly acknowledged during the “Planetary Health” lecture in the <i>Infection, Inflammation, &amp; Immunity</i> course, specific mental health effects such as the weather’s impact on depression, anxiety, and PTSD was not discussed. Climate anxiety was likewise not addressed in the Psychiatry curriculum, though this topic could be integrated into lectures on anxiety. This topic could also be integrated into the Year 2 Patients and Populations course, which has a 2 hour dedicated session to global health.</p>	

<b>8. Does your <u>medical school</u> curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation:</i> During the “Planetary Health” lecture of the <i>Infection, Inflammation, &amp; Immunity</i> course, a case study of river flooding due to climate change highlighted the issue of water security. This case study discussed the effects of water changes on livestock, agriculture, and transmission of water-borne infections.</p>	

<b>9. Does your <u>medical school</u> curriculum address the outsized impact of climate change on marginalized populations such as those with low SES, women, communities of color, Indigenous communities, children, homeless populations, and older adults?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation:</i> In the <i>Respiratory Medicine</i> course, M1s had a lecture titled “Environmental Racism: Impact of Air Pollution Exposure on Cardiovascular and Pulmonary Outcomes,” that highlighted redlining in the context of air pollution, and different life expectancies based on neighborhood. The lecture also explicitly addressed racial disparities in regards to health outcomes. This lecture addressed the specific (and testable) learning objective, “Analyze the impact of structural inequity on individual and population-level exposures to air pollution and associated negative health impacts.” The direct association with climate change could be made more clear, however. Notably, the impact of climate change on women, Indigenous communities, children, and older adults could be expanded upon in the curriculum.</p>	

<b>10. Does your <u>medical school</u> curriculum address the unequal regional health impacts of climate change globally?</b>
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3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation:</i> In the M1 <i>Infection, Inflammation, and Immunity</i> course, a lecture called “Health and Climate Change” covered the topic of disproportionate climate change related mortality in areas of the world which have contributed the least to emissions. However, there is ample opportunity to integrate this theme across other core curriculum.</p>	

***Curriculum: Environmental Health & the Effects of Anthropogenic Toxins on Human Health***

<b>11. Does your <u>medical school</u> curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation:</i> This topic is not covered. The closest that the Geisel curriculum has come to addressing the impact of environmental exposures on reproductive health is with regards to organophosphate poisoning, which is covered as part of “Cholinergic Receptor Agonists” pharmacologic lecture in the <i>Cardiovascular Medicine</i> course. However, the increased use of these chemicals and their relation to climate change, pollution, or sustainable agriculture was not addressed. This could easily be added as it is a key research topic that the Children’s Environmental Health and Research Center at Geisel focuses on.</p>	

<b>12. Does your <u>medical school</u> curriculum address important human-caused environmental threats that are relevant to the university’s surrounding community?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation:</i> This topic was covered in the M1 session “Health and Climate Change” that took place during the <i>Infection, Inflammation, and Immunity</i> course. The detection and transmission of Zika Virus in the local New Hampshire area, and the risk this posed to pregnant people, was addressed. In this course, increased incidence of Lyme Disease in the community is also discussed. In the <i>Respiratory Medicine</i> course, the impacts of indoor wood storage and burning on air quality is discussed since it is the primary mode of heating in the surrounding area. Areas to expand include</p>	

discussion of local groundwater contamination cases, increased ALS surrounding the Lake Mascoma region, and increased heat that is of concern to older adults without access to air conditioning.

**13. To what extent does your medical school emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?**

3	Indigenous knowledge and value systems are <b>integrated throughout</b> the medical school's planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included <b>briefly</b> in the core curriculum.
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* This topic is discussed in the M1 elective "Indian Health Service Trip," where students travel to the Bemidji Area in Minnesota to learn about Native American culture and health care. Leading up to the trip, there are four student led seminars and two speakers from Indigenous physicians. These sessions discuss the importance of Indigenous knowledge and value systems and their connection to planetary health. The speaker series are open to all Geisel students, but this topic is not covered in the core curriculum.

**14. Does your medical school curriculum address the outsized impact of anthropogenic environmental toxins on marginalized populations such as those with low SES, women, communities of color, children, homeless populations, Indigenous populations, and older adults?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* After implementation of the Race and Health Equity Longitudinal Curriculum (RHE LC), there are three M1 sessions on environmental racism and discrimination. The *Hematology* lecture called "Pediatrics, Ethics, and Race & Health Equity" discusses disproportionate exposure to environmental toxins and lead poisoning in marginalized populations. A *Foundations* class titled "Equity of Cancer Care in the United States," and a *Patients and Populations* class entitled "Context Session 2: Race in Medicine," discuss redlining and inequitable exposure to poorer air quality and carcinogens. An M1 combined *Respiratory and Cardiovascular* course lecture entitled "Environmental Injustice and the Effects on Cardiovascular and Pulmonary Diseases," addressed inequitable exposures to indoor air pollutants and their physiologic impacts.

**15. Does your medical school curriculum address the environmental and health co-benefits of a plant-based diet?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* In the first year *GI, Metabolism, and Nutrition* course, there is a required 2-hour culinary medicine session in which the effects of plant-based diet on the environment are discussed and students cook a four-part plant-based meal. There was also a standalone class which discusses the environmental and health co-benefits of a plant-based diet in lectures in that course as well.

**16. Does your medical school curriculum address the carbon footprint of healthcare systems?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation:* There was no incorporation of the carbon footprint of the healthcare system in the medical school curriculum. Opportunities to incorporate this include discussing the footprint of anesthetic gasses in the OR rooms, medical waste, and more. Of note, there is an ongoing audit of waste production and the carbon footprint of the endoscopy suite by MS4SF members.

**17. Does your medical school curriculum cover these components of sustainable clinical practice in the core curriculum? (points for each)**

2	The health <b>and</b> environmental <b>co-benefits</b> of <b>avoiding</b> over-medicalization, over-investigation and/or over-treatment
2	The environmental impact of <b>pharmaceuticals</b> and over-prescribing as a cause of climate health harm. Alternatively teaching on <b>deprescribing</b> where possible and its environmental and health co-benefits would fulfill this metric.
1	The health <b>and</b> environmental <b>co-benefits</b> of <b>non-pharmaceutical management</b> of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK.
1	Environmental impact of <b>surgical</b> healthcare on planetary health and the climate crisis, and how can it be mitigated

1	The impact of <b>anesthetic</b> gases on the healthcare carbon footprint and ways to reduce anesthesia environmental impacts, such as total intravenous anesthesia or choosing less environmentally harmful anesthetic gas options with reduced greenhouse gas emissions
1	The impact of <b>inhalers</b> on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	<b>Waste production</b> within healthcare <b>clinics</b> and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting)
	<p><i>Score explanation:</i> Over-medicalization and its role in environmental harm is not discussed in the core curriculum. Polypharmacy was specifically mentioned during the “Heart Failure Seminar” small group case. But this case did not address the role of polypharmacy on the environment and instead only addressed it in the context of whether patients would be able to remember to take their full regimen. Another major opportunity was missed during lectures on cardiovascular pharmaceuticals, which discussed habit change but not how encouraging exercise may also lead to better environmental outcomes like a reduction in carbon emissions from vehicle use. Social prescribing is not addressed in the curriculum. The environmental impact of surgical impact and surgical waste is not discussed. Additionally, the lectures on asthma and respiratory pharmaceuticals in the <i>Respiratory Medicine</i> course both failed to mention the environmental impacts of various types of inhalers or anesthetic gases. Hospital waste is not yet addressed.</p> <p>All of these areas offer room for curricular growth at Geisel.</p>

### *Curriculum: Clinical Applications*

<b>18. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies to have conversations with patients about the health effects of climate change?</b>	
2	Yes, there are strategies introduced for having conversations with patients about climate change in the <b>core</b> curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in <b>elective</b> coursework.
0	No, there are <b>not</b> strategies introduced for having conversations with patients about climate change
<p>This topic is briefly covered in the “Health and Climate Change ” lecture that occurred in the M1 course <i>Infection, Inflammation, and Immunity</i> under the objective “Identify actionable ways to have a positive impact on patient and population health when addressing climate related health threats”. We discussed strategies to establish trust with patients and mitigate stigma around climate change. This topic is also covered via discussions about individual interventions in the “Environmental Racism: Impact of Air Pollution Exposure on Cardiovascular and Pulmonary Outcomes” lecture delivered during the <i>Respiratory Medicine</i> Course. Additionally, while the Structural Vulnerability Assessment Tool introduced during the Patients and Populations course addresses safe living conditions, toxic exposures, and access to healthy foods, students are not instructed on how to guide conversation to link these features with climate change and global health.</p>	

<b>19. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies</b>	
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for taking an environmental history or exposure history?	
2	Yes, the <b>core</b> curriculum includes strategies for taking an environmental history.
1	Only <b>elective</b> coursework includes strategies for taking an environmental history.
0	No, the curriculum does <b>not</b> include strategies for taking an environmental history.
<p><i>Score explanation:</i> In the M1 <i>Hematology</i> course, there is an entire session dedicated to lead exposure in children called Hematology Integrations: Pediatrics, Ethics &amp; Race and Health Equity. The objective “Identify the common presentations, risk factors, and health consequences of lead toxicity in children” was addressed. In the longitudinal curriculum <i>On Doctoring</i>, there is opportunity to further discuss environmental or exposure history taking. Additional environmental exposure histories are taught in select locations, such as when working at the Veterans Affairs Hospital in WRJ, where strategies for taking a detailed history involving exposures during deployment were taught during a didactic session (i.e. Agent orange, burn pits, etc.).</p>	

***Curriculum: Administrative Support for Planetary Health***

20. Is your <b>medical school</b> currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?	
4	Yes, the medical school is currently in the process of making <b>major</b> improvements to ESH/planetary health education.
2	Yes, the medical school is currently in the process of making <b>minor</b> improvements to ESH/planetary health education.
0	No, there are <b>no</b> improvements to planetary health education in progress.
<p><i>Score explanation:</i> There is a recently formed sub-committee focused on planetary health within a medical-school wide group dedicated to making longitudinal curricular changes related to race and health equity. Minor curricular improvements are currently being drafted, but is an ongoing area of collaboration.</p>	

21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the <b>core</b> curriculum?	
6	Planetary health/ESH topics are <b>well integrated</b> into the core medical school curriculum.
4	<b>Some</b> planetary health/ESH topics are appropriately integrated into the core medical student curriculum.
2	Planetary health/ESH is not integrated and is primarily addressed in <b>(a) standalone lecture(s)</b> .
0	There is <b>minimal/no</b> education for sustainable healthcare.
<p><i>Score explanation:</i> At this point, components of planetary health are taught in standalone lectures in multiple courses. Opportunities for further education are advertised during these lectures (ex. Joining MS4SF). While learning objectives related to planetary health are contained within these lectures, these</p>	

learning objectives are not part of broader course objectives. Further integration is therefore needed throughout the core curriculum at Geisel, and there is an ongoing effort among a group of medical students and staff to create more longitudinal incorporation of climate and health themes into the medical school curriculum.

**22. Does your medical school employ a member of faculty to specifically oversee and take responsibility for the incorporation of planetary health and sustainable healthcare as a theme throughout the course?**

1	<b>Yes, the medical school</b> has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	<b>No, the medical school</b> does <b>not</b> have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.

*Score explanation:* There are faculty members who are actively working to incorporate planetary health lectures into the curriculum. Dr. Sarah Crockett is leading the formation of a Climate and Health Working Group on the Longitudinal Curriculum Committee. However, there is not a person who is specifically employed to oversee curricular integration.

**Section Total (37 out of 72)**

**37**

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*Are there additional curriculum resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.*

**Geisel is very supportive of students seeking out individual learning opportunities, such as electives online or through other institutions. Many students also pursue additional degrees, such as a Masters in Public Health, where topics like those noted above can be covered. For example, there is a course called “Environmental Health Policy,” offered through the Dartmouth Institute. Yet, this course is difficult to add into the Geisel curriculum without enrolling in an MPH. We have identified many critical areas where climate change needs to be incorporated into the core curriculum as a result of its far reaching and disparate impacts. The Race and Health Equity Longitudinal Curriculum (RHE LC) is working to incorporate several of these topics into our courses.**

# Interdisciplinary Research

***Section Overview:*** *This section evaluates the quality and quantity of interdisciplinary planetary health research at the medical school and broader institution. Interactions between health and the environment are complex and multifactorial. While climate change has been extensively studied from an environmental science perspective, planetary health is an emerging field. As leading health institutions with talented **researchers** and research resources, medical schools should fund research studying the health effects of climate change and anthropogenic environmental toxins. This obligation is particularly strong because the public and policymakers are more attentive to climate change when its implications for human health are emphasized.*

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your <b>medical school</b> ?	
3	Yes, there are faculty members at the <b>medical school</b> who have a <b>primary</b> research focus in planetary health <b>or</b> healthcare sustainability.
2	Yes, there are individual faculty members at the <b>medical school</b> who are conducting research <b>related</b> to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the <b>institution</b> , but none associated with the medical school.
0	No, there are <b>no</b> planetary health and/or healthcare sustainability researchers at the <b>institution</b> or <b>medical school</b> at this time.
<p><i>Score explanation:</i> There are several faculty members at Geisel who are focused on researching planetary health topics. Dr. Heiko Pohl, a Professor of Gastroenterology, does research focused on the carbon emissions associated with performing endoscopies. Dr. Laura Paulin is an Assistant Professor of Medicine, Section of Pulmonary and Critical Care Medicine, who studies air pollution and its impact on human health. Dr. Elijah Stommel, a Professor of Neurology, studies the implications of a changing climate on Amyotrophic Lateral Sclerosis and other Neurodegenerative Diseases. Outside of the medical school, the graduate program <i>Ecology, Evolution, Environment, and Society (EEES)</i> at Dartmouth has researchers working on projects related to planetary health. For example, the lab of Dr. Kathy Cottingham studies the distribution of Lyme Disease in a changing climate and the health impacts of arsenic exposure. Additionally, Dr. Justin Mankin leads the Dartmouth Climate Modeling and Impacts Group that models aspects of climate change. This is just a sampling of planetary health-related research that is happening on campus.</p>	

2. Is there a dedicated department or institute for interdisciplinary planetary health research at your <b>institution</b> ?	
3	There is <b>at least one</b> dedicated department or institute for interdisciplinary planetary health research.
2	There is <b>not currently</b> a department or institute for interdisciplinary planetary health research, but there are <b>plans</b> to open one in the next 3 years.
1	There is an <b>Occupational and Environmental Health department</b> , but no interdisciplinary department or institute for planetary health research.



0	There is <b>no</b> dedicated department or institute.
<p><i>Score explanation:</i> Dartmouth does work related to environmental exposures in the Children’s Environmental Health and Disease Prevention Research Center. This group is not focused on exposures related to climate change, however. They do research focused on childhood immune function in the context of allergy/asthma and arsenic exposure on child growth and development. Our Environmental Health and Safety department does work related to laboratory safety and waste management. Some researchers engaged in planetary health research are part of the graduate program <i>Ecology, Evolution, Environment, and Society (EEES)</i> at Dartmouth. Other institutes at Dartmouth engaged in climate change-related research include the Irving Institute of Energy and Society, Institute of Arctic Studies, Dartmouth Toxic Metals Superfund Research Program, Revers Center, and The Dartmouth Institute for Health Policy and Clinical Practice. A single institute does not exist to bring together the work underway here that relates aspects of environmental and planetary health.</p>	

3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your <u>medical school</u> ?	
3	Yes, there is a process in which community members impacted by climate and environmental injustice have <b>decision-making power</b> in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice <b>advise</b> the climate + environmental research agenda.
1	<b>No</b> , but there are <b>current efforts</b> to establish a process for community members to advise or make decisions on the research agenda.
0	There is <b>no</b> process, and <b>no</b> efforts to create such a process.
<p><i>Score explanation:</i> There are efforts being made to allow students to partner with the community to implement local changes. For example, there is a Spring 2023 elective being offered, “State Based Health Policy and Advocacy” where students meet New Hampshire legislators and learn about health policy developments on a local level. This would allow the community to guide projects that medical students take on. Though largely, the community does not have a clear way to give input or make decisions about research projects underway at Dartmouth. Since this is a small community, many Dartmouth professors and/or students are part of Vital Communities, Sustainable Hanover, Upper Valley Adaptation Workgroup, and local energy committees where community input can be heard. The Sustainability Office at Dartmouth also recently hosted several public forums related to updates to Our Green Future Report 2.0 where Dartmouth will be outlining new sustainability goals. However, research underway at Dartmouth is led by the investigators and the institution.</p>	

4. Does your <u>institution</u> have a planetary health website that centralizes ongoing and past research related to health and the environment?	
3	There is an <b>easy-to-use, adequately comprehensive</b> website that <b>centralizes</b> various campus resources related to health and the environment including all of the following: upcoming events, leaders in planetary health at your institution, and relevant funding opportunities.
2	There is a website that <b>attempts to centralize</b> various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.

1	The <b>institution</b> has an <b>Office of Sustainability website</b> that includes <b>some</b> resources related to health and the environment.
0	There is <b>no</b> website.
<p><i>Score explanation:</i> Dartmouth College has an Office of Sustainability with a comprehensive <a href="#">website</a> about campus sustainability initiatives. Direct ties to health and the environment are not clear here, however. Additionally, the <a href="#">Children’s Environmental Health and Disease Prevention Research Center</a> also has a website that brings together their research related to pediatric and maternal environmental exposures, but again this is not directly tied to planetary health. The <a href="#">Arthur L. Irving Institute for Energy and Society</a> has information related to energy research. And finally, the <a href="#">Revers Center for Energy, Sustainability, and Innovation</a> has information related to the projects of fellows doing research projects relevant to planetary health. While these exist, they do not centralize projects across campus related to planetary health.</p>	

<b>5. Has your <u>institution</u> recently hosted a conference or symposium on topics related to planetary health?</b>	
4	Yes, the <b>medical school</b> has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	Yes, the <b>institution</b> has hosted at least one conference or symposium on topics related to planetary health in the past year.
2	Yes, the <b>institution</b> has hosted a conference on topics related to planetary health in the past three years.
1	The <b>institution</b> has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the <b>institution</b> has not hosted a conference on topics related to planetary health in the past three years.
<p><i>Score explanation:</i> Geisel’s <a href="#">NNE CO-OP Practice &amp; Community Based Research Network</a> held their 43rd annual conference on the codominant themes of climate and health and political determinants of health on January 27-29, 2023. Additionally, Dartmouth College’s Irving Institute for Energy and Society hosted a <a href="#">conference</a> in October 2022 focused on energy futures, meeting climate targets through renewable energy sources, and global energy access. The Physicians for Human Rights group at the Geisel School of Medicine at Dartmouth hosted a conference on <a href="#">Planetary Health</a> in January 2019.</p>	

<b>6. Is your <u>medical school</u> a member of a national or international planetary health or ESH organization?</b>	
1	Yes, the medical school is a member of a national or international planetary health <b>or</b> ESH organization
0	No, the medical school is <b>not</b> a member of such an organization

*Score explanation:* The Geisel School of Medicine at Dartmouth is a member of the Global Consortium on Climate and Health Education. Dartmouth-Hitchcock Medical Center is also a member of Practice Greenhealth.

**Section Total (11 out of 17)**

**11**

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*Are there additional research resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.*

## Community Outreach and Advocacy

***Section Overview:*** *This section evaluates medical school engagement in community outreach and advocacy efforts associated with planetary health. Researching and teaching planetary health is necessary but not sufficient. It is critical that institutions also directly engage with communities most affected by environmental health harms. Although climate change is a problem largely created by those with power and resources, its impacts fall disproportionately on under-resourced populations and communities of color. Institutions should partner with local communities affected by climate change and pollution to share information about environmental health threats, advocate together for change, and provide opportunities for students to be a part of this work.*

1. Does your <b>medical school</b> partner with community organizations to promote planetary and environmental health?	
3	Yes, the <b>medical school</b> meaningfully partners with <b>multiple</b> community organizations to promote planetary and environmental health.
2	Yes, the <b>medical school</b> meaningfully partners with <b>one</b> community organization to promote planetary and environmental health.
1	The <b>institution</b> partners with community organizations, but the medical school is not part of that partnership.
0	No, there is <b>no</b> such meaningful community partnership.
<p><i>Score explanation:</i> Geisel does not have consistent partnerships with organizations involved in environmental health. Students can independently volunteer with Willing Hands, a local gleaning organization that recovers nutritious food from supermarkets and helps grow nutritious food for pantries in the region. Involvement with this organization is largely student-directed. Additionally, there is the opportunity for students to join the new organization New Hampshire Healthcare Workers for Climate Action. Dartmouth College partners with community groups like Sustainable Hanover or the Upper Valley Adaptation Workgroup to work on getting the town of Hanover, NH to 100% renewable energy sourcing.</p>	

2. Does your <b>medical school</b> offer community-facing courses or events regarding planetary health?	
3	The <b>medical school</b> offers community-facing courses or events at least once every year.
2	The <b>medical school</b> offers courses or events open to the community at least once per year, but they are not primarily created for a community audience.
1	The <b>institution</b> has offered community-facing courses or events, but the <b>medical school</b> was not involved in planning those courses or events.
0	The <b>institution/medical school</b> have not offered such community-facing courses or events.
<p><i>Score explanation:</i> In April 2022, Medical Students for a Sustainable Future partnered with other student groups, including Geisel Yoga, Global Health Scholars, and the Meditation Group, to plan an</p>	

Earth Day Celebration Event at the Dartmouth Organic Farm. We hope to continue this event annually. Students from Geisel, The Dartmouth Institute, faculty from the medical school and hospital, and other members of the community participated. This event is open to the community, but was not created with community members as the intended audience.

There was also a free public lecture at Dartmouth-Hitchcock Health in April 2022 where Dr. Aaron Bernstein, MD, MPH, presented on “Climate Change & Health Equity: A Pediatrician’s Prescription for Effective Climate Action.”

**3. Does your medical school have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?**

2	Yes, all students <b>regularly</b> receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are <b>sometimes</b> included in communication updates.
0	Students <b>do not</b> receive communications about planetary health or sustainable healthcare.

*Score explanation:* No such communication exists at Geisel or at DHMC, and the undergraduates are the Sustainability Office’s target audience. MS4SF has discussed compiling updates to add to our school’s monthly wellness letter, but no such communication has been distributed yet.

**4. Does the institution or main affiliated hospital trust engage in professional education activities targeting individuals post graduation with the aim of ensuring their knowledge and skills in planetary health and sustainable healthcare remain up to date during their professional career?**

2	Yes, the <b>institution</b> or <b>main affiliated hospital trust</b> offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health.
1	Yes, the <b>institution</b> or <b>main affiliated hospital trust</b> offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are <b>no</b> such accessible courses for post-graduate providers

*Score explanation:* The institution does not offer courses, but there have been numerous Grand Rounds dedicated to areas of planetary health where providers can receive CME credits. There was a Grand Rounds held on April 6, 2023 where Dr. Aaron Bernstein spoke on “Climate Change and Health Equity: A Pediatrician’s Prescription for Effective Climate Action”. There was a Grand Rounds held on August 12, 2023 on “Climate Health: A Call to Action for Health Care Providers of all backgrounds” led by Dr. Sarah Crockett. On August 19, 2023, there was a Cardiovascular Disease and Climate Grand Rounds on “The Climate Crisis and Cardiovascular Health: What should health professionals know, and what can they do?” On October 12, 2023, there was an Emergency Medicine Grand Rounds by Dr. Jay Lemery on “The Intersections of Climate Change and Health.” There was a Climate and Health ECHO course put together in 2022 by DH staff and Geisel medical students targeting healthcare workers at DH and around the country. An upcoming ECHO course put together by Dr. Seddon Savage will also include planetary health themes, though that will not be the focus of the course. [New Hampshire Healthcare Workers for Climate Action \(NH HWCA\)](#) has offered many events that count as

continuing education credits for physicians in New Hampshire and Vermont. These are virtual lectures that encompass topics such as climate change and human migration, climate change and birth outcomes, and mental health impacts of climate change. Many healthcare professionals at Dartmouth access these, but they are not offered through DHMC.

**5. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about environmental health exposures?**

2	Yes, <b>all</b> affiliated hospitals have accessible educational materials for patients.
1	<b>Some</b> affiliated hospitals have accessible educational materials for patients.
0	<b>No</b> affiliated medical centers have accessible educational materials for patients.

*Score explanation:* Educational materials for patients related to environmental health exposures, for example in pulmonology regarding air pollution and asthma, are available upon request or when given by a physician if they deem it relevant. This varies between departments at DHMC. Medical Students for a Sustainable Future at Geisel has worked with New Hampshire Healthcare Workers for Climate Action on securing posters with QR codes to display in provider offices which offer patients material related to environmental health exposures, though these posters are not displayed in every DH affiliated clinic.

**6. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about climate change and health impacts?**

2	Yes, <b>all</b> affiliated hospitals have accessible educational materials for patients.
1	<b>Some</b> affiliated hospitals have accessible educational materials for patients.
0	<b>No</b> affiliated hospitals have accessible educational materials for patients.

*Score explanation:* Medical Students for a Sustainable Future at Geisel has worked with New Hampshire Healthcare Workers for Climate Action on securing posters with QR codes to display in provider offices which offer patients material related to climate effects on health, environmental health exposures, though these posters are not displayed in every DH affiliated clinic.

<b>Section Total (7 out of 14)</b>	<b>7</b>
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*Are there additional community engagement and advocacy resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.*

# Support for Student-Led Planetary Health Initiatives

**Section Overview:** *This section evaluates institutional support for student-led planetary health initiatives, such as funding, fellowships, programming, and student groups. Planetary health is a young field and, as young people facing a future deeply shaped by climate change, students are often some of the first at an institution to engage with it. Institutions should provide support for students to engage in sustainability quality improvement (QI) initiatives, discover mentors in their area of interest, and receive funding for planetary health projects.*

1. Does your <u>medical school</u> or your <u>institution</u> offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the <b>medical school</b> or <b>institution</b> <i>either</i> offers grants for students to enact sustainability initiatives/QI projects <i>or</i> sustainability QI projects are part of the core curriculum.
1	The <b>medical school</b> or <b>institution</b> encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, <b>but</b> there is no student funding available and there is no requirement to participate.
0	No, <b>neither</b> the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects.

*Score explanation:* Medical students can apply for funding for projects related to energy research through the [Irving Institute of Energy](#). Medical students are also eligible to apply for project funding through Dartmouth College's Sustainability Office, though this information is not easy to find and few medical students are likely aware of this resource. In addition, there are unfunded QI opportunities within the second and fourth year curricula that could be used to focus on sustainability or planetary health-related projects. Medical students can also submit funding requests to the medical school Student Government, and sustainability-focused initiatives would be considered. Furthermore, medical students can receive funding for projects that could be planetary health related through the Swigart Ethics Fellowship or Schweitzer Fellowship.

2. Does your <u>institution</u> offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The <b>institution</b> has a <b>specific</b> research program or fellowship for students interested in doing planetary health/sustainable healthcare research.
1	There are research opportunities for students to perform research related to planetary health/sustainable healthcare, but these <b>require student initiative</b> to seek these out and carry them out in their spare time.
0	There are <b>no opportunities</b> for students to engage in planetary health/sustainable healthcare research.

*Score explanation:* Both Dartmouth College and Geisel offer funded research opportunities to medical students, a number of which could be used to conduct a project related to sustainability and/or climate change and health as long as other existing criteria were met. These include M1 summer research funding, the [Swigart Ethics Fellowship](#), and the [Schweitzer Fellowship](#). In addition, medical students are eligible to apply for mini-grants through the [Irving Institute for Energy](#) at Dartmouth College.

There are no dedicated funds for planetary health, climate change and health, or sustainable healthcare. All of these require student initiative and involvement outside of the curriculum.

**3. Does the medical school have a webpage where medical students can find specific information related to planetary health and/or sustainable healthcare activities and mentors within the medical school? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.**

2	The <b>medical school</b> has a web-page with specific information related to planetary health or sustainable healthcare that includes up-to-date information on relevant initiatives and contact information of potential mentors.
1	There is a <b>medical school</b> webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the medical school, but it lacks key information.
0	There is <b>no medical-school</b> specific webpage for locating planetary health and/or sustainable healthcare projects or mentors.

*Score explanation:* There is a new [student Research Opportunities website](#) with internal and external research opportunities, a database listing faculty projects, and funding resources. This website allows faculty studying planetary health and sustainability to look for interested students, although this information is limited and not planetary health/ sustainability specific.

**4. Does your medical school have registered student groups dedicated towards fostering a culture of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?**

2	Yes, there is a student organization <b>with faculty support</b> at my medical school dedicated to planetary health or sustainability in healthcare.
1	Yes, there is a student organization at my medical school dedicated to planetary health or sustainability in healthcare but it <b>lacks faculty support</b> .
0	No, there is <b>not</b> a student organization at my institution dedicated to planetary health or sustainability in healthcare.

*Score explanation:* The Geisel chapter of Medical Students for a Sustainable Future (MS4SF) was started in the summer of 2020 and obtains student group funding through the medical school. We also have begun meeting with New Hampshire Healthcare Workers for Climate Action and a newly formed group of physicians interested in the intersection of climate change and health at DHMC. Additionally, faculty connections established through our MS4SF group have led to multiple members finding research opportunities and mentors in the field of sustainability.

Physicians for Human Rights recently (Winter 2023) held an advocacy workshop outlining steps to write testimony to support or oppose local legislation. Members of MS4SF were in attendance and intend to utilize these strategies to specifically target climate related legislation during this legislative cycle.



**5. Is there a student liaison representing sustainability interests who serves on a medical school or institutional decision-making council to advocate for curriculum reform and/or sustainability best practices?**

1	Yes, there is a student representative that serves on a medical school or institutional decision-making council/committee.
0	No, there is no such student representative.

*Score explanation:* There is no single, overarching institutional decision-making council at Dartmouth. Undergraduate students sit on most institutional level sustainability groups such as the Sustainability Working Group that created the “Our Green Future” report for the College, and are also present on almost all ad hoc committees. One of our MS4SF members sits on the Waste Management Ad Hoc Committee for the Green Futures Report 2.0 at Dartmouth College.

Additionally, there is no formal position within the medical school’s Student Government body or Medical Education Committees. Similarly, the graduate student council (for which combined-degree students are eligible) does not have a dedicated sustainability position. Geisel recently formed a Planetary Health sub-committee on the Race and Health Equity (RHE) Longitudinal Curriculum (LC) committee to advocate for curricular reform, but this sub-committee has not taken any notable steps beyond its formation at this point.

**6. In the past year, has the institution had one or more co-curricular planetary health programs or initiatives in the following categories? (1 point each)**

1	Projects where students are able to gain experience in organic agriculture and sustainable food systems, such as gardens, farms, community supported agriculture (CSA), fishery programs, or urban agriculture projects.
1	Panels, speaker series, or similar events related to planetary health that have students as an intended audience.
1	Events in which students learn directly from members of a local environmental justice community about the climate and environmental challenges they face, and how health professionals can partner with their community to address these exposures and impacts.
1	Cultural arts events, installations or performances related to planetary health that have students as an intended audience.
1	Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.
1	Wilderness or outdoors programs (e.g., that organize hiking, backpacking, kayaking, or other outings for students)

*Score explanation:*

The Dartmouth Organic Farm hosts the Farm Club, which is primarily run for undergraduate students but welcomes interested medical students. Since the spring of 2021, medical students have the opportunity to volunteer at the Farmacy at Dartmouth-Hitchcock Medical Center and learn about organic agriculture, how to run small vegetable gardens, and links to healthcare. At the medical school orientation, M1s also volunteer at local farms. Furthermore, we had a farm advertise their CSA share at the Annual Earth Day event in April 2022. Score of 1.

Medical students can attend the [speaker series](#) hosted by NH Healthcare Workers for Climate Action, which hosts many talks around the topic of planetary health. This series is not directed at students, but students are encouraged to attend. Geisel also hosted the 43rd Annual Meeting for the Northern New England CO-OP Practice and Community Based Research Network meeting on the role of healthcare workers in climate and the political determinants of health. This was not widely advertised, but students were invited to register. Score of 1.

Medical students at Geisel have been invited to join and participate with a new climate & health based organization called New Hampshire Healthcare Workers for Climate Action (NH HWCA) based out of Concord, NH, which formed in August 2021 and is chaired by Dr. Bob Friedlander, a retired palliative care oncologist. The organization consists of multiple working groups (Behavioral Health, Climate Justice, Education, Communication, and Children's Health). NH HWCA has been involved with directly educating ~20 first year Urban and Global Health Scholars. Speakers from NH HWCA will also be participating in a student led Earth Day Celebration event in 2023 that is open to the community. Score of 1.

The Hopkins Center for the Arts (the HOP) hosts a wide array of cultural events throughout the year, and their programming in the 2021/2022 and 2022/2023 seasons has included several performances related to climate change and planetary health. These have included [The Force of Things](#) in January 2022, the screening of [Peak](#) on melting glaciers in May 2022, [Mountainfilm](#) in October 2022, among others. There are also screenings of films and live performances centered around indigenous practices and art. The HOP is also in the process of being renovated in accordance with Dartmouth's sustainable energy goals. Score of 1.

There are numerous local environmental organizations in the Upper Valley region, many focused around sustainable and organic agriculture, local food systems, and discussions about local energy needs and housing. Medical student groups have occasionally organized gleaning volunteer days with Willing Hands, but students are always welcome to volunteer with those organizations on an individual basis. Vital Communities, the Upper Valley Adaptation Workgroup, and Sustainable Hanover are also groups working to build a climate resilient community here in the Upper Valley. Score of 1.

The Dartmouth Outing Club organizes many opportunities for students to engage in outdoor activities. These are primarily aimed at undergraduates, but graduate and medical students are able to use their resources, equipment, and take exercise classes. Additionally, first year medical students are offered a two-day outdoor orientation program completely free of charge consisting of small group hiking, kayaking, paddle boarding, and cabin camping activities. There is also a "Wilderness Medicine" elective offered in Spring 2023. Score of 1.

Total score: 6/6

<b>Section Total (12 out of 15)</b>	<b>12</b>
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*Are there additional student-led initiative resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.*

# Campus Sustainability

**Section Overview:** This section evaluates the support and engagement in sustainability initiatives by the medical school and/or institution. The healthcare industry is a major contributor to greenhouse gas emissions as well as pollution that harms local, regional, and global ecosystems. While healthcare is, by nature, a resource-intensive endeavor, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinizing every aspect of how our systems operate, from where we source our energy, to how we build our infrastructure, to what companies we invest in. Our medical schools, clinics, and hospitals must set the standard for sustainable practices, and show other sectors what is possible when it comes to minimizing environmental impact.

1. Does your <u>medical school</u> and/or <u>institution</u> have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is <b>at least one designated staff member</b> for sustainability at the hospital and/or medical school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but <b>no specific staff member</b> in charge of medical school and/or hospital sustainability.
1	There are <b>no salaried sustainability staff</b> , but there is a sustainability task force or committee
0	There are <b>no</b> staff members <b>or</b> task force responsible for overseeing campus sustainability
<p><i>Score explanation:</i> Dartmouth College does have an <a href="#">Office of Sustainability</a>. Within the Office Of Sustainability, there is no one dedicated to sustainability at the medical school. Likewise, the main hospital affiliated with Geisel, Dartmouth-Hitchcock Medical Center, has a sustainability council that is newly reformed after the sustainability programs at the hospital were cut in 2016 due to budgetary restrictions. It is expected that Dr. Heiko Pohl will soon be appointed to a Sustainability position at Dartmouth-Hitchcock Medical Center, but there is no such position at the Geisel School of Medicine.</p>	

2. How ambitious is your <u>institution/medical school</u> plan to reduce its own carbon footprint?	
5	The institution/medical school has a <b>written and approved plan</b> to achieve carbon neutrality by <b>2030</b>
3	The institution/medical school has a <b>written and approved plan</b> to achieve carbon neutrality by <b>2040</b>
1	The institution/medical school has a stated goal of carbon neutrality by <b>2040</b> but has <b>not created a plan</b> to reach that goal or the <b>plan is inadequate</b>
0	The institution/medical school does <b>not</b> meet any of the requirements listed above
<p><i>Score explanation:</i> In Dartmouth's <a href="#">2017 Sustainability Road Map</a>, Dartmouth set a goal to "improve the efficiency of energy transmission and distribution systems by 20 percent by 2030 (relative to efficiency levels from 2010), obtain 50 percent of energy supply from renewable</p>	

sources by 2025 and 100 percent by 2050, and reduce Scope 1 and 2 greenhouse gas emissions by 50 percent by 2025 and 80 percent by 2050 (relative to a 2010 emissions baseline).” The plan to achieve these goals included steam to hot water conversion and a new power generation source. There is no goal that clearly states carbon neutrality. The town of Hanover, NH where Dartmouth is located has a [goal of 100% renewable energy by 2050](#). The 2017 sustainability goals are revised every 5 years, so we are currently in the process of revision. There has been no significant change in sustainability goals since the last Planetary Health Report Card. In 2022, Dartmouth-Hitchcock ultimately did not sign onto the HHS Health Sector Climate pledge which aimed to reduce emissions by 50% by 2030 and achieve net zero emissions by 2050, despite widespread support among DH staff.

**3. Do buildings/infrastructure used by the medical school for teaching (not including the hospital) utilize renewable energy?**

3	Yes medical school buildings are <b>100%</b> powered by renewable energy
2	Medical school buildings source <b>&gt;80%</b> of energy needs from off-site and/or on-site renewable energy.
1	Medical school buildings source <b>&gt;20%</b> of energy needs from off-site and/or on-site renewable energy.
0	Medical school buildings source <b>&lt;20%</b> of energy needs from off-site and/or on-site renewable energy.

*Score explanation:* According to the Sustainability Office, about 13% of the medical school’s electricity is coming from renewables. Approximately 3% of their consumption is generated on campus from rooftop solar. This only pertains to the medical school buildings on campus. It was noted that in 2020, Dartmouth College purchased 7500 megawatt hours of Renewable Energy Certificates (RECs), but this was dispersed across campus buildings. Medical school facilities at the hospital use a different energy supply. 10% of the energy at the hospital is produced from a solar array through Norwich Solar Technologies.

**4. Are sustainable building practices utilized for new and old buildings on the medical school campus, with design and construction of new buildings and remodeling of old buildings conforming to a published sustainability rating system or building code/guideline?**

3	Yes, sustainable building practices are utilized for new buildings on the medical school campus and the <b>majority</b> of old buildings <b>have been retrofitted</b> to be more sustainable.
2	Sustainable building practices are utilized for new buildings on the medical school campus, but most old buildings have <b>not been retrofitted</b> .
1	Sustainable building practices are <b>inadequately or incompletely</b> implemented for new buildings.
0	Sustainability is <b>not considered</b> in the construction of new buildings.

*Score explanation:* Dartmouth adheres to the National Green Building Standard for all buildings on the Dartmouth campus. New buildings are constructed following these [guidelines](#), and old buildings are updated or are currently being retrofitted to meet Dartmouth’s energy goals. The medical school campus buildings specifically have not undergone significant energy retrofitting.

**5. Has the medical school implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?**

2	Yes, the medical school has implemented strategies to encourage and provide <b>environmentally-friendly transportation options</b> such as safe active transport, public transport, or carpooling and these options are well-utilized by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default.
1	The medical school has implemented <b>some</b> strategies to provide environmentally-friendly transportation options, but the options are <b>unsatisfactorily</b> accessible or advertised.
0	The medical school has <b>not</b> implemented strategies to encourage and provide environmentally-friendly transportation options.

*Score explanation:* The medical school and Dartmouth College have recently implemented environmentally-friendly transportation options, including accessible and frequently running buses between the medical school, undergraduate campus, Dartmouth Hitchcock Medical Center, and local housing clusters. These buses are free and run from 7 AM to 2 AM, with 24 hour service, depending on the season. There are also some bike paths and bike racks used by students in the area. It should be noted that it is still difficult to access off-campus clinical sites without a car in the third year and beyond, so most students drive.

**6. Does your medical school have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?**

2	Yes, the medical school has <b>both</b> compost <b>and</b> recycling programs accessible to students and faculty.
1	The medical school has <b>either</b> recycling <b>or</b> compost programs accessible to students and faculty, but not both.
0	There is <b>no</b> compost or recycling program at the medical school.

*Score explanation:* The medical school has a recycling program through the college. However, composting/ organic recycling is not accessible.

**7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?**

3	Yes, the medical school has <b>adequate</b> sustainability requirements for food and beverages, including meat-free days or no red-meat, and <b>is engaged</b> in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are <b>insufficient or optional</b> . The medical school <b>is engaged</b> in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are <b>insufficient or optional</b> . The medical school is <b>not</b> engaged in efforts to increase food and beverage sustainability.

0	There are <b>no</b> sustainability guidelines for food and beverages.
<p><i>Score explanation:</i> The medical school does not have any food and beverage sustainability guidelines. Of note, the medical school does not have its own dining hall, so these policies would need to be implemented to specifically address on-campus catered events. The hospital dining options adhere to some of GreenHealth Exchange procurement guidelines, but these are not comprehensive. The medical school is not involved in these selections.</p>	

8. Does the <u>medical school</u> or <u>institution</u> apply sustainability criteria when making decisions about supply procurement?	
3	Yes, the medical school has <b>adequate</b> sustainability requirements for supply procurement <b>and</b> is <b>engaged</b> in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>engaged</b> in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>not engaged</b> in efforts to increase sustainability of procurement.
0	There are <b>no</b> sustainability guidelines for supply procurement.
<p><i>Score explanation:</i> Geisel does not have supply procurement sustainability guidelines. The main affiliate hospital, Dartmouth Hitchcock Medical Center, adheres to some sustainability guidelines through <a href="#">GreenHealth Exchange</a>. Dartmouth College is in the process of writing sustainable procurement policies.</p>	

9. Are there sustainability requirements or guidelines for events hosted at the <u>medical school</u> ?	
2	Every event hosted at the medical school <b>must</b> abide by sustainability criteria.
1	The medical school <b>strongly recommends or incentivizes</b> sustainability measures, but they are <b>not required</b> .
0	There are <b>no</b> sustainability guidelines for medical school events.
<p><i>Score explanation:</i> No such guidelines exist at Dartmouth. Any sustainability initiatives at events are student led.</p>	

10. Does your <u>medical school</u> have programs and initiatives to assist with making lab spaces more environmentally sustainable?	
2	Yes, the medical school has <b>programs</b> and <b>initiatives</b> to assist with making lab spaces more environmentally sustainable.
1	There are <b>guidelines</b> on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are <b>no</b> efforts at the medical school to make lab spaces more sustainable.

*Score explanation:* Dartmouth does have an [Environmental Health and Safety Department](#) that has an environmental focus. It is primarily focused on laboratory chemical waste management. In that sense, this department provides feedback on how to help labs be more environmentally friendly. The guidelines are not clearly noted anywhere, however. A representative from EHS is willing to have these types of discussions with laboratory personnel if sought out. There is an opportunity for Geisel to team up with My Green Labs to make laboratory spaces more environmentally friendly.

**11. Does your institution's endowment portfolio investments include fossil-fuel companies?**

4	The institution is <b>entirely divested</b> from fossil fuels <b>and</b> has made a <b>commitment to reinvest divested funds</b> into renewable energy companies or renewable energy campus initiatives.
3	The institution is <b>entirely divested</b> from fossil fuels.
2	The institution has <b>partially divested</b> from fossil fuel companies <b>or</b> has made a <b>commitment to fully divest</b> , but <b>currently</b> still has fossil fuel investments.
1	The institution has <b>not divested</b> from fossil-fuel companies, but faculty and/or students are <b>conducting organized advocacy</b> for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been <b>no efforts</b> to change that.

*Score explanation:* Dartmouth [divested](#) in Fall 2021 following advocacy by the undergraduate group [Divest Dartmouth](#), though it will continue to hold current fossil fuel investments until expiry.

**Section Total (11 out of 32)**

**11**

Back to summary page [here](#)

*Are there additional sustainability resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.*

# Grading

## Section Overview

This section focuses on the grading of the report card. The institution received a grade for each of the individual sections as well as an overall institutional grade. Section point totals were tallied, divided by the total points available for the section, and converted to a percentage. The overall institutional grade is a weighted average of the section grades, with curriculum receiving a higher weight owing to its larger number of metrics. Letter grades for each section and the institution overall were then assigned according to the table below.

Letter Grade*	Percentage
A	80% - 100%
B	60% - 79%
C	40% - 59%
D	20% - 39%
F	0% - 19%

*\*Within each grade bracket, a score in the top 5% (\_5 to \_9%), receives a “+”, and a score in the bottom 5% (\_0- \_4%) receives a “--”. For example, a percentage score of 78% would be a B+.*

## Planetary Health Grades for the Geisel School of Medicine At Dartmouth

The following table presents the individual section grades and overall institutional grade for the Geisel School of Medicine at Dartmouth on this medical-school-specific Planetary Health Report Card.

Section	Raw Score %	Letter Grade
<b>Planetary Health Curriculum (30%)</b>	$(37/72) \times 100 = 51.39\%$	C
<b>Interdisciplinary Research (17.5%)</b>	$(11/17) \times 100 = 64.71\%$	B-
<b>Community Outreach and Advocacy (17.5%)</b>	$(7/14) \times 100 = 50.00\%$	C
<b>Support for Student-led Planetary Health Initiatives (17.5%)</b>	$(12/15) \times 100 = 80.00\%$	A-
<b>Campus Sustainability (17.5%)</b>	$(11/32) \times 100 = 34.38\%$	D
<b>Institutional Grade</b>	$(A \times 0.3 + B \times 0.175 + C \times 0.175 + D \times 0.175 + E \times 0.175) = 55.5\%$	C+



# Report Card Trends

## Section Overview

This graph demonstrates trends in overall and section grades for the years in which Geisel School of Medicine has participated in the Planetary Health Report Card initiative.

### PHRC Trends for the Geisel School of Medicine at Dartmouth

