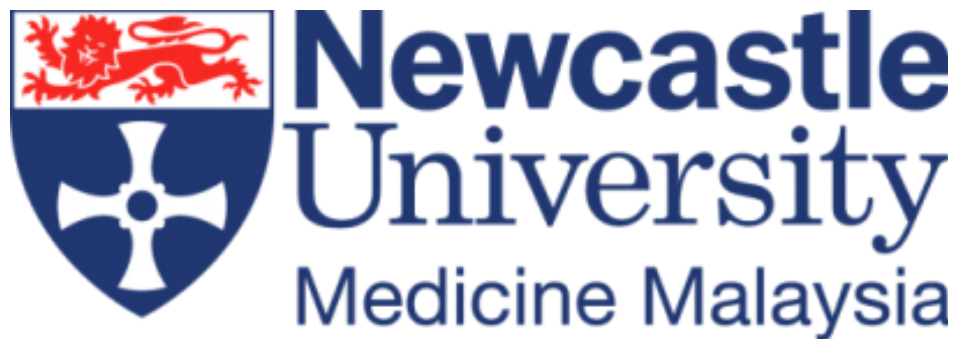




Planetary Health Report Card: Newcastle University Medicine Malaysia



2021-2022 Contributing Team:

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Summary of Findings

Overall	D+
<u>Curriculum</u>	B
<ul style="list-style-type: none"> NUMed has a well-integrated coverage on environmental health and awareness curriculum. Recommendation: More teaching how climate change has impacted the <i>local</i> healthcare system and the effects the environment on causing disease in the different body systems. Student presentations, case based discussion, and self directed e-learning modules can help achieve this, especially. This is especially useful for Year 4 students in their CDM rotation, which revisits different body systems weekly. 	
<u>Interdisciplinary Research</u>	C+
<ul style="list-style-type: none"> NUMed demonstrates interest in planetary health (PH) research and healthcare sustainability through a dedicated team of researchers. However, the lack of awareness regarding the team’s efforts should be addressed by promoting better student, staff, and community involvement in PH and sustainability research. Recommendations: Some initiatives we recommend include offering climate change as one of the research studies as part of mandatory Student Selective Component (SSC). We can also approach and include Non Government Organizations (NGO) to conduct and take part in the research regarding environmental issues. 	
<u>Community Outreach and Advocacy</u>	F
<ul style="list-style-type: none"> Providing educational materials on the environmental impacts of health have been made accessible in medical school affiliated hospitals. However, there is still a lack of community outreach programmes for medical students, little postgraduate support, and sparse communication about PH between staff and students. Recommendations: Improve communications between staff and students regarding PH and sustainable healthcare via virtual talks and timely emails highlighting current environment issues. Administrative team should organize and encourage more student involvement in community-based environmental programs. 	
<u>Support for Student-Led Initiatives</u>	D
<ul style="list-style-type: none"> The NUMed administration has been supportive of student-led health-related initiatives, although COVID-19 restrictions have limited execution of these plans. Nonetheless, both the administration and medical students have expressed interest in future collaboration and plan to implement more initiatives. Recommendations: Organising more events, movements, and establishing a student-led club that centres around planetary health/sustainability in medicine could help. The administration could: offer incentives for PH events; facilitate collaborations between students, staff and researchers; and introduce grants to medical students to enact sustainability QI project initiatives. 	
<u>Campus Sustainability</u>	D
<ul style="list-style-type: none"> NUMed has made good progress in improving campus sustainability, especially in the area of transportation, limiting waste production and energy usage, and more. In addition to these efforts, there are more institutional policies that have to be made to make a bigger impact to tackle climate change. Recommendations: Introducing goals and pledges can help keep the NUMed community motivated and accountable, with a clearer direction in mind. We also recommend focusing on creating and enforcing sustainability guidelines and criterias in the area of hosting events, food and beverage sale in cafeterias, and supply procurement to improve campus sustainability. 	

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 “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.” 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.
- **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 (for example, undergraduate departments (USA), other related departments eg 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 example).

Added to our resources this 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 medical school 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 more than one elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does not have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a lecture on planetary health.
0	No, the medical school has not offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>NUMed offers one Environment and Sustainable Campus Committee (SSC) for Sustainability and Health. Its aims are for students to understand the issue of climate change and its relation with public health, and the importance of leadership by healthcare professionals in protecting public health in climate change.</i></p>	

Curriculum: Health Effects of Climate Change

2. Does your medical school curriculum address the relationship between extreme heat, health risks, and climate change?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>As part of Newcastle University's core curriculum, there are testable lectures dedicated to climate change and its disproportionate impact on certain populations through the learning outcomes 'To</i></p>	

understand and appreciate the unequal impacts of climate change globally’, ‘Discuss the impact of climate change on the health of marginalised/indigenous populations globally’ and ‘Explain how global change such as the climate emergency, impacts on health at a global, local and individual level. Understand how the health impacts of environmental change are distributed unequally within and between populations’ in years 2, 3 and 5 respectively.

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 in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

This topic is covered briefly in the core curriculum, with several learning outcomes such as ‘Describe how the environment and health interact at the global level, including the effects of climate change on health’, ‘Discuss the impact of climate change on the health of marginalised/indigenous populations globally and ‘Describe how global change such as the climate emergency, impacts on health at a global, local and individual level’ throughout years 2, 3 and 5 encourage further study and signpost to resources around the impact of the climate emergency on health and vice versa, including extreme weather events.

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

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

Newcastle University has a dedicated and testable second-year lecture in the Infectious Diseases case where it taught about how seasonal climate change can result in epidemics.

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

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

0	This topic was not covered.
<i>At Newcastle University, this was addressed in a lecture in year 2 based on Global Health. This was also briefly covered in the Year 4 CDM online tutorial on the effects of environmental air hazards that can contribute to respiratory diseases.</i>	

6. Does your medical school curriculum address the cardiovascular health effects of climate change, including increased heat?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>In Newcastle University's Year 4 ACE course (ACE117) online tutorial "Ecological, Environmental and Occupational Hazards in Ill Health", it addresses the link between environmental problems and health. A section of the tutorial is dedicated to discuss the effects of air pollution in cardiovascular diseases. Measures that can be taken to mitigate the effects are also discussed.</i>	

7. Does your medical school curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>This topic was not covered.</i>	

8. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

At Newcastle university, there are a few learning outcomes related to the relationships between climate change, individual patient food and water security, ecosystem health and, climate change. Case 18 in year 2 includes the learning outcome “Describe how the environment and health interact at the global level, including the effects of climate change on health” covers relationships between health and climate change but not on ecosystem health.

9. Does your medical school 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?

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

This topic was covered in a few slides in the lectures of Global Health in Year 2. The learning outcome ‘Describe major determinants underlying differences in mortality and morbidity between different regions of the world.’

10. Does your medical school curriculum address the unequal regional health impacts of climate change globally?

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

This topic was covered in a testable lecture on Global Health in Year 2. The learning outcome “Describe how the environment and health interact at the global level, including the effects of climate change on health” briefly covers the unequal health impacts of climate change in year 2.

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

11. Does your medical school curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?

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

0	This topic was not covered.
<i>The topic was not covered.</i>	

12. Does your medical school curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>Although the NUMed's curriculum did highlight the impact of human-caused environmental threats on an individual's health, it is studied on a global scale, or relating to the UK, rather than localised to the surrounding community.</i>	

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

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 in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Throughout the 5 years of medical course in NUMed, the curriculum has integrated above mentioned topics into the core curriculum. For example, during our HIV module, we have lectures covering the awareness of the non-clinical determinants of health, including social, political, economic, environmental, and gender disparities. Apart from that, during our year5 Good Medical Practice Module, we are tasked to present the relationship between socioeconomic status and health. For example, people who live in rural areas with no access to clean water sources are at a higher risk of developing water-borne infections.

In Newcastle University's Year 4 ACE course (ACE117) online tutorial "Ecological, Environmental and Occupational Hazards in Ill Health", some of the adverse effects of air pollution on children, pregnant women and the elderly are briefly mentioned, highlighting how these populations are often more severely affected by anthropogenic environmental toxins.

The impact of health on different groups and the disproportionate effects is covered extensively in the curriculum as a whole. Specifically related to planetary health this is more extensively covered in optional resources.

Curriculum: Sustainability

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

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

As part of the Good Medical Practice module in Year 5, students were required to learn and present about the "co-benefits of climate actions with food and health as example". NUMed has organised an Environmental Health Awareness week where important topics including the environmental and health co-benefits of a plant based diet was discussed. It was a one hour lecture on how to integrate plant based diet into our regular diet, and it has also highlighted the effects of animal farming on the environment at a global scale. The lecture also provided students with plant-based protein alternatives such as beans, soy-based proteins etc.

Year 2 learning outcomes include "Describe the nutritional risks and benefits associated with different forms of diet" which includes plant based diets. The impact on health of different foods, including meat, are included in many areas of the curriculum regarding nutrients. The environmental benefits of plant based diets are covered in less detail than the health benefits. There could have been more detail about specifically plant based diets.

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

3	This topic was explored in depth by the core curriculum
2	This topic was briefly covered in the core curriculum.

1	This topic was covered in elective coursework.
0	This topic was not covered.

At NUMed, during our Good Medical Practice Module in Year 5, students were tasked to present on the topic of “Climate change and healthcare - Understanding Carbon footprint of healthcare and Greener NHS (organisational sustainability policies and the legal frameworks for reducing carbon emissions”.

In Year 4, there is the learning outcome of ‘Demonstrate how to apply the following concepts in clinical management: shared decision making, personalised care, reducing harm/ waste, managing risk, reducing unnecessary variation in practice and sustainability in clinical management’.

17. Does your medical school curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (1 point each)	
1	Waste production within the healthcare system and strategies for reducing waste in clinical activities, such as in the operating room
1	The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	The impact of anaesthetic gases on the healthcare carbon footprint and ways to reduce anaesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally anaesthetic gas options with reduced greenhouse gas emissions
1	The environmental impact of pharmaceuticals and over-prescribing as a cause of climate health harm. Alternatively teaching on deprescribing where possible and its environmental and health co-benefits would fulfill this metric.
1	The health and environmental co-benefits of non-pharmaceutical management 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 for obesity. This is commonly known as social prescribing in the UK.
1	The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment

1. Waste management and ways to reduce unnecessary waste production has been integrated into the Year 3 syllabus.

5. At NUMed, during case discussion seminars on non-communicable diseases (Diabetes, Hypertension, Obesity), students are encouraged to learn about the importance of conservative management such as diet control, exercising in controlling diseases and the environment.

6. At NUMed, during the clinical reasoning seminars, students engage in discussions on the importance of good clinical history and examination in order to reduce the need of excessive medical tests, and prioritising conservative management before thinking about medical or surgical management of a disease.

Curriculum: Clinical Applications

18. In training for patient encounters, does your medical school’s curriculum introduce strategies to have conversations with patients about the health effects of climate change?	
2	Yes, there are strategies introduced for having conversations with patients about climate change in the core curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in elective coursework.
0	No, there are not strategies introduced for having conversations with patients about climate change
<p><i>At NUMed, during the Good Medical Practice module in Year 5, students are given a lecture by Dr. Maria Lee on “The Role of Medical Professionals in Climate Crisis”. The lecture emphasizes on the importance of healthcare professionals being equipped with knowledge about climate change, and also ways to communicate with patients about strategies in preventing climate change. These strategies include: Presenting facts, encouraging change by implementing short term, mid term and long term goals with patients.</i></p>	

19. In training for patient encounters, does your medical school’s curriculum introduce strategies for taking an environmental history or exposure history?	
2	Yes, the core curriculum includes strategies for taking an environmental history.
1	Only elective coursework includes strategies for taking an environmental history.
0	No, the curriculum does not include strategies for taking an environmental history.
<p><i>At NuMed, students are taught to take a full history, which includes asking about environmental exposure (home environment) and occupational exposure during their first year. (Case 6). This was then taught again in further depth in the Year 4’s Clinical Decision Making Block 10 on the topic of Pneumoconiosis.</i></p>	

Curriculum: Administrative Support for Planetary Health

20. Is your medical school 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 major improvements to ESH/planetary health education.

2	Yes, the medical school is currently in the process of making minor improvements to ESH/planetary health education.
0	No, there are no improvements to planetary health education in progress.
<p><i>There is considerable engagement and interest from the medical school to implement and improve Education for Sustainable Healthcare. Dr Alberti is in charge of overseeing the integration of planetary health teaching across the curriculum. The aim is to integrate sustainable healthcare within every course and case, it will have three outcomes, the first of which will be taught, the second integrated in the clinical setting e.g. quality improvement projects and the third focusing on the responsibilities of a doctor. This is very well supported by a strong team including Deans, students and external advisors.</i></p> <p><i>At NUMed, the Global Health submodule was introduced to the Good Medical Practice module in Year 5, focusing on engaging students in discussions about global health through lectures, presentations as well as small group discussions. Lectures such as “COVID-19 and Global Health”, “Climate and Health”, “the Role of Medical Professionals in Climate Crisis” have been integrated into the module.</i></p>	

21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the core curriculum?	
6	Planetary health/ESH topics are well integrated into the core medical school curriculum.
4	Some 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 (a) standalone lecture(s).
0	There is minimal/no education for sustainable healthcare.
<p><i>At the Newcastle University medical school, some lectures and seminars in Year 2 teach about the relationship between biochemistry (related to smoking and air pollutants), genetics (related to the effect of free radicals generated by pollutants have on our DNA), relating back to the pathophysiology of pulmonary conditions such as COPD and emphysema.</i></p>	

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	Yes, the medical school has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	No, the medical school does not have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.
<p><i>At NUMed, the dean of academic affairs, Dr Paul Hubbard, is responsible to oversee and take responsibility for the incorporation of planetary health and sustainable healthcare as a theme throughout the course. He works with a team of academic staff to curate the best way in integrating this into the syllabus. However, there is no specific staff that has the expertise in ESH/planetary health</i></p>	

topics in NUMed to aid in this decision. However, there is expert guidance in the Newcastle UK campus. Both NUMed and Newcastle UK share the same curriculum.

Section Total (45 out of 69)

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Back to Summary Page [here](#)

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 medical school?	
3	Yes, there are faculty members at the School of Medicine who have a primary research focus in planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the School of Medicine who are conducting research related 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 institution, but none associated with the medical school.
0	No, there are no planetary health and/or healthcare sustainability researchers at the institution or medical school at this time.
<i>The Newcastle University Medicine Malaysia has a research team of 10 members from the UK and Malaysia who's primary research focus is in planetary health and healthcare sustainability. The work they undertake is aimed at tackling the United Nations Sustainable Development Goals.</i>	

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

3. Is there a process by which communities disproportionately impacted by climate change and	
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environmental injustice give input or make decisions about the research agenda at your medical school?	
3	Yes, there is a process in which community members impacted by climate and environmental injustice have decision-making power in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice advise the climate + environmental research agenda.
1	No, but there are current efforts to establish a process for community members to advise or make decisions on the research agenda.
0	There is no process, and no efforts to create such a process.
<i>There is currently no such process at NUMed.</i>	

4. Does your institution have a planetary health website that centralizes ongoing and past research related to health and the environment?	
3	There is an easy-to-use, adequately comprehensive website that centralizes 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 attempts to centralize various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The institution has an Office of Sustainability website that includes some resources related to health and the environment.
0	There is no website.
<i>Newcastle University has a webpage that compiles research, education, and event opportunities at the UK institution. However, there is currently no such webpage available to the students of the Malaysian campus.</i>	

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?	
4	Yes, the medical school has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	Yes, the institution has hosted at least one conference or symposium on topics related to planetary health in the past year.
2	Yes, the institution has hosted a conference on topics related to planetary health in the past three years.
1	The institution has not hosted any conferences directly, but they have provided financial support for a local planetary health event.

0	No, the institution has not hosted a conference on topics related to planetary health in the past three years.
<i>NUMed has hosted one virtual Environmental Health Awareness Week from 31st October to 7th November 2021: Road to Zero Carbon and Zero Wasyr between 31st October to 7th November 2021.</i>	

6. Is your medical school a member of a national or international planetary health or ESH organization?	
1	Yes, the medical school is a member of a national or international planetary health or ESH organization
0	No, the medical school is not a member of such an organization
<i>NUMed has members in the British Malaysian Chamber of Commerce which works toward sustainability. However, this is not a specifically targeting planetary health.</i>	

Section Total (8 out of 17)	C-
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Back to summary page [here](#)

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 medical school partner with community organizations to promote planetary and environmental health?	
3	Yes, the medical school meaningfully partners with multiple community organizations to promote planetary and environmental health.
2	Yes, the medical school meaningfully partners with one community organization to promote planetary and environmental health.
1	The institution partners with community organizations, but the medical school is not part of that partnership.
0	No, there is no such meaningful community partnership.
<i>Currently, there is no such partnership in NUMed.</i>	

2. Does your medical school offer community-facing courses or events regarding planetary health?	
3	The medical school offers community-facing courses or events at least once every year.
2	The medical school 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 institution has offered community-facing courses or events, but the medical school was not involved in planning those courses or events.
0	The medical school has not offered such community-facing courses or events.
<i>NUMed had intended to hold such an event in April 2022. Unfortunately, due to the most recent COVID-19 restrictions, this event was not able to be carried out.</i>	

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

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 institution or main affiliated hospital trust 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 institution or main affiliated hospital trust offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are no such accessible courses for post-graduate providers
<i>There are no such accessible courses for individuals post-graduation due to the differences in the healthcare systems between the UK and Malaysia.</i>	

5. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about environmental health exposures?	
2	Yes, all affiliated hospitals have accessible educational materials for patients.
1	Some affiliated hospitals have accessible educational materials for patients.
0	No affiliated medical centers have accessible educational materials for patients.
<i>Most of the medical centers have patient-facing resources such as brochures and posters about toxic exposures such as the relationship between our health and smoking cigarettes, eating a non-balanced meal, having a sedentary lifestyle, etc.</i>	

6. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about climate change and health impacts?	
2	Yes, all affiliated hospitals have accessible educational materials for patients.
1	Some affiliated hospitals have accessible educational materials for patients.

0	No affiliated hospitals have accessible educational materials for patients.
<i>There is a dedicated online article on the Ministry of Health Malaysia's website that advises people to stop smoking during haze season, with ample explanation of the reasoning behind it.</i>	

Section Total (2 out of 14)	F
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Back to summary page [here](#)

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 institution offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the institution <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 medical school encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, but there is no student funding available and there is no requirement to participate.
0	No, the institution does not offer opportunities or support for sustainability initiatives or QI projects.
<p><i>NUMed encourages its students to partake in the Climate Leadership Research which includes a scholarship provided by Newcastle University to all students across the 3 campuses. However, NUMed does not have an allocated grant or offer opportunities for sustainability initiatives or QI projects.</i></p>	

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The institution has a specific 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 require student initiative to seek these out and carry them out in their spare time.
0	There are no opportunities for students to engage in planetary health/sustainable healthcare research.
<p><i>There are opportunities for medical students to undertake an intercalated year between Year 3 and Year 4, or Year 4 and Year 5, in Global Health or Public Health. This master's degree includes some modules that are focused on planetary health and sustainability. Students in Year 2 are also offered summer research scholarship programs that include environment/sustainability objectives.</i></p>	

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	
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medical school? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.

2	The medical school has a webpage 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 medical school 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 no medical-school specific webpage for locating planetary health and/or sustainable healthcare projects or mentors.

There is one webpage specific for Newcastle University medical school. However, there is no medical-school specific webpage for NUMed to for such resources.

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 with faculty support 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 lacks faculty support.
0	No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.

There is currently no student organisation dedicated to planetary health or sustainability in healthcare. Hence, there are no entities that the university can fund for this. However, there is an environment and sustainability-focused staff-led committee that involves two student representatives named 'Environment and Sustainable Campus Committee (ESCC)' each year. The ESCC hosts events and projects that raise awareness of planetary health and sustainability and encourages staff and students to practice sustainable habits.

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.

Two student representatives are involved in the staff-led 'Environment and Sustainable Campus Committee (ESCC)' each year. The ESCC hosts events and projects that raise awareness of planetary health and sustainability and encourages staff and students to practice sustainable habits.

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)
<i>NUMed had organised a few webinar such as food composting webinar, recycling webinar and climate emergency webinar in conjunction with environmental awareness week.</i>	

Section Total (4 out of 15)	D
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Back to summary page [here](#)

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 medical school and/or institution 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 at least one designated staff member 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 no specific staff member in charge of medical school and/or hospital sustainability.
1	There are no salaried sustainability staff, but there is a sustainability task force or committee
0	There are no staff members or task force responsible for overseeing campus sustainability
<p><i>The staff-led Environment and Sustainable Campus Committee is responsible for the environmental management across the University and it is made up of 10 paid staff, including academics, heads of service, and two student representatives.</i></p>	

2. How ambitious is your medical school/institution's plan to reduce its own carbon footprint?	
4	The institution has a stated goal of carbon neutrality by 2030 or earlier and the medical school / institution has a well-defined and adequate plan in place to achieve this goal.
3	Yes, there is a stated carbon neutrality goal by at least 2040 and the medical school/institution has a well-defined and adequate plan in place to achieve this goal.
2	Yes, there is a stated carbon neutrality goal by at least 2040, but the medical school/institution has not created a plan to reach that goal or the plan is inadequate.
1	There is a CO2 emission reduction goal, but it is not one of carbon neutrality.
0	There is no stated goal for reduction of CO2 emissions.
<p><i>Newcastle University is committed to net-zero carbon dioxide emissions by 2030. However, this only includes the UK campus and not the Malaysian campus. NUMed has yet to pledge or state a goal for its CO2 emission reduction.</i></p>	

3. Do buildings/infrastructure used by the medical school for teaching (not including the hospital) utilize renewable energy?	
3	Yes medical school buildings are 100% powered by renewable energy
2	Medical school buildings source >80% of energy needs from off-site and/or on-site renewable energy.
1	Medical school buildings source >20% of energy needs from off-site and/or on-site renewable energy.
0	Medical school buildings source <20% of energy needs from off-site and/or on-site renewable energy.
<p><i>Medical school buildings source <20% of energy needs from both off-site and on-site renewable energy. In collaboration with EduCity Iskandar, NUMed has plans to install solar panels to increase its use of renewable energy and reduce its CO2 emissions. However, no specific date or plan has been set for installation and usage.</i></p>	

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 majority of old buildings have been retrofitted to be more sustainable.
2	Sustainable building practices are utilized for new buildings on the medical school campus, but most old buildings have not been retrofitted.
1	Sustainable building practices are inadequately or incompletely implemented for new buildings.
0	Sustainability is not considered in the construction of new buildings.
<p><i>There is no plan on constructing a new building in the campus hence there is no sustainability considered in the construction as well.</i></p>	

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 environmentally-friendly transportation options 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 some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised.

0	The medical school has not implemented strategies to encourage and provide environmentally-friendly transportation options.
<i>There is a free shuttle bus service that runs on the weekdays in between the campus and EcoNest, where a large majority of NUMed students reside. The student office has been coordinating the shuttle bus schedule from time to time, to meet the demands of the students, especially during the exam period.</i>	

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 both compost and recycling programs accessible to students and faculty.
1	The medical school has either recycling or compost programs accessible to students and faculty, but not both.
0	There is no compost or recycling program at the medical school.
<i>Recycling programs have been launched for some time in the campus, where one of the efforts can be easily appreciated through the coverage of recycling bins at most of the corners. Compost programs on campus have been set to be established, however, the national lockdown due to COVID-19 has caused this plan to be put temporarily on hold.</i>	

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 adequate sustainability requirements for food and beverages, including meat-free days or no red-meat, and is engaged in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is engaged in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is not engaged in efforts to increase food and beverage sustainability.
0	There are no sustainability guidelines for food and beverages.
<i>Aside from limiting the sale of plastic bottled drinks in vending machines, there are currently no sustainability guidelines set into place for food and beverages.</i>	

8. Does the medical school or associated institution apply sustainability criteria when making decisions about supply procurement?	
3	Yes, the medical school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.

2	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is engaged in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is not engaged in efforts to increase sustainability of procurement.
0	There are no sustainability guidelines for supply procurement.
<i>No current sustainability policies for supply procurement.</i>	

9. Are there sustainability requirements or guidelines for events hosted at the medical school?	
2	Every event hosted at the medical school must abide by sustainability criteria.
1	The medical school strongly recommends or incentivizes sustainability measures, but they are not required.
0	There are no sustainability guidelines for medical school events.
<i>There are no sustainability guidelines provided on a regular basis for medical school events.</i>	

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

11. Does your institution's endowment portfolio investments include fossil-fuel companies?	
4	The institution is entirely divested from fossil fuels and has made a commitment to reinvest divested funds into renewable energy companies or renewable energy campus initiatives.
3	No, the institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil fuel companies or has made a commitment to fully divest, but currently still has fossil fuel investments.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.

0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.
<p><i>The institution has not divested from fossil-fuel companies, but NUMed is currently working with IIB (EduCity/NUMed's campus Owner) and Petronas to explore the possibility to install Solar System in EduCity in order to utilise the renewal energy from Solar system installed by Petronas team, reducing exposure to fossil-fuel companies.</i></p>	

Section Total (8 out of 31)	D
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Back to summary page [here](#)

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%

Planetary Health Grades for the Newcastle University Medicine (NUMed) Malaysia School of Medicine

The following table presents the individual section grades and overall institutional grade for the Newcastle University Medicine (NUMed) Malaysia School of Medicine on this medical-school-specific Planetary Health Report Card.

Section	Raw Score	Letter Grade
Planetary Health Curriculum (30%)	$(45 / 69) \times 100 = 65.22\%$	B
Interdisciplinary Research (17.5%)	$(8 / 17) \times 100 = 47.05\%$	C+
Community Outreach and Advocacy (17.5%)	$(2 / 14) \times 100 = 14.29\%$	F
Support for Student-led Planetary Health Initiatives (17.5%)	$(4 / 15) \times 100 = 26.67$	D
Campus Sustainability (17.5%)	$(8 / 31) \times 100 = 25.81\%$	D
Institutional Grade	39.48%	D+

Report Card Trends

Section Overview

This graph demonstrates trends in overall and section grades for the years in which Newcastle University Medicine (NUMed) Malaysia has participated in the Planetary Health Report Card initiative.

