



Planetary Health Report Card:

Queen's University Belfast



2020-2021 Contributing Team:

- Students: Victoria England*, Amanda Madera, Hannah McPhee, Rhiannon Wells, Riley Westwood.
- Faculty Mentors: Dean Pascal McKeown, Professor Neil Kennedy, Professor Diarmuid O'Donovan, Dr Vivienne Crawford.
- *Primary Contact: Victoria England, vengland01@qub.ac.uk

All named individuals have given permission to be mentioned in this report.

Summary of Findings

Curriculum	B
<ul style="list-style-type: none"> Planetary Health and Education for Sustainable Healthcare topics are evident in the core medical curriculum and various elective courses at QUB. These topics are becoming more longitudinally integrated through the introduction of the new C25 curriculum; with one of its core themes being ‘Global and Population Health’. Staff have affirmed their commitment to these issues and are supportive of making Planetary Health connections and implications more explicit in the curriculum, with more dedicated time and content given to this. 	
Interdisciplinary Research	C
<ul style="list-style-type: none"> Planetary health research is not a primary research focus within the medical school at QUB, and the university lacks an institute of interdisciplinary planetary health research. The success of the conference “Healthy People on a Healthy Planet”, should encourage commitment to the involvement of such events. The medical school should encourage and improve collaboration with other areas of the university, such as the School of Natural and Built Environment and Centre of Sustainability, Equality and Climate Change, whilst continuing its SDG mapping to committee to tackle issues related to planetary health. 	
Community Outreach and Advocacy	D
<ul style="list-style-type: none"> There are some existent partnerships between QUB, such as the Widening Participation Partnership, and a number of community-facing events have been held. Communications regarding planetary health are sent to students through a number of means (e.g. communications from the QUBSU Climate Action Group). The medical school should continue to establish its own partnerships with community and engage in community outreach and advocacy efforts associated with planetary health, for example, by holding community-facing events about planetary health and sustainable healthcare. 	
Support for Student-Led Initiatives	B+
<ul style="list-style-type: none"> QUB currently supports a number of student-led initiatives, including a number of planetary health projects, and providing grants to students. There are also two student representatives advocating for sustainability best practices. The medical society Students for Global Health advocate for planetary health and sustainability. The medical school should aim to fund research into planetary health, for example, through the established Summer Studentship scheme. It would also be ideal to develop a webpage to provide medical students with information on planetary health and sustainable healthcare, perhaps through the Med Portal. 	
Sustainability	C+
<ul style="list-style-type: none"> QUB has developed a number of sustainability practices on campus, such as: establishing an Office of Sustainability, implementing sustainable building practices, providing a range of environmentally friendly transportation options, applying sustainability criteria to catering, and providing recycling programs. However, there are still a number of important steps that QUB should take to improve sustainability, including: setting and achieving a goal of carbon neutrality, divesting from fossil fuels, increasing renewable energy sources, etc. It is vital that QUB is transparent about these, as information is lacking and difficult to find. 	

Statement of Purpose

Planetary health is human health.

The Planetary Health Alliance defines planetary health as “a field focused on characterizing the human health impacts of human-caused disruptions of Earth's natural systems.” 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 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.

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 change. Therefore, it is critical that medical students are trained to understand the health effects of climate change, as well as planetary health 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 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>Score explanation:</i> Medical students at QUB study ‘Student Selected Components’ (SSC’s) throughout each of its preclinical teaching years (1 in Year 1, 2 in Years 2 and 3), and are given a choice of modules to study. Of these SSC’s, there are currently 3 modules offered that primarily focus on ESH/ planetary health. The details of these modules are as follows:</p> <p><u>‘Healthcare needs smaller feet- Sustainable Healthcare: Theory into practice’</u>- lead by Dr. Vivienne Crawford & Ms. Mariead Boohan The SSC introduces participants to topics central to sustainable healthcare. The module aims to facilitate an understanding of the range of factors that can impact on healthcare sustainability including political, economic, ethical beliefs and behaviours. Based on this understanding of global aspects relevant to sustainable healthcare, participants will begin to consider local aspects that may be amenable to change with a view to improving sustainability.</p> <p><u>‘SusQI’</u>- lead by Dr. Vivienne Crawford The module aims to facilitate an understanding of the range of factors that can affect healthcare quality and sustainability including political, economic, ethical beliefs and behaviours. Based on this understanding of global aspects relevant to sustainable healthcare, and the methods and processes of quality improvement, participants will begin to consider</p>	

local aspects that may be amenable to change with a view to improving quality and sustainability.

‘Global Health: Concepts, Trends and Priorities’- lead by Dr. Charlene McShane & Dr. Chris Jenkins

This course will provide an introduction on global health history before discussing the key organisations and institutions that influence global health; for example, the World Health Organisation. The course will explore some of the major challenges within the field, such as pandemic response, climate change, anti-microbial resistance; and the rise of non-communicable disease in low and lower-middle income settings. Finally, the course will introduce students to some of the key debates in the field; namely on the value of international medical electives; and on decolonising global health.

There are 3 other SSC modules that focus primarily on Global Health and Global Health Issues; however, they may engage students in some relevant planetary health topics. These include, **‘Global Child Health’** (lead by Prof. Neil Kennedy), **‘Global Cancer Trends’** (lead by Dr. Blanaid Hicks), and **‘Women’s Global Health’**.

Recommendations: The medical school should continue to support and encourage students and staff to develop planetary health SSCs, especially those which focus on planetary health.

Curriculum: Health Effects of Climate Change

2. Does your medical school curriculum address the relationship between extreme temperature health risks and climate change, as well as the socioeconomic/racial disparities in extreme heat exposure?

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.

Score explanation: As part of the C19 curriculum, Prof. Frank Kee delivers a lecture in the ‘People and Populations’ module, titled; “Climate Change and Sustainability”. The predicted increase in heat related deaths due to the thermal stress effects of climate change is mentioned, as are the risks associated with an increased frequency of heat waves in Europe, droughts in West Africa and floods in Nairobi, Kenya. The lecture mentions an increased vulnerability for those living in slums and coastal regions and highlights the variation in greenhouse gas emissions by country, however it does not directly address socioeconomic/ racial disparities in extreme heat exposure.

Although this area of the course is not yet being taught, it is planned that this topic will be covered in the C25 core curriculum, through case-based learning.

Recommendations: Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. For the C25 curriculum, we have only been able to reflect and evaluate on areas of the curriculum which have been taught so far. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school's curriculum.

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.

Score explanation: The C19 curriculum ‘People and Populations’ lecture by Prof. Frank Kee, “Climate Change and Sustainability”, mentions some of the health effects of extreme weather events including thermal stress: deaths, illness; injury/death from floods, storms, cyclones, bushfires; or the effects of these events on food yields.

Although this area of the course is not yet being taught, it is planned that this topic will be covered in the C25 core curriculum, through case-based learning.

Recommendations: Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. For the C25 curriculum, we have only been able to reflect and evaluate on areas of the curriculum which have been taught so far. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school's curriculum.

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.
<p><i>Score explanation:</i> The C19 curriculum ‘People and Populations’ lecture by Prof. Frank Kee, “Climate Change and Sustainability”, describes the effect of climate change on ecosystems and particular species as resulting in microbial proliferation; and changes in vector-pathogen-host relations and host relations and infectious disease geography/seasonality.</p> <p><i>Recommendations:</i> Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. Dr. O’Gorman’s four Microbiology lectures in the C25 curriculum (within the Fundamentals of Clinical Science block) consider the spread of infections and provide some example tropical diseases. These could easily be linked to climate change and its effect on the prevalence of these diseases around the globe, for example, more tropical diseases entering Europe.</p>	

5. Does your medical school curriculum address the cardiorespiratory health effects of climate change, including 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.
<p><i>Score explanation:</i> The C19 curriculum ‘People and Populations’ lecture by Prof. Frank Kee, “Climate Change and Sustainability”, includes cardiovascular and respiratory disease as some of the health effects of climate change, as a result of air pollution and other environmental and extreme weather events. Further, in the ‘Principles of Disease and Treatment’ module, teaching on respiratory conditions, such as Asthma, COPD, and Asbestosis, mentions environmental, occupational and social factors as potential causes of these conditions.</p> <p>In the new C25 curriculum, the health effects caused by climate change on the cardiorespiratory system are emphasised at many points throughout the course as possible learning objectives to be discussed, both through case-based learning and a tutorial on the social determinants of health (within the first block, <i>Fundamentals of Clinical Science</i>). There is no single lecture but instead a longitudinal incorporation of the topic throughout lectures.</p>	

6. 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.
<p><i>Score explanation:</i> The C19 curriculum ‘People and Populations’ lecture by Prof. Frank Kee, “Climate Change and Sustainability”, references environmental degradation due to climate change, such as land, coastal ecosystems and fisheries, resulting in health effects including, loss of livelihoods, displacement, poverty and adverse health; specifically, mental health, infectious diseases, malnutrition and physical risks. The mental health and neuropsychological effects of environmental degradation and climate change are not specifically outlined.</p> <p>It is planned that this topic will be briefly referred to in the C25 curriculum.</p> <p><i>Recommendations:</i> Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. Whilst the biopsychosocial causes and management of mental health and neuropsychological conditions is often referenced throughout the course of the curriculum, the effects of environmental degradation and climate change are not typically mentioned. This should be more evident as part of the ‘social’ aspect of the biopsychosocial model; throughout teaching of neurological conditions, and their management. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school’s curriculum.</p>	

7. 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.
<p><i>Score explanation:</i> The C19 curriculum ‘People and Populations’ lecture by Prof. Frank Kee, “Climate Change and Sustainability”, notes reduced water and food security, leading to malnutrition and diarrheal disease as some of the international effects of climate change. It states the climate change effects on ecosystems and particular species as impacting microbial proliferation; changes in vector- pathogen- host relations and infectious disease geography/ seasonality; and impaired crop, livestock and fisheries yields, leading to impaired nutrition, health and survival.</p>	

There has also been a longitudinal incorporation of this topic into the new C25 curriculum, both in tutorials and in case-based learning. Discussion of these factors as social determinants of people's health are discussed, with relation to the increased vulnerability rural people in LEDC's may face due to climate change, including their food and water security. This is also compared to people in the UK who live in poverty and to Irish travellers within the UK.

8. 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, 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.

Score explanation: The C19 curriculum lecture by Prof. Frank Kee, “Climate Change and Sustainability”, mentions an increasing vulnerability for those living in slums and coastal regions, as well as some factors associated with increased risk of extreme events and disasters related to climate change, for example, age, pre-existing health problems, poverty and isolation, informal settlements, and poor health and education systems. The lecture, “Health Inequalities”, explains social determinants of health and references the need to develop healthy and sustainable places and communities, however the outsized impact of climate change on the marginalized groups noted above is not directly covered.

Although this area of the course is not yet being taught, it is planned that this topic will be covered in the C25 core curriculum, through case-based learning.

Recommendations: Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. Although there is some teaching on the impact on climate change on marginalized populations, we do not feel that all of the listed populations are discussed in sufficient detail. It would be ideal to make a clear link between climate change and social inequalities. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school's curriculum.

9. Does your medical school curriculum address the unequal 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.
<p><i>Score explanation:</i> The C19 curriculum lecture by Prof. Frank Kee, “Climate Change and Sustainability”, highlights the variation in greenhouse gas emissions by country and includes a world map reflecting mortality related to climate change. Climate change is described as the defining issue for health systems in the 21st century (according to the World Health Organization), however, the unequal health impacts of climate change globally are not directly addressed. The lecture on “Health Inequalities” explains social determinants of health and discusses the need to develop healthy and sustainable places and communities.</p> <p><i>Recommendations:</i> Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. The two topics of unequal health impacts around the world and climate change are typically discussed separately, but it would be ideal to make the connections between them more explicit. For the C25 curriculum, we have only been able to reflect and evaluate on areas of the curriculum which have been taught so far. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school’s curriculum.</p>	

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

10. 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.
<p><i>Score explanation:</i> In the C19 curriculum, a lecture on “Screening for Congenital Abnormalities” is available on the Medical Education Portal for Year 4 Students on their ‘Obstetrics and Gynaecology’ placement. This lecture makes reference to environmental exposures increasing the risk of congenital abnormalities in the foetus, specifically exposure to chemicals, pesticides, medications, alcohol and radiation during pregnancy. This topic may be explored more in depth in elective courses, such as ‘Women’s Global Health’ referenced previously.</p>	

Recommendations: Although the effects of environmental toxins such as drugs and alcohol are covered in depth, a few small changes could be made to incorporate the effects of industry-related toxins. For example, Case 1 from the C25 curriculum discusses non-industry-related toxins, and setting this in a heavily polluted city or near a factory could prompt students to consider the effects of industry-related toxins. Furthermore, teaching on genetics and multifactorial disease, as well as congenital abnormalities, could better emphasize the role of environmental factors or gene- environment interactions on the incidence of these conditions. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school’s curriculum.

11. 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.

Score explanation: The C19 curriculum lecture by Prof. Frank Kee, “Climate Change and Sustainability”, outlines predictions for the effects of climate change in Northern Ireland, including the potential for more frequent extreme weather events, such as floods and storms. It outlines the need for adaption and mitigation to these threats alongside the co-benefits of addressing climate change and improving health and referenced ‘A Sustainable Development Strategy for Northern Ireland’.

Recommendations: Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. For the C25 curriculum, we have only been able to reflect and evaluate on areas of the curriculum which have been taught so far. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school’s curriculum.

12. Does your medical school curriculum address the unique climate and environmental health challenges that have impacted and are impacting Indigenous communities?

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.

Score explanation: There was no evidence to support this metric.

Recommendations: Whilst understanding how Indigenous communities are uniquely impacted by climate and environmental challenges globally is of importance and interest, these communities are not prevalent across the UK & Ireland. We feel that emphasis and priority should be given to addressing the impact on minority ethnic groups, the Irish travelling community, people experiencing homelessness and refugee or asylum seeking communities, alongside other prevalent or marginalised groups such as those listed in Section 13.

13. 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, 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.

Score explanation: The C19 curriculum lecture by Prof. Frank Kee, “Health Inequalities”, explains social determinants of health and references the need to develop healthy and sustainable places and communities. It demonstrates how various socioeconomic and political factors can influence someone’s living and working conditions, amongst other determinants of health, which affect equity in health and wellbeing. However, the outsized impact of anthropogenic environmental toxins on the marginalized groups noted above is not directly covered.

In the C25 curriculum there is an opportunity to explore the increased exposure to anthropogenic toxins amongst a variety of patients from low-income communities. This is taught longitudinally in case-based learning and tutorials based on Dr. Corrigan’s “Social Determinants of Health” and “Health Inequalities” tutorials.

Recommendations: Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. Although there is some teaching on the impact of anthropogenic environmental toxins on marginalized populations, we do not feel that all of the listed populations are discussed in sufficient detail. It would be ideal to incorporate this topic into lectures in the C25 curriculum, rather than tutorials only. We hope that in future years, as the C25 curriculum is fully

implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school's curriculum.

Curriculum: Sustainability

14. 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.

Score explanation: The C19 curriculum lecture by Prof. Frank Kee, “Climate Change and Sustainability”, discusses the co-benefits of addressing climate change and improving health; giving ‘healthier, sustainable eating’ as an example. Whilst not explicitly mentioning a plant-based diet, it describes the environmental and health benefits of eating less processed foods, eating more locally produced, fresh, seasonal food and reducing consumption of animal products; eating more vegetables instead. Some of the noted health benefits are a reduced risk of obesity, heart disease, stroke, diabetes, and colon and breast cancers. The environmental benefits include reducing the social, environmental and economic cost of ‘food miles’, and reducing greenhouse gas emissions.

In the C25 curriculum, a lecture on nutrition briefly covers this topic in a similar way to within the C19 curriculum. One of the cases in first year focuses on a vegan patient, providing opportunities to explore this topic early in the course.

Recommendations: Many of the possible improvements to be made for curriculum only require a small link to planetary health in a topic that is already covered in depth in the course. For example, in the C25 curriculum, slightly altering the case to include the environmental benefits of a plant-based diet, and some dialogue from the patient explaining their diet as an environmental choice, could encourage more discussion regarding the benefits of a plant-based diet. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school's curriculum.

15. Does your medical school curriculum highlight the waste generated by the healthcare system and identify ways to advocate for and implement sustainable best practices in health care?

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.

Score explanation: The C19 curriculum lecture by Prof. Frank Kee, “Climate Change and Sustainability”, includes a slide titled, ‘What can a GP do?’. This includes suggestions such as educating yourself and your patients, using less energy personally and more sustainable forms of transport, as well as joining committees, networks or councils and being an advocate for climate change and sustainability.

This topic may be explored more in depth in elective courses, such as ‘Healthcare needs smaller feet- Sustainable Healthcare: Theory into practice’ or ‘SusQI’ referenced previously.

Recommendations: Our assessment of the curriculum found that, although there is teaching and discussion around sustainable health care, there is little teaching formally highlighting the waste generated and the impact of this. Current core curriculum teaching and elective courses could be easily modified to make this more explicit. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school’s curriculum.

Curriculum: Clinical Applications

16. 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

Score explanation: There is no evidence to support this.

Recommendations: This topic could be introduced as part of communication skills training or integrated into case histories in clinical skills teaching examples.

17. 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>Score explanation:</i> As part of QUB’s clinical skills teaching, students are taught to take a thorough history from patients, which includes a social history. This includes aspects such as: their occupational and living situation, and may explore their exposure to potential toxins (if relevant). An example of this would be asking if someone had been exposed to asbestos in an industrial or home environment, or any environmental toxins if they were involved in agricultural work.</p> <p><i>Recommendations:</i> The importance of a thorough social history, including environmental and exposure risks, should continue to be emphasised. This topic could also be introduced as part of communication skills training or integrated into case histories in clinical skills teaching examples.</p>	

Curriculum: Administrative Support for Planetary Health

18. Is your medical school currently in the process of 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>Score explanation:</i> QUB has recently introduced an updated curriculum, C25. In this new curriculum, one of the four key themes is ‘Global and Population Health’. ‘Social Accountability & Sustainable Healthcare’ is a sub theme within this. Staff have confirmed that they are actively including planetary health and sustainable healthcare into the C25 curriculum, and there are regular meetings regarding and reviewing this process.</p> <p><i>Recommendations:</i> Although the new C25 curriculum places a large focus on global health, it is important for the medical school to continue to integrate <u>planetary health</u> as part of this theme, and to do so in a longitudinal fashion. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school’s curriculum.</p>	

19. 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.

Score explanation: In the new curriculum (C25), 'Global and Population Health' is one of the main four themes, and 'Social Accountability and Sustainable Healthcare' is a sub-theme within this. Global and planetary health issues are well integrated into case-based learning scenarios. But planetary health and sustainable healthcare are only appropriately integrated into the cases. So, the material isn't incorporated into one single series of lectures but is instead incorporated longitudinally mainly through a wide variety of these cases. Within cases students need to consider the possible global and population health implications of the scenario, guided by prompts. However, planetary health and healthcare sustainability focused learning objectives are not the main focus. Students can choose to explore planetary health, but this would not fulfill the compulsory learning objectives for the cases, and so, students not interested in the topic may not choose to investigate planetary health.

Recommendations: Although the new C25 curriculum places a large focus on global health, it is important for the medical school to continue to integrate planetary health as part of this theme, and to do so in a longitudinal fashion. For the C25 curriculum, we have only been able to reflect and evaluate on areas of the curriculum which have been taught so far. We hope that in future years, as the C25 curriculum is fully implemented, the metric above will increasingly be achieved, as planetary health is further integrated into the medical school's curriculum.

20. Bonus: Does your medical school have a program that offers incentives for faculty/departments to develop new planetary health/ESH courses and/or incorporate planetary health/ESH into existing courses?

1*	Yes, the medical school has an incentive program.
0	No, the medical school does not have an incentive program.

Score explanation: Queen's has recently introduced an SDG Research Seed Fund, an internal award scheme, where grants of up to £5000 are available to assist in SDG related activity and projects. The Fund is intended to support projects with clear potential to provide opportunities

for research engagement or to further consolidate research relationships with external partners, and that are not currently in receipt of other funds which could reasonably support that activity.

<https://www.qub.ac.uk/Research/Our-research/Engaged-Research/THEENGAGEDRESEARCHSEEDFUND-SUSTAINABLEDEVELOPMENTGOALS.html>

Recommendations: Examples of other incentives may include opportunities for professional development for staff in this area, such as receiving certificates of participation, opportunities for delivering interest or expert lectures, or professional or voluntary leadership roles. Other incentives to support and connect faculty may include meetings, guidance resources, workshops or learning opportunities, and networking opportunities.

Section Total (42 out of 58)	72%
-------------------------------------	------------

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?	
4	Yes, there are faculty members at the School of Medicine who have a primary research focus in planetary health and healthcare sustainability.
3	Yes, there are faculty members at the School of Medicine who have a primary research focus in a 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.
<p><i>Score explanation:</i> There are a small number of researchers working on projects related to planetary health, although this is not their primary area of focus. Alongside this, there are a number of researchers within the wider institution who also have an interest in planetary health as a secondary research focus.</p> <p>Professor Jayne Woodside, a professor who works within the Institute of Public Health (one of the three main research institutes of the School of Medicine, Dentistry and Biomedical Science) has received funding for a research project funded by Department of Agriculture, Food and the Marine (DAFM)/Department of Agriculture, Environment and Rural Affairs (DAERA) exploring sustainable dietary guidelines and whether adhering to those guidelines will result in any concerns in terms of nutritional status. The first piece of work as part of this project will be a systematic review of the impact of meat-alternatives (environmental, nutritionally, and consumer acceptability) alongside an audit of the current availability of meat-alternatives. Professor Woodside is also a researcher for the Institute for Global Food Security (IGFS), one of the four Global Research Institutes at QUB, which examines the challenges of food integrity – nutritional, environmental, food-safety, animal welfare. The</p>	

IGFS does include other researchers from the School of Medicine, Dentistry and Biomedical Science, but most projects within the Institute currently focus more on climate change and sustainability in terms of agriculture, food production and ecology.

Dr Leandro Garcia, a researcher in the Centre of Public Health (one of the three main research centres in the School of Medicine, Dentistry and Biomedical Science), has worked on a few projects related to planetary health. Dr Garcia was part of a project mapping the evidence of the possible links between exposure to air pollution and physical health.

<https://www.sciencedirect.com/science/article/pii/S0160412020319097?via%3Dihub>

Several researchers in other schools at QUB are involved in planetary health research. QUB has an in-depth research portal which enables users to find projects and researchers under particular topics or themes. When searching the term ‘Climate and Health’ in the portal, a total of 49 profiles come up. A few examples of researchers related to the topic of focus here are listed below:

Dr Deepti Adlakha from the School of Natural and Built Environment is an interdisciplinary researcher whose research focuses on generating evidence for reducing environmental health and social disparities, particularly factors affecting prevention, control and mitigation of non-communicable diseases in populations. She has worked on a number of papers linking public health and urban development.

<https://pure.qub.ac.uk/en/publications/defining-pathways-to-healthy-sustainable-urban-development>;

<https://pure.qub.ac.uk/en/publications/the-nexus-between-air-pollution-green-infrastructure-and-human-health>

Professor Jenny McKinley and Dr Siobhan Cox of the School of Natural and Built Environment have both worked on projects investigating anthropogenic factors and their impact on human health. Alongside their colleagues Dr Ulrich Ofterdinger & Dr Rory Doherty, also of the School of Natural and Built Environment, published a paper investigating the origin of chronic kidney disease and its relationship with environmental urbanization in Belfast.

<https://pure.qub.ac.uk/en/publications/chronic-kidney-disease-of-unknown-origin-is-associated-with-environmental-urbanization-in-belfast>

Recommendations: Further encourage researchers with a secondary interest in planetary health to develop their research by providing resources and grants to enable medical researchers to prioritize planetary health research at QUB. Encourage interdepartmental research, such as with researchers in the School of Natural and Built Environment, who have previously investigated environmental factors and human health.

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.

Score explanation: The School of Medicine, Dentistry and Biomedical Sciences does not have a department or institute which explicitly supports and promotes research which investigates the impact of climate change on health or healthcare sustainability.

There is a newly established Centre of Sustainability, Equality and Climate Action. The Centre’s aims currently focus on the environmental aspects of climate change, however, they do mention interdisciplinary collaboration to help deliver on the UN’s Sustainable Development Goals. Similarly the Institute for Global Food Security works on the environmental impact on agriculture and food sustainability.

<https://www.qub.ac.uk/research-centres/SECA/>

Queen’s has both an Occupational Health department, and within the Estates Directorate, staff undertake a number of sustainability roles to deliver a range of operational and policy issues around sustainability, such as Energy/ Carbon Management, Sustainable Travel, Waste Management and Engagement. The Estates Directorate therefore contains the Environmental Health department.

<https://www.qub.ac.uk/directorates/HumanResources/employees/occupational-health/>

<https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/>

We believe that none of these departments alone is sufficiently dedicated to planetary health to justify a point, but that the existence of these three departments together warrant a ‘dedicated department’ at QUB.

Recommendations: Further interdepartmental collaboration between the Centre of Sustainability, Equality and Climate Action, Occupational Health department and Estates Directorate is needed, with an increased focus on planetary health. It would be ideal to expand the Centre of Sustainability, Equality and Climate Action to include researchers from the School of Medicine, Dentistry and Biomedical Science, who have an interest in planetary health and healthcare sustainability. Alternatively, the development of an interdisciplinary department on planetary health and healthcare sustainability could be established within the medical school. A centralized, interdisciplinary department would provide a hub providing resources for researchers dedicated to planetary health and global health development, enabling QUB to further address the UN SDGs.

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 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.
<p><i>Score explanation:</i> There is no evidence to suggest a process or current efforts to create a process in which community members impacted by climate and environmental injustice can advise or have decision-making power in the climate and environmental research agenda.</p> <p><i>Recommendations:</i> Create a process in which community members impacted by climate and environmental injustice can provide advice to those who determine the climate and environmental research agenda. Work with policy members and other researchers within the wider institution to establish a network to enable easy communication between researchers and community members. There are some policy fellows at QUB who are involved with the Belfast Climate Commission who may be able to advise or help to develop such a process within the medical school. This partnership could be extended to develop a process whereby communities can give input on research agendas and sustainable practices at QUB. https://www.belfastclimate.org.uk/</p>	

4. Does your institution have a planetary health website, or a website centralizing various campus resources 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.
<p><i>Score explanation:</i> There is a section of the Estates Directorate which tackles Sustainability at Queen's This website includes some resources related to health and the environment, including</p>	

campaigns and events which staff and students can get involved in, and Queen’s current Green Initiatives, such as waste and recycling. The University is also developing an SDG website which will include health and environment-related resources.

<https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/>

Recommendations: Update or interlink the Sustainability at Queen’s website with the Centre of Sustainability, Equality and Climate Action to create an easy-to-use, adequately comprehensive website centralizing all campus resources related to health and the environment, which signposts users to current research opportunities and planetary health researchers. This will make it easier for staff and students to find all the information they need, and to further highlight the importance of planetary health and environmental action.

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?

4	Yes, the institution has hosted more than one conference or symposium on topics related to planetary health in the past year, including at least one on climate change.
3	Yes, the institution has hosted 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.

Score explanation: QUB hosted a conference in September 2020 entitled “Healthy People on a Healthy Planet”. This web conference brought together 18 international speakers working in global health, and focused on the SDG’s on the five year anniversary of the UN summit.

<https://www.qub.ac.uk/research-centres/CentreforPublicHealth/Events/GlobalHealthLiveWebConferenceSeptember24-252020.html>

As part of the NI Science Festival in February 2020, Queen’s School of Biological Sciences hosted a symposium titled ‘Climate: Time to Change’. The event focussed on three main themes: Biodiversity, Future Foods, and Human and Animal Health – aiming to encourage discussions on building a more sustainable world.

<https://www.qub.ac.uk/about/Leadership-and-structure/Faculties-and-Schools/Medicine-Health-and-Life-Sciences/Events/ClimateTimetoChange.html>

The School of Biological Sciences hosted a Climate Change Conference in March 2020, focussing on the importance of recognising the local and global impacts of climate change, as

well as what is being done to mitigate and adapt to such impacts, and promoting all dimensions of sustainability.

<https://pure.qub.ac.uk/en/activities/climate-change-conference>

Recommendations: Continue to hold conferences and symposiums on topics related to planetary health, encouraging staff and students from QUB to attend and take part. Encourage medical students who have previous degrees or intercalated degrees in global health to submit presentations and display current research at conferences and symposiums to further highlight QUB's dedication to global health, planetary health and healthcare sustainability and enable students an opportunity to present their research.

6. Has your institution or medical school joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education?

2	Yes, the medical school has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education.
1	Yes, the institution has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education, but the medical school specifically has not.
0	No, the institution has not joined the Planetary Health Alliance or the Global Consortium on Climate and Health Education.

Score explanation: QUB, the School of Medicine, Dentistry and Biomedical Science or any other QUB departments or schools are not registered for either the Planetary Health Alliance or the Global Consortium on Climate and Health Education. QUB is a member of several Irish and British climate groups, for example, the Alliance for Sustainability Leadership in Education and the Green Gown Awards.

https://www.eauc.org.uk/our_educational_members

<https://www.greengownawards.org/home>

Recommendations: Encourage the medical school and/or the wider institution to join both the Planetary Health Alliance and the Global Consortium on Climate and Health Education, to show that the institution is determined to help tackle the climate crisis, and to encourage planetary health research at QUB.

Section Total (9 out of 19)

47%

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.
<p><i>Score explanation:</i> Queen’s Widening Participation Partnership produce taster days and workshops for schools from the community. There are some related to medicine, with members of staff or PhD students from the medical school taking part. However, there are no sessions specifically related to the medical school or planetary health. There is a new aim of embedding the Sustainable Development Goals for 2030 into all the workshop sessions. https://www.qub.ac.uk/directorates/sgc/wpu/</p> <p><i>Recommendations:</i> Although there are a number of partnerships between the medical school and the community, we could not identify any of these which focus on promoting planetary and environmental health. We encourage the medical school to design a framework to establish such initiatives, and to avail of interdisciplinary and community links to aid the implementation of this.</p>	

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.

Score explanation: As part of the NI Science Festival in February 2020, Queen’s School of Biological Sciences hosted a symposium titled ‘Climate: Time to Change’. The event focussed on three main themes: Biodiversity, Future Foods, and Human and Animal Health – aiming to encourage discussions on building a more sustainable world.
<https://www.qub.ac.uk/about/Leadership-and-structure/Faculties-and-Schools/Medicine-Health-and-Life-Sciences/Events/ClimateTimetoChange.html>
The School of Biological Sciences hosted a Climate Change Conference in March 2020, focussing on the importance of recognising the local and global impacts of climate change, as well as what is being done to mitigate and adapt to such impacts, and promoting all dimensions of sustainability.
<https://pure.qub.ac.uk/en/activities/climate-change-conference>

Recommendations: The medical school has not specifically organised any community-facing events regarding planetary health, and we encourage the medical school to explore this opportunity.

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.

Score explanation: The School of Medicine, Dentistry and Biomedical sciences sends out regular e-mails about talks and events for students to attend (online or in person). Some of these are related to planetary health. In 2020 the EIT curating citizen engagement project was brought to attention which involved 4 Universities in Europe. The focus on the project was to build digital citizen science activities to co-create the future of food.
<https://eit.europa.eu/our-activities/opportunities/eit-food-curating-citizen-engagement>

The SU Climate Action Group also emails all students at Queen’s regarding their meetings and actions. However, we feel that these emails are easily marked as spam and unlikely to be read by a large number of students.

There is also a new Public Health bi-monthly news bulleting, however this is only sent to public health students.

Email communications are often generic and rarely offer information in relation to planetary health and/or sustainable healthcare.

Recommendations: We feel that a newsletter summarising planetary health and sustainable healthcare for all students in the school would be useful. It would be ideal if the SU could flag emails regarding the Climate Action Group, to encourage students to read these updates. An email newsletter specific to the medical school would be ideal, however we recognise that there is already an enormous amount of email communication between the medical school and its students.

4. Do hospitals affiliated with your medical school 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.

Score explanation: Due to Covid-19, it has been extremely difficult to assess which patient educational resources are available across the five hospital trusts in Northern Ireland. Online resources at Belfast Health and Social Care Trust under “Healthy living” about “care in the sun”, providing information on how to stay safe in the sun and signs of skin cancer plus 3 useful links. <https://belfasttrust.hscni.net/healthy-living/>
No resources detailing other environmental health exposures such as pesticides, chemicals, toxics or pollutants are available online.

Recommendations: We appreciate that Queen’s works in partnership with the five hospital trusts in Northern Ireland, but has little or no control over which resources are made available to patients in the hospitals.

Although the definition of accessible is somewhat vague, especially during Covid-19, we appreciate that some resources do exist (for example on the effects of smoking and sunlight), but do not believe that these are adequate. We believe that providing some resources on a greater range of environmental toxins, such as those listed above, would be beneficial.

5. Do hospitals affiliated with your medical school 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.
<p><i>Score explanation: There is no evidence to support this metric.</i></p> <p><i><u>Recommendations:</u> We appreciate that Queen's works in partnership with the five hospital trusts in Northern Ireland, but has little or no control over which resources are made available to patients in the hospitals.</i></p> <p><i>Although the definition of accessible is somewhat vague, especially during Covid-19, we believe that providing some resources on the impact of climate change on health (for example in hospital lobbies, GP waiting rooms, outpatient departments, etc) would be beneficial.</i></p> <p><i>Examples of such resources are available here:</i></p> <p>https://medsocietiesforclimatehealth.org/educate/patients/</p>	

Section Total (4 out of 12)	33%
------------------------------------	------------

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?	
2	Yes, the institution offers grants available to medical students for students to enact sustainability initiatives.
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.
0	No, the institution does not offer opportunities or support for sustainability initiatives.
<p><i>Score explanation:</i> There are student-led initiatives supported by the University’s Environmental Team, for example,, the “Green Fund” and “Student Environmental Leadership Programme”. All students are able to submit proposals for projects. Examples of projects include “Elms Accommodation Allotment” promoting wellbeing and healthy eating, and providing plastic free sanitary products for the University to reduce the impact of plastics on human health and the environment. https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/StudentInitiatives/</p> <p>The Green Fund empowers staff and students to create and deliver projects within their area that benefit the environment, and aims to spread environmental awareness, outreach and support for the University’s low Carbon vision. There is available funding of up to £1500 per team (£20,000 in total). https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/GreenFund/</p> <p>The student environmental leadership programme is an enrichment programme which is composed of workshops, volunteering and environmental projects. Students can apply to become “Sustainability Champions” - advocates for good environmental practices at the University who spread awareness, provide feedback to staff, liaise and do community work. There is access to funding opportunities. https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/GetInvolved/</p>	

Recommendations: We propose for there to be a greater publication of these schemes in order to increase awareness (this could be done via the school to gain attention of medical students) and for there to be a call on projects which emphasise planetary health issues.

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?

3*	The institution offers an explicit paid fellowship for medical students to do research related to planetary health and/or sustainable healthcare.
2*	The institution offers paid research opportunities for students and planetary health/sustainable healthcare projects would be considered eligible.
1	There are unfunded research opportunities for students to perform research related to planetary health/sustainable healthcare.
0	There are no opportunities for students to receive funding for planetary health/sustainable healthcare research.

Score explanation: Medical students are offered the chance to intercalate for a year (after completion of second or third year of the medical degree). Public Health and Global Health Masters are two of the options for intercalation, which include some planetary health aspects and the opportunity to carry out research relating to this during the dissertation. Prizes and grants are open to application from students. Medical students are also able to complete a PhD as an intercalated degree, but opportunities are scarce and we are not aware of any PhD's in planetary health being offered. However, a PhD is a funded opportunity to perform research, unlike the aforementioned Masters.

<https://www.qub.ac.uk/schools/mdbs/Study/IntercalatedDegrees/IntercalatedMasters/>

Students are able to apply for Summer Studentships, a paid research opportunity. However, no studentships currently available focus on planetary health or sustainable healthcare.

<https://www.qub.ac.uk/schools/mdbs/Study/ClinicalAcademicTraining/SummerStudentships/>

Some SSCs provide unpaid opportunities to research planetary health, such as those offered by Dr Vivienne Crawford (see Q1 in Curriculum).

Recommendations: The medical school should continue to offer paid research opportunities for students, and in particular should focus on offering paid opportunities in planetary health research. Projects which are already established, such as Summer Studentships and PhDs should be developed and include options related to planetary health.

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 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.

Score explanation: The online platform “Green at Queen’s E-Zine” provides news, information and updates on all things environment and climate change, including events at the University and opportunities for student involvement. However, this is not specific to the medical school or to planetary health.

<https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/GreenatQueensE-Zine/>

Recommendations: We propose either a direct webpage or regular email newsletter by the medical school with planetary health updates. One option could be to create a planetary health tab on the Med Portal, which would be accessible for all medical students.

4. Does your medical school have funded, 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 funded 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 and/or funding.
0	No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.

Score explanation: Students for Global Health is a registered society at QUB Student’s Union. Students for Global Health is a student network and registered charity tackling global and local health inequalities through education, advocacy and community action. Their vision is a fair and just world in which equity in health is a reality for all. However, this society does not receive any more faculty support or SU funding than the dozens of other medical societies at Queen’s. <https://home.qubsu.org/clubssocieties/sfgh/>

Recommendations: We encourage faculty to support, advise, and get involved with Students for Global Health. However, we appreciate that there are many medical societies at Queen's undertaking important work, and it is difficult for faculty to endorse them all, or for the SU to provide more funding to Students for Global Health than for other societies.

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

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

Score explanation: The Campaigns and Engagement Student Officer (who also chairs the QUBSU Climate Action Group) sits on all institutional management groups in relation to carbon and other sustainability related initiatives.

<https://qubsu.org/YourUnion/MeettheTeam/StudentOfficers/CampaignsEngagement/>

Queen's also has a part-time Environmental Student Officer, who campaigns for sustainability and best practices.

The School also has a representative who advocates best practices for students, however this does not necessarily include sustainability.

Recommendations: It would be ideal to create a role for a student representative advocating specifically for planetary health and sustainability best practices on behalf of the medical school.

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) that follow Leave No Trace principles.

Score explanation:

For each of the categories above:

- The medical school offers an SSC called ‘Rural Health’, where students gain practical experience of day to day activities on working farms, discuss mental and physical health of farmers in NI, describe the challenges affecting rural healthcare provision in NI, etc.
- In September, the Centre for Public Health held a conference titled Healthy People on a Healthy Planet.
<https://www.qub.ac.uk/research-centres/CentreforPublicHealth/Events/GlobalHealthLiveWebConferenceSeptember24-252020.html>
- The medical school offers an SSC called ‘Rural Health’, where students gain practical experience of day to day activities on working farms, discuss mental and physical health of farmers in NI, describe the challenges affecting rural healthcare provision in NI, etc.
- As part of the NI Science Festival in February 2020, Queen’s School of Biological Sciences hosted a symposium titled ‘Climate: Time to Change’. The event focussed on three main themes: Biodiversity, Future Foods, and Human and Animal Health – aiming to encourage discussions on building a more sustainable world.
<https://www.qub.ac.uk/about/Leadership-and-structure/Faculties-and-Schools/Medicine-Health-and-Life-Sciences/Events/ClimateTimetoChange.html>
- QUB SU organises a number of Volunteer SU programmes such as Handy Helpers, who help to plant trees and wildflowers, raise awareness of recycling, and offer training in Environmental and Waste Awareness. Green at Queen’s also offers a number of environmental volunteering opportunities, such as maintaining allotments.
<https://qubsu.org/VolunteerSU/Opportunities/HandyHelpers/>
- QUB Scout Network organises a number of wilderness and outdoor programmes that follow Leave No Trace principles. <https://home.qubsu.org/clubsocieties/scoutnetwork/>

Section Total (11 out of 14)	79%
-------------------------------------	------------

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>Score explanation:</i> There are number of staff within the Estates Directorate with responsibility for various aspects of Sustainability – e.g. within the Estates Directorate, staff undertake a number of sustainability roles to deliver a range of operational and policy issues around sustainability, such as Energy/ Carbon Management, Sustainable Travel, Waste Management and Engagement.</p> <p>The School of Medicine, Dentistry and Biomedical Sciences have multiple Sustainability Champions who aim to embed a sustainable culture within students, and students. Champions implement projects, host information events and ensure the School is taking part in Queen’s wider sustainability programs.</p> <p>https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/</p> <p><i>Recommendations:</i> <i>We propose that the medical school designates a member of staff dedicated to sustainability.</i></p>	

2. Does your medical school and/or institution have a stated goal of carbon neutrality by 2050?	
4*	The medical school is already carbon neutral.
3	Yes, there is a stated carbon neutrality goal and the medical school has a well-defined and adequate plan in place to achieve this goal.
2	Yes, there is a stated carbon neutrality goal, but the medical school 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>Score explanation:</i> The University's current target is to achieve 21% reduction in carbon emissions by 2020, this target has been achieved through the delivery of a robust carbon reduction plan. The university is currently developing a road map to deliver a net zero target, which would align with the UK government's net zero carbon by 2050 target. This target will hopefully be set in the coming months, and align with the Sustainability commitments of the forthcoming University Corporate Plan.</p> <p>https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/EnergyandCarbonManagement/</p> <p><i>Recommendations:</i> We propose that the University sets a carbon neutrality goal, and creates an adequate plan in order to achieve that goal. QUBSU Climate Action Group is advocating for Queen's to become net carbon neutral by 2030 – we support this goal and strongly encourage the university to work towards it.</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.

Score explanation: A small percentage of energy used within Queen’s University is from renewable energy. Most buildings within The School of Medicine, Dentistry and Biomedical Sciences use energy which is sourced from onsite low carbon Combined Heat Power Plants.
<https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/EnergyandCarbonManagement/>

Recommendations: We propose that the University sources a larger percentage of energy for the medical school buildings from renewable sources, either off-site or on-site. As an achievable goal, we suggest that 25% of energy should be sourced from renewable sources by 2025.

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 rating system or sustainable 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.

Score explanation: Queen’s University is committed to ensuring that sustainability is incorporated into every aspect of its operations, teaching and research. The Estates Directorate ensures all development projects are designed to a high, sustainable standard. All projects greater in value than £1 million are designed to a BREEAM Excellent standard, whilst refurbishments achieve a BREEAM Very Good rating. In addition to this the University has invested significantly in retrofitting existing buildings to increase energy efficiency and sustainability.
 Key areas of sustainability construction considered are sustainability concept, energy performance, water efficiency, sustainable transport and biodiversity.
<https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/SustainableConstruction/>

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.
<p><i>Score explanation:</i> The University has a Travel Plan which details the University’s strategy for increasing the uptake of sustainable travel across the University from 2015 to 2020. A new 5 year Travel Plan is currently being developed.</p> <p>A range of initiatives which aim to encourage active travel options within the student community have been undertaken by Queen’s University. This includes the provision of Sheffield cycle stands at most builds and showering facilities. Public transport is encouraged, with the University hosting a number of events in partnership with Translink, the local public transport organisation.</p> <p>To connect The School of Medicine, Dentistry and Biomedical Sciences with Belfast City Hospital, a shuttle bus, which is free for staff and students, routinely travels between the two sites.</p> <p>https://www.qub.ac.uk/directorates/EstatesDirectorate/Services/SustainabilityatQueens/SustainableTravel/</p>	

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.
<p><i>Score explanation:</i> The School of Medicine, Dentistry and Biomedical Sciences (and all buildings across the University Campus) have a waste aims to reduce the amount of waste generated, the amount going to landfill and increase the amount recycled.</p> <p>Items which can be recycled within the school include batteries, books, cardboard, metal, paper, plastics, glass.</p> <p>All gardening waste at the University is sent for composting and all food waste generated from student accommodation, catering outlets (cafes and in house catering) is sent for composting.</p>	

<https://www.qub.ac.uk/sites/campus-food-drink/Sustainability/>

Recommendations: It would be ideal if the university provided food waste bins for compost in medical school buildings, where they would be accessible to students.

7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections?

3	Yes, the medical school has adequate sustainability requirements for food and beverages 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.

Score explanation: Queen’s Campus Food and Drink are committed to embedding sustainability. They have implemented a range of initiatives which aims to reduce waste, enhance sustainable food choices, and cook with seasonal produce. Queen’s has been a Fairtrade University for several years.

<https://www.qub.ac.uk/sites/campus-food-drink/Sustainability/>

Recommendations: Improve options for those students bringing packed lunches in medical school buildings, for example, providing microwaves and kettle. Improving options for those bringing lunches would reduce waste. The university should aim to improve awareness about the sustainability of their food and beverage selections, as currently very little is known about this. The university could introduce sustainability initiatives in the canteens, for example, Waste-free Wednesdays.

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.
<p><i>Score explanation:</i> Where appropriate, the university utilises procurement frameworks established by collaborative consortia who assess and monitor risk regarding sustainability aspects. The university considers and includes sustainability aspects in the specifications for tendered suppliers in accordance with Government guidance and weights environmental aspects. However, little to no information on sustainable supply procurement is publicly available.</p> <p>https://www.qub.ac.uk/directorates/FinanceDirectorate/visitors/procurement/</p> <p><i>Recommendations:</i> We propose that the University produces clearer procurement guidelines and criteria, and that this information is made publicly available, to encourage transparency of procurement. The medical school should engage in such efforts to increase sustainability of procurement.</p>	

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.
<p><i>Score explanation:</i> Although some discussions have been held with Eventus (University Events Section) regarding Green Events, no formal guidelines have been produced.</p> <p><i>Recommendations:</i> We propose that formal sustainability guidelines are produced for use at all University events, which must be fulfilled by the hosts and supervised by Eventus. Although we appreciate that a number of events held by the medical school (such as society events) have little regulation, it would be ideal if any guidelines produced were also applicable to the medical school, and any events which are associated with it.</p>	

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.
<p><i>Score explanation:</i> The Institution Estates, Energy and Environmental team provides advice and guidance to labs on how they can be more sustainable. Until June 2019, the University participated in the NUS Green Impact Program and Environmental Accreditation program with a specific lab component. A number of research and teaching labs from across the School of Medicine participated in this program. This was to be replaced by LEAF – a Lab specific sustainability program in 2020, however (due to Covid-19 and limited use of lab spaces), the commencement of this was delayed to February 2021.</p> <p>https://www.sustainabilityexchange.ac.uk/leaf_lab_efficiency_assessment_framework</p>	

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.
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>Score explanation:</i> Queen's publicly committed to divesting from fossil fuels approximately 5 years ago after a public campaign from students and staff called “Fossil Free”, but since have shown no transparent plan or evidence that this has been acted upon.</p> <p>The University delegates the selection of investments held to its fund manager, and does not impose explicit investment restrictions regarding social, ethical and environmental issues. The University has instructed its fund manager to take account of environmental, social and corporate governance considerations, and provided that the effect is not materially detrimental to expected investment returns, the University will seek to transfer its indirect investment into funds which exclude companies involved in the extraction and production of fossil fuels, by 2025.</p> <p>https://www.qub.ac.uk/directorates/FinanceDirectorate/visitors/responsible-investment/</p> <p><i>Recommendations:</i> We propose that the University re-commits to divesting from fossil fuels, produces a transparent plan for actions to fulfil this, and evidence of divestment being</p>	

conducted. The QUBSU Climate Action Group is advocating for divestment in their 'Green New Deal', and we strongly support this.

Section Total (17 out of 29)

59%

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 Queen's University Belfast School of Medicine

The following table presents the individual section grades and overall institutional grade for the Queen's University Belfast School of Medicine on this medical-school-specific Planetary Health Report Card. 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.

Section	Raw Score	Grade
Planetary Health Curriculum (30%)	42 / 58 = 72%	B
Interdisciplinary Research (17.5%)	9 / 19 = 47%	C
Community Outreach and Advocacy (17.5%)	4 / 12 = 33%	D
Support for Student-led Planetary Health Initiatives (17.5%)	11 / 14 = 79%	B+
Campus Sustainability (17.5%)	17 / 29 = 59%	C+
Institutional Grade	60%	B -