



Planetary Health Report Card (Medicine): Keele University



2024-2025 Contributing Team:

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Summary of Findings

Overall Grade	A+
Curriculum	A
<ul style="list-style-type: none"> The Keele Curriculum strongly emphasises the effects of pollution, extreme weather and the effect on the pattern of infectious disease, as well as health inequalities, with these sessions being delivered in a variety of ways. The importance of planetary health is revisited every year allowing students to build on their learning and to introduce them to new planetary health concepts. Recommendations: The curriculum currently lacks a focus on teaching students how to incorporate discussions about planetary health into patient interactions. This could be addressed through clinical skills training or early years GP teaching. Additionally, there is no coverage of the environmental impact of surgical practices. Emphasising the importance of indigenous knowledge and value systems as integral components of planetary health solutions would also enhance the curriculum. 	
Interdisciplinary Research	A
<ul style="list-style-type: none"> Keele University has a strong research focus on sustainability and factors that affect planetary health with several researchers in the medical school exploring topics that promote sustainability. The Institute of Sustainable Futures is the basis of most of the sustainability research at Keele and provides the opportunity for a variety of multidisciplinary research. Recommendations: The research undertaken at Keele should have a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda. 	
Community Outreach and Advocacy	A+
<ul style="list-style-type: none"> The Keele Medical School has meaningful links with several community organisations that advocate for sustainability and planetary health, providing educational community placements for students within the local community. In addition, there are also Student Union events such as the Green Festival, focusing on the university community. Since the last report card, Keele University has provided more opportunities for students to learn more about global challenges. Recommendations: The medical school could run a community facing event regarding planetary health which would be a great addition to the medical school's research focused events. Although the university itself runs community facing events regarding sustainability and planetary health, the medical school is not involved in the planning or running of these. 	
Support for Student-Led Initiatives	A+
<ul style="list-style-type: none"> Keele University provides funding for student projects across campus which medical students are eligible to apply for. The medical school also has a webpage dedicated to sustainability and planetary health. Recommendations: A student-led planetary health group should be formed with faculty support. 	
Campus Sustainability	A+
<ul style="list-style-type: none"> At Keele University, sustainability is very important and this is evident throughout the current projects and initiatives on our main university campus. Transport has been considered, with medical placements accessible by public transport. Recommendations: It is hard to suggest improvements with a clear carbon neutral goal and entirely renewable energy already in place. Whilst there are Green Event Guidelines, these could be enforced for 	

student-led events.

Statement of Purpose

Planetary health is human health.

The Planetary Health Alliance describes planetary health as “a solutions-oriented, transdisciplinary field and social movement focused on analysing and addressing the impacts of human disruptions to Earth’s natural systems on human health and all life on Earth.” This definition is intentionally broad, intended to encompass the multitude of ways that the environment can affect health, including water scarcity, changing food systems, urbanisation, 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 health professional schools’ 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 health professional’s training. It is imperative that we hold our institutions accountable for educating health professionals 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 colour, 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 health professional schools, we have created a Planetary Health Report Card that students internationally can use to grade and compare their institutions on an annual basis. This student-driven initiative aims to compare health professional schools nationally and internationally on the basis of discrete metrics in five main category areas: 1) planetary health curriculum, 2) interdisciplinary research in health and environment, 3) university support for student planetary health initiatives, and 4) community outreach centred on environmental health impacts and 5) school campus sustainability.

Definitions & Other Considerations

Definitions:

- **Planetary Health:** is described by the Planetary Health Alliance as “the health of human civilisation and the state of the natural systems on which it depends.” For example, topics such as climate change, declining biodiversity, shortages of arable land and freshwater, and pollution would all fall under the realm of planetary health. Both planetary health and traditional ‘environmental health’ examine the relationship between human health and the external environment, including extreme temperatures, chemicals, vector-borne diseases, etc. Planetary health explicitly concerns itself with the potential health harms associated with human-caused perturbations of natural systems. Therefore, the human health focus of planetary health makes the field well-adapted for the context of health professional’s education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term “planetary health” to satisfy the metric.
- **Sustainable Healthcare:** As defined by the Academy of Royal Colleges, sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental, and social constraints and demands within health care settings. A sustainable healthcare system maintains population health, reduces disease burden and minimises use of healthcare services.
- **Education for Sustainable Healthcare (ESH):** is defined as the process of equipping current and future health professionals with the knowledge, attitudes, skills and capacity to provide environmentally sustainable services through health professional education, thus working to decrease the enormous environmental impact of the healthcare industry. Planetary Health Education is an integral part of this education rather than an end in itself. This is because knowledge on Planetary Health is required to be able to fully understand the necessity of sustainable healthcare as well as being part of the broader knowledge needed to fully protect and promote health. In summary, ESH is covered by the three Priority Learning Outcomes of the Centre of Sustainable Healthcare below, and Planetary Health Education is embraced in the first learning objective and is a fundamental requirement to achieve learning outcomes 2 and 3:
 1. Describe how the environment and human health interact at different levels.
 2. Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems.
 3. Discuss how the duty of a doctor to protect and promote health is shaped by the dependence of human health on the local and global environment.
- **Medical School/Department vs. Institution:** When “Medical school” is specified in the report card, this only refers to curriculum and resources offered by the School/department of Medicine and does not include offerings from other parts of the university (e.g. undergraduate departments (USA), other related departments (e.g. Public Health, Population Health departments). In contrast, when “institution” is specified in the report card, we are referring to the university more broadly including all of its campuses. Any resource reasonably accessible by medical students, no matter where in the institution the resource comes from or if it is

specifically targeted for medical students, can meet this metric.

- **Environmental history (Metric #19 in Curriculum Section):** This is a series of questions students are taught to ask during medical encounters that elicits patients' exposures and environmental risk factors. Historically, this has included consideration of exposures like pesticides, asbestos, and lead, though in the modern era shaped by climate change, it can be expanded to include things like wildfire smoke exposure, air pollution and mould after flooding. Key components include place of residence over the lifecourse, occupational history, food and water sources (e.g. meat from industrial feeding operations, regular fishing in contaminated water, access to clean drinking water), and exposure to air pollution. Please be as specific as possible when providing evidence for this metric.
- **Elective:** The word "elective" refers to an optional course or lecture series that a student can opt to take part in but is not a requirement in the core curriculum. Generally, these elective courses take place in the preclinical curriculum but vary by school.
- **Core Curriculum:** This refers to taught material that is delivered to the entire cohort of students in one year.
- **Clerkship / Outreach:** This is a term used in the USA to refer to placements that medical students go on e.g. Pediatrics, General medicine, Psychiatry. In the UK these are referred to as rotations, outreach or placements. This is a relatively short (approximately 4-8 weeks) period of study and patient-centred clinical experience that takes place as part of the undergraduate programme.
- **Clinical rotation:** This is a term used to refer to placements that students go on (e.g., ophthalmology, surgery, cardiology).
- **Physiotherapy vs Physical Therapy:** For the purposes of this report card these terms are considered interchangeable. However, physiotherapy will be used primarily.
- **Community organisations:** For most institutions, there are existing groups that are not directly affiliated with the university and exist as a product of what the community the institution exists in cares about or needs. These specific community organisations relevant to this report include those that are focused around some aspect of climate and health preservation. These community organisations can include but are not limited to local mutual aid initiatives, underserved-resource distribution groups, clean-up and nature conservation groups, community gardeners, and other environmental-related organisations. If your institution does not have access to local volunteerships with community groups, please report any community organisations your institution or school has collaborated with.
- **Climate justice:** The idea that certain population groups and geographical locations which are disproportionately more impacted by climate change are already economically and socially disadvantaged. This double vulnerability sits alongside pre-existing social justice concerns and should therefore shift policy and practice to mitigate the inequitable effects of the climate crisis.
- **Extractivism:** The removal of natural resources typically in large quantities. Within anthropology this term is often used in the context of colonialism to refer to

the historic seizing of natural resources, a practice which has developed business models tied to ecological degradation and loss of biodiversity.

- **Global South:** Nations that often have less economic and industrial development and are typically in the southern hemisphere. These nations have been found to be disproportionately impacted by the climate crisis.
- **Low socioeconomic status (SES):** An individual or geographical area that across a variety of socioeconomic factors (e.g., income, education, race/ethnicity) is considered vulnerable. This vulnerability has been correlated to more adverse health outcomes often as a consequence of encountering more barriers in accessing and receiving healthcare.
- **Low and Middle-Income Countries (LMIC):** Countries that have lower degrees of economic affluence.
- **Anthropogenic:** Created through human activity
- **Marginalized communities:** Groups excluded from mainstream economic, educational, social, and/or cultural experiences due to race, gender identity, sexual orientation, age, physical ability, language, and/or immigration status (Sevelius et al., 2020).

Other considerations:

- If there are more than one “tracks” at your institution with two different curricula (for example, Harvard Medical School has a Pathways and HST curriculum track), you can choose to fill out a report card for each track, or fill out just one report card and average the scores received by each track in cases where the scores are different (see the 2021 Harvard or Oxford report cards as examples). Where possible please indicate the proportion of students that are on each track.

Completed in 2022 a [Literature Review by Metric](#) is available for the 2022 medicine report card metrics. We are in the process of updating this review and making it more applicable to all the disciplines. However the review serves as a rough collection of references for further learning and a resource for those advocating for increased planetary health engagement at their institutions.

Planetary Health Curriculum

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

Curriculum: General

1.1. Did your medical school offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
Yes, the medical school has offered more than one elective whose primary focus is ESH/planetary health in the past year. (3 points)	
Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year. (2 points)	
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. (1 points)	
No, the medical school has not offered any electives on planetary health or electives that include ESH/planetary health topics in the past year. (0 points)	
Score Assigned:	3
<p><i>Score explanation: Keele University offers many opportunities for students to engage in Education for Sustainable Health and Planetary Health. This is done through many avenues within the Medical School Curriculum, especially through elective opportunities. In Year 1, students must complete an Academic Mini Review where they review research from a wide range of topics provided. Examples of such topics are: 'Developing Sustainable approaches to 21st century healthcare challenges'; 'Global Healthcare Access and Vaccination, can access really be equitable'; 'How do we reduce the number of animals used in biomedical research'; 'The global burden, spread and barriers to eradication of TB'; 'The effects of air pollution on human health'; 'Repurposing old drug - potential of heparin derivatives as a treatment of SARS', 'Antimicrobial Stewardship', 'What does the emergence of autochthonous dengue in France tell us about the risk to the UK from arboviral infections'.</i></p> <p><i>Moreover, Year 2 medical students are provided the opportunity to review sustainability and planetary health within the community through their community partnership placements which are longitudinal placements throughout the year; with placements at AED donate (community fundraising to provide defibrillators to local communities), B-Arts (aim to engage with people from different backgrounds to create sustainable art to strengthen cultural infrastructure and improve mental health) and Green Doctor CIO (aims to encourage people to overcome isolation by taking part in activities and workshops to promote healthier lifestyles using Staffordshire's green spaces).</i></p>	

In the latter 3 years of the degree, medical students at Keele can choose electives that have a sustainability focus such as 'Health and healthcare around the world' or can conduct qualitative research on any topic of interest.

Curriculum: Health Effects of Climate Change

1.2. Does your medical school curriculum address the relationship between extreme heat, health risks, and climate change?

This topic was explored **in depth** by the **core** curriculum. (3 points)

This topic was **briefly** covered in the **core** curriculum. (2 points)

This topic was covered in **elective** coursework. (1 point)

This topic was **not** covered. (0 points)

Score Assigned:

3

Score explanation: Keele Medical School provides a mandatory interprofessional education day for each year group. This session discusses how to utilise resources in various situations such as flooding and the effect this has on healthcare, highlighting the relevance of climate change to clinical practice. In phase 1 (pre-clinical years of the undergraduate medicine course), there are several lectures that address climate change and health risks. In the 'health promotion lecture' the rates of mortality related to climate change are discussed. Furthermore, the rural health lecture and environmental lectures discuss how climate affects rural populations, access to healthcare and the effect of extreme temperature in the UK on mortality, which heavily discussed the main cause of deaths in elderly in the summer was due to extreme heat conditions. Discussions within PBL covered possible preventive methods and red flag signs of negative effects of extreme heat upon the elderly, such as delirium and blackouts. This link is also further emphasised in the Year 3 session Sustainable Healthcare workshop and lecture.

In Year 1, students must complete an Academic Mini Review where they review research from a wide range of topics provided. The topic 'The effects of air pollution on human health' probes students to acknowledge this relationship between extreme heat, health risks and climate change, whilst also providing a list of resources which touch on this subject too. Due to this being an elective component, students were free to explore these topics to great depth.

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

This topic was explored **in depth** by the **core** curriculum. (3 points)

This topic was **briefly** covered in the **core** curriculum. (2 points)

This topic was covered in **elective** coursework. (1 point)

This topic was **not** covered. (0 points)

Score Assigned:	3
<p><i>Score explanation: In the first phase of medical school, Keele promotes discussions about extreme weather and healthcare through the lectures on rural health, environmental disease and health promotion. Here, lectures discuss the effect of drought on agriculture and rural populations and the effect of extreme weather on healthcare systems. This was in the lecture: rural health.</i></p> <p><i>During the annual interprofessional day, students work with other healthcare disciplines to prioritise and resume healthcare delivery in a flooded town.</i></p> <p><i>In Year 3, students attend a sustainability health care workshop which focuses on the global burden of disease attributable to the environment and what changes can be made to improve healthcare system outcomes. Case studies of extreme weather events and the impact on healthcare delivery is discussed and potential improvements are also discussed.</i></p>	

1.4. Does your <u>medical school</u> curriculum address the impact of climate change on the changing patterns of infectious diseases?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	
This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	3
<p><i>Score explanation: In Years 1 and 3, students have lectures on communicable diseases and infectious disease respectfully. These lectures discuss climate change and geology as factors that contribute to a disease prevalence. This is also covered in the academic mini-reviews undertaken by Year 1 students. In the student selected components, those who select to do the 'Health and Healthcare around the World' component, explore the burden of climate change on patterns of disease. Additionally, this topic is touched upon in the Year 1 Microbiology lab sessions where climate change is discussed in relation to the spread of infectious diseases. Students are also encouraged to discuss and think about future patterns of infectious diseases and changes that may come about due to climate change.</i></p> <p><i>In clinical years, students have the opportunity to go on infectious disease wards and have infectious diseases teaching where they discuss the implications of climate on disease patterns.</i></p>	

1.5. Does your <u>medical school</u> curriculum address the respiratory health effects of climate change and air pollution?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	

This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	3
<p><i>Score explanation: In Phase One of medical school, the environmental disease lecture as well as the rural health lecture addresses the effects of air pollution on respiratory health. This lecture discusses the different sources of air pollution and the long term, as well as short term, effects on respiratory health. In the genes and environment lecture, students discuss modifiable environmental causes of cancers. In Year 3, students have another opportunity to review the effects of pollution on health in the 'Sustainable healthcare workshop'. Students also get the opportunity to further address the respiratory health effects through writing an academic mini review on the health effects of air pollution. This is the same as last year.</i></p>	

1.6. Does your <u>medical school</u> curriculum address the cardiovascular health effects of climate change, including increased heat	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	
This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	3
<p><i>Score explanation: In Phase One of medical school, the environmental diseases lecture addresses the effects of air pollution on cardiovascular health. It looks at the contributing factors to pollution and the mechanism by which there is a long-term effect on cardiovascular disease such as increased mortality and hospital admission. The academic mini review on the effects of air pollution allows patients to address epidemiology, aetiology and pathophysiology of pollution-related cardiovascular disease.</i></p> <p><i>In Year 2, we also have a lecture called 'Psychosocial aspects of heart disease', which briefly touches on the impact of the environment on cardiovascular health.</i></p> <p><i>In Year 3, students are prompted to discuss cardiovascular health in the 'Sustainable healthcare workshop' by working in teams to address the proposed scenario, identify challenges that impact the NHS and work on solutions to these issues.</i></p>	

1.7. Does your <u>medical school</u> curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	

This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	3
<p><i>Score explanation: This is covered in the core curriculum. In the environmental disease lecture in Year 1, students are encouraged to reflect on the impact that green space has on mental health, linking it to the mental health effects of environmental degradation and climate change. The importance of social prescribing and green space is also further emphasised, through the primary care curriculum in Phase 2 through the cluster worksheets. Students are offered the opportunity to delve into this topic through electives such as reviews on 'the effects of air pollution on health', 'developing sustainable approaches to 21 st healthcare challenges' and 'healthcare for homeless people'. Here, students reflect on the impact of the consequences of climate change on patient mental health. This is the same as last year.</i></p>	

1.8. Does your <u>medical school</u> curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	
This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	2
<p><i>Score explanation: In the Year 3 sustainability workshop, students aim to understand the United Nations sustainability goals. They are asked to select a healthcare sustainability challenge such as food waste, homelessness or air pollution and identify what contributes to this issue, who does it affect and how this can be addressed. This is part of the core curriculum of the medical school. Additionally, during the 'health and healthcare around the world' student selected component, students are encouraged to choose a country of their choice and analyse the healthcare systems. In addition to this, students need to analyse the effects of socio-economic factors, water and food security on the healthcare systems and how these impact disease patterns within the country. Similarly, these factors are discussed in the sustainability workshops during Year 3.</i></p>	

1.9. Does your <u>medical school</u> curriculum address the outsized impact of climate change on marginalised populations such as those with low SES, women, communities of colour, Indigenous communities, children, homeless populations, and older adults?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	
This topic was covered in elective coursework. (1 point)	

This topic was not covered. (0 points)	
Score Assigned:	3
<p><i>Score explanation: There are at least 3 PBL cases and sessions in Year 1 and Year 2 that emphasise the effects of socio-economic status, for example exposure to pollution, in the context of asthma and living situation. In second year, students receive a lecture on poverty and healthcare which emphasises how environmental damage disproportionately affects poorer communities. The 'effects of pollution on health' Workshops in Year 3 look into the health of refugees and how healthcare professionals and charities can further support them with water insecurity due to droughts and climate change. In first year, students have the choice of undertaking an academic mini review of the topic 'The health gap - are women being let down by the healthcare system?' This provides a wide scope for students to investigate the impact of climate on the health gap between genders. Another topic offered looks at 'decolonizing medicine' which students could use to explore the effect of climate on the healthcare received by these populations relative to other members of the population. There is a very core element of 'Decolonising the Curriculum' integrated within the preclinical years curriculum. We have many lectures and workshops such as 'Decolonising Biomedical Language', highlighting the importance in understanding the struggles and negativity that has been associated with medicine in history. In addition, Keele medical school provides lectures on rural health which highlight how climate change makes it increasingly difficult for patients to access healthcare relative to urban societies. In Year 2, we have a compulsory component where we have to research and present our findings to our PBL groups, based on the effects of colonisation in medicine.</i></p>	

1.10. Does your <u>medical school</u> curriculum address the unequal regional health impacts of climate change globally?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	
This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	3
<p><i>Score explanation: The medical school provides lectures and workshops in Year 3 on global health and public health that look at inequalities within different communities, covering topics such as poverty and refugees, and health inequalities, including differences in health status, and access and quality of care. Strategies to combat these are also discussed. These topics were covered in-depth in lectures and seminars, within the first two years as well.</i></p> <p><i>In Phase 1 of medical school a rural health lecture is given. This highlights how climate change makes it increasingly difficult for patients to access healthcare relative to urban societies.</i></p> <p><i>In Year 1, students have the choice to research various topics that address this issue as part of their Academic Mini Review, an independent, compulsory, student-selected component of the curriculum. Topics such as 'Decolonizing the curriculum', 'Global healthcare access and vaccination - can access really be equitable', 'Developing sustainable approaches to 21st century healthcare</i></p>	

challenges’, allowing students to explore the unequal regional health impacts of climate change between the marginalised and non-marginalized populations within the country.

One of the student-selected components, health and healthcare around the world, gives students the opportunity to explore health disparities and factors that contribute to this which can include climate change.

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

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

This topic was explored **in depth** by the **core** curriculum. (3 points)

This topic was **briefly** covered in the **core** curriculum. (2 points)

This topic was covered in **elective** coursework. (1 point)

This topic was **not** covered. (0 points)

Score Assigned:

2

Score explanation: In Phase 1, there are two lectures (Genes and Disease I and Genes and Disease II), that covers the effect of air pollution exposure on the foetus and early development. This is the same as last year.

1.12. Does your medical school curriculum address important human-caused environmental threats that are relevant to the university’s surrounding community?

This topic was explored **in depth** by the **core** curriculum. (3 points)

This topic was **briefly** covered in the **core** curriculum. (2 points)

This topic was covered in **elective** coursework. (1 point)

This topic was **not** covered. (0 points)

Score Assigned:

2

Score explanation: The Environmental Pathology lecture in Year 1 looks at how pollution affects communities and how human caused pollution is correlated with asthma and COPD in larger industrial cities such as Stoke on Trent, where the potteries are a large employer and workers are exposed to large amounts of dust and dangerous chemicals in the workplace. This is also mentioned again in year 2 lectures on asthma and COPD.

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

This topic was explored **in depth** by the **core** curriculum. (3 points)

This topic was **briefly** covered in the **core** curriculum. (2 points)

This topic was covered in **elective** coursework. (1 point)

This topic was **not** covered. (0 points)

Score Assigned:

2

Score explanation: This topic was mentioned in the lecture reproduction and global health. Here it was highlighted that implementing global programmes may devalue their local ways and practise.

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

This topic was explored **in depth** by the **core** curriculum. (3 points)

This topic was **briefly** covered in the **core** curriculum. (2 points)

This topic was covered in **elective** coursework. (1 point)

This topic was **not** covered. (0 points)

Score Assigned:

3

Score explanation: Score explanation

The 'effects of pollution on health' workshops in Year 3 look into the health of refugees and how healthcare professionals and charities can further support them with respect to water pollution and insecurity as well as air pollution.

In Year 1, the Environmental Pathology lecture covers the increased exposure to air pollution of low-income communities in urban environments.

The impact of environmental toxins on homeless populations was covered as part of the Sustainability in Healthcare workshop where students were encouraged to think about how we can improve the health of homeless people and linking this to the SDGs.

In Year 2, the poverty and health lecture highlights how people living in lower socio-economic environments are more likely to have to work in hazardous conditions.

This is the same as last year.

Curriculum: Sustainability

1.15. Does your <u>medical school</u> curriculum address the environmental and health co-benefits of a plant-based diet?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	
This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	2
<i>Score explanation: This topic was covered in a Nutrition workshop, which took place within Phase 1 of the curriculum, covered in the case of a plant-based body builder. This is the same as last year.</i>	

1.16. Does your <u>medical school</u> curriculum address the carbon footprint of healthcare systems?	
This topic was explored in depth by the core curriculum. (3 points)	
This topic was briefly covered in the core curriculum. (2 points)	
This topic was covered in elective coursework. (1 point)	
This topic was not covered. (0 points)	
Score Assigned:	3
<p><i>Score explanation: In the Keele curriculum, students have lectures that aim to develop the awareness of the legal frameworks for reducing carbon emissions in their first and third year through lectures and workshops. The topics that derive from this include the NHS's ambition to become the first net zero national health service, as well as the SDGs. The carbon footprint of anaesthetics was also covered within a specific lecture provided as pre-work for this workshop.</i></p> <p><i>Furthermore, students are taught about the environmental impact of inhalers and how they contribute to the carbon footprint of the healthcare systems. Moreover, students have elective opportunities to explore national and global healthcare systems for example through academic reviews or elective global health programmes. Here, students can elaborate on the learning they have acquired during the semester on how healthcare systems contribute to the carbon footprint. This is the same as last year.</i></p>	

1.17. Does your <u>medical school</u> curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (points for each)	Score
The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment (2 points)	2

The environmental impact of pharmaceuticals and over-prescribing as a cause of climate health harm. Alternatively teaching on deprescribing where possible and its environmental and health co-benefits would fulfil this metric. (2 points) .	2
The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK. (1 point)	1
Environmental impact of surgical healthcare on planetary health and the climate crisis, and how can it be mitigated. (1 point)	0
The impact of anaesthetic gases on the healthcare carbon footprint and ways to reduce anaesthesia's environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions. (1 point)	1
The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers. (1 point)	1
Waste production within healthcare clinics and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting) (1 point)	1
<p><i>Score explanation: Through Case Based Learning (CBL) and Case Integrated Learning (CIL) in Phase 2, there is an emphasis on the dangers of over-investigating and over-medicating.</i></p> <p><i>Deprescribing from a health and environmental point of view is covered in the Year 4 Primary Care Cluster sessions, as well as through PBL in Phase 1.</i></p> <p><i>Problem based learning and case-based learning encourages students to implement social prescribing into their clinical skills. In Year 2, there are community placements based on social prescribing such as Growthpoint which allow students to reflect on the health and environmental benefits of these interventions. For example, during the elderly block in Year 3, students are encouraged to consider non-pharmacological treatment for delirium such as sleep hygiene and keeping clocks around.</i></p> <p><i>The carbon footprint and waste produced by anaesthetics was covered in Year 3 in a specific lecture on the environmental impact of anaesthetics.</i></p> <p><i>The difference in environmental impact of inhalers was covered in Year 4 CIL as part of a prescribing challenge. It was also covered within the 'Sustainable Healthcare' lecture in Year 3. The environmental impact of MDIs is covered in an information giving session to Year 2 students.</i></p> <p><i>The academic mini review topics 'Developing Sustainable Approaches to 21st Century Healthcare Challenges' and 'Repurposing Old Drugs: Potential of Heparin Derivatives as a Treatment for SARS-Cov2 infection' in Year 1, encourage students to consider waste production within health care systems and how we can reduce this waste. Waste production is also covered in the Sustainable Healthcare Workshops in Year 3 and the mandatory IPE days.</i></p> <p><i>The impact of surgical healthcare on the environment is not covered.</i></p> <p><i>This is the same as last year.</i></p>	

Curriculum: Clinical Applications

1.18. In training for patient encounters, does your medical school's curriculum introduce strategies to have conversations with patients about the health effects of climate change?

Yes, there are strategies introduced for having conversations with patients about climate change in the **core** curriculum. (2 points)

Yes, there are strategies introduced for having conversations with patients about climate change in **elective** coursework. (1 points)

No, there are **not** strategies introduced for having conversations with patients about climate change. (0 points)

Score Assigned:

0

Score explanation: This is not covered in the core curriculum.

1.19. In training for patient encounters, does your medical school's curriculum introduce strategies for taking an environmental history or exposure history?

Yes, the **core** curriculum includes strategies for taking an environmental history. (2 points)

Only **elective** coursework includes strategies for taking an environmental history. (1 point)

No, the curriculum does **not** include strategies for taking an environmental history. (0 points)

Score Assigned:

2

Score explanation: All clinical skills sessions relating to history emphasise the importance of gaining a comprehensive social history which includes what the environment of the patient is like. This includes a patient's occupation, diet, exercise, smoking, accommodation (city), who they live with and their job etc. The emphasis on environmental and exposure histories are included within communication skills sessions from Year 1 to Year 5. For example, students are expected to ask for occupation and to look out for occupations linked to diseases such as lung and cardiovascular disease. This is the same as last year.

Curriculum: Administrative Support for Planetary Health

1.20. Is your medical school currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?

Yes, the medical school is currently in the process of making **major** improvements to ESH/planetary health education. (4 points)

Yes, the medical school is currently in the process of making **minor** improvements to ESH/planetary health education. (2 points)

No, there are **no** improvements to planetary health education in progress. (0 points)

Score Assigned:

4

Score explanation: Since the production of our report last year, the Medical School Sustainability working group has been receptive to our suggestions and are working on them. Most of these suggestions have been acted on and minor changes are in the process of being made.

Despite this, the existing planetary health education is pretty robust and scores over 90% of the points available for Curriculum: General section, meaning they are eligible for 4 points.

1.21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the core curriculum?

Planetary health/ESH topics are **well integrated** into the core medical school curriculum. (6 points)

Some planetary health/ESH topics are appropriately integrated into the core medical student curriculum. (4 points)

Planetary health/ESH is not integrated and is primarily addressed in **(a) standalone lecture(s)**. (2 points)

There is **minimal/no** education for sustainable healthcare. (0 points)

Score Assigned:

6

Score explanation: In Years 1 and 2 of the medical school, planetary healthcare topics are delivered in the form of lectures, electives, and workshops. For example, there is a lecture on the effects of pollution on cardiovascular and pulmonary systems, sustainable kidney care, a health inequalities lecture, and opportunities to look at sustainability through elective academic reviews as well as community partner placements.

In addition to this, across the first 2 years, at least 3 of the problem based cases have opportunities to reflect on environmental exposures and their consequences of health. Additionally, there is an interprofessional session looking at budgeting in healthcare.

In Year 3, the curriculum is much more integrated with there being more workshops on public health, refugee health, and looking at solutions to sustainability issues- there is a Sustainability in Healthcare workshop in Year 3, as well as a Health of Refugees workshop and Environmental Health lectures.

Additionally, there are more electives looking at sustainable change in healthcare, for example, by writing academic reviews or community placements.

This is the same as last year.

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

Yes, the medical school has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare. (1 point)

No, the medical school does **not** have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare. (0 points)

Score Assigned:

1

Score explanation: There is the institutional lead of sustainability who oversees the inclusion of sustainable healthcare within the curriculum, as well as another member of staff who does this alongside being a year lead.

This is the same as last year.

Section Total (64 out of 72)

89%

Back to Summary Page [here](#)

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

Interdisciplinary Research

Section Overview: *This section evaluates the quality and quantity of interdisciplinary planetary health research at the 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, institutions 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 emphasised.*

2.1. Are there researchers engaged in planetary health research and healthcare sustainability research at your **institution**?

Yes, there are faculty members at the institution who have a primary research focus in planetary health or sustainable healthcare/vetcare. (3 points)

Yes, there are individual faculty members at the **institution** who are conducting research **related** to planetary health or healthcare sustainability, OR are part of a national/international sustainability working group, but it is not their primary research focus. (2 points)

There are sustainability researchers at the **institution**, but not specifically associated with healthcare/vetcare. (1 point)

No, there are **no** planetary health and/or sustainability researchers at the **institution** at this time. (0 points)

Score Assigned:

3

Score explanation: Currently, there is a School of Medicine researcher, with one of their key research areas is sustainable inhaler prescribing. There are several research projects being undertaken at the moment relating to sustainability. For example, the GAP study focuses on barriers to sustainable prescribing in primary care and the PROMPTT study focuses on polypharmacy and reducing the over prescribing of opioids. There are also several studies looking into social prescribing measures and their health benefits.

The [Institute for Sustainable Futures](#) transcends across different schools and collaborates with researchers attached to the medical school. There is a Sustainable Pharmacy interdisciplinary group at Keele, which includes staff across different courses, with a focus on improving the sustainable healthcare and pharmacy issues highlighted by the [Government Steering group on the Improving the use of Medicines](#) (for better outcomes and reduced waste). Within this group, there are several researchers who's primary research theme is Sustainable Pharmacy.

Associated with our university, there are staff members whose research is also strongly linked to Planetary Health, such as Sharon George (food waste and climate change), Lydia Martins (social science and food security), Toby Bruce (food security) and members of the SEND project (energy management).

The School of Geography, Geology and Environmental Studies is linked with ULAB in Bangladesh looking into the impacts of flooding on human health.

This metric is largely the same as last year.

2.2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?

There is **at least one** dedicated department or institute for interdisciplinary planetary health research. (3 points)

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. (2 points)

There is an **Occupational and Environmental Health department**, but no interdisciplinary department or institute for planetary health research. (1 points)

There is **no** dedicated department or institute. (0 points)

Score Assigned:

3

Score explanation: There is [an Institute for Sustainable Futures](#), where one of their key aims is building a healthy society, clean energy and water and food security. There is a dedicated Occupational Health research team, but this does not include environmental health.

2.3. 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 institution?

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. (3 points)

Yes, there is a process in which community members impacted by climate and environmental injustice **advise** the climate + environmental research agenda. (2 points)

No, but there are **current efforts** to establish a process for community members to advise or make decisions on the research agenda. (1 points)

There is **no** process, and **no** efforts to create such a process. (0 points)

Score Assigned:

2

Score explanation: There is evidence of patient and public engagement within the [Primary Care Research Centre](#) and that community members have influence over this research agenda. [The Institute for Sustainable Futures](#) partners with different local organisations and focuses on providing sustainable governance and community living. However, there is not a process within this institute where community members have influence over the research agenda. This is the same as last year.

2.4. Does your institution have a planetary health website that centralises ongoing and past research related to health and the environment?

There is an **easy-to-use, adequately comprehensive** website that **centralises** 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. (3 points)

There is a website that **attempts to centralise** various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive. (2 points)

The **institution** has an **Office of Sustainability website** that includes **some** resources related to health and the environment. (1 point)

There is **no** website. (0 points)

Score Assigned:

3

Score explanation: The medical school has a [specific webpage](#) on planetary health within research and the curriculum. Our university has a [main sustainability page](#) which covers the university as a whole as well as having a main page for [student and staff sustainability](#). Our SU also has a dedicated page aimed towards student sustainability projects and [sustainable volunteering opportunities](#). This is the same as last year.

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

Yes, the **institution** has hosted at least one conference or symposium on topics related to planetary health in the past year. (4 points)

Yes, the **institution** has hosted at least one conference or symposium on topics related to sustainable healthcare/vetcare in the past year. (3 points)

Yes, the **institution** has hosted a conference on topics related to planetary health / sustainable healthcare/vetcare in the past three years. (2 points)

The **institution** has not hosted any conferences directly, but they have provided financial support for a local planetary health event. (1 point)

No, the **institution** has not hosted a conference on topics related to planetary health in the past three years. (0 points)

Score Assigned:

4

Score explanation: Keele University runs an ongoing [Great Challenges lecture series](#) where planetary health topics are frequently. In the last year, the following events have been run:

- *The Food System Transition – how we can feed ourselves without destroying the planet or our health [October 2023]*
- *Small States at the Crossroads - Does the Maldives Matter? [October 2023]*
- *Migration in the Maghreb, an interdisciplinary approach: MADAR's motley [May 2023]*

In the last three years the following events have run:

- *Soundscape Interfaces: Toward a transdisciplinary ecoacoustics for people and planet- [Dec 2022]*
- *The role of multilateral development organisations in promoting sustainable and inclusive rural transformation with specific reference to the work of the International Fund for Agricultural Development (IFAD) and its contribution to meeting the Sustainable Development Goals (SDGs) [April 2022]*
- *Can meaningful hope spring from revealing the depth of our climate failure?*
- *'Is the UK food secure? Does it Matter?'*
- *'Tackling Human Infections in the 21 st Century'*

In the last three years, the medical school has:

- *Hosted the Society for Academic Primary Care North Meeting 2021 where the topic was Sustainability and touched on topics such as Planetary Health in the Curriculum, the interaction between nature and health and the inclusion of green spaces within communities.*
- *There was a medical student-led event by the Keele Obstetrics And Gynaecology Society called the 'Sustainable Period' in January 2022*

2.6. Is your institution a member of a national or international planetary health or ESH/ESV organisation?

Yes, the institution is a member of a national or international planetary health **or** ESH/ESV organisation. (1 points)

No, the institution is **not** a member of such an organisation. (0 points)

Score Assigned:

1

Score explanation: Keele Medical School is a member of the [Planetary Health Alliance](#), which has been advertised to the wider university. This is the same as last year.

Section Total (16 out of 17)

94.12%

Back to Summary Page [here](#)

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

Community Outreach and Advocacy

Section Overview: This section evaluates medical school engagement in community outreach and advocacy efforts associated with planetary health. Researching and teaching planetary health is necessary but not sufficient. It is critical that institutions also directly engage with communities most affected by environmental health harms. Although climate change is a problem largely created by those with power and resources, its impacts fall disproportionately on under-resourced populations and communities of colour. 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.

3.1. Does your <u>institution</u> partner with community organisations to promote planetary and health?	
Yes, the institution meaningfully partners with multiple community organisations to promote planetary and environmental health. (3 points)	
Yes, the institution meaningfully partners with one community organisation to promote planetary and environmental health. (2 points)	
The institution does not partner with community organisations, but has participating in community focused events relating to planetary health. (1 point)	
No, there is no such meaningful community partnership. (0 points)	
Score Assigned:	3
<p><i>Score explanation: The medical school has several meaningful partners.</i></p> <p><i>Community Partnership Placements are a compulsory element of Year 2 of the Medicine course at Keele University. This gives students an opportunity to have a long-term partnership with a local community organisation. Examples of community organisations that promote planetary and environmental health include B-Arts and Chell Area Family.</i></p> <p><i>In addition, in Year 3 of the Medicine course, it is compulsory to choose Student Selected Components, which gives a range of different specialties that a student can choose to study in. This includes specialties such as 'Introduction to Global Health' and 'Interventions and research on Global Health', in which the students may work with different communities regarding sustainable healthcare.</i></p> <p><i>As an institution, Keele has multiple partnerships through CASIC (Community Animation and Social Innovation Centre), which the university co-founded, there is a focus on community engagement and community-focused solutions for local and global issues, which often cover sustainability issues and issues affecting planetary health. The university's KRISP scheme was Green Gown nominated and provides specific support for local businesses for research and innovation for environmental and social sustainability.</i></p>	

3.2. Does your institution offer community-facing courses or events regarding planetary health?

The **institution** offers community-facing courses or events at least once every year. (3 points)

The **institution** offers courses or events open to the community at least once per year, but they are not primarily created for a community audience. (2 points)

The **institution** has promoted community-facing courses or events, but was not involved in planning those courses or events. (1 point)

The **institution/medical school** have not offered such community-facing courses or events. (0 points)

Score Assigned:

3

Score explanation: Score explanation: In late 2021, Keele hosted [SAPC North's Annual Conference](#) with a focus on Sustainability, open to different academic primary care clinicians in the UK. In December 2022, an interdepartmental meeting to discuss sustainability within healthcare was planned, however this was not designed as a community facing event. In February 2024, the Keele Institute of Liberal Arts and Sciences are hosting a lecture: '[Global Challenges facing healthcare delivery](#)', which is part of a series of 'Global Challenge' lectures giving us insight of how we can be sustainable by managing the effects of climate change.

As an institution, Keele University hosts a variety of community-facing events each year:

- *A collaborative project between Keele Students' Union and Keele University held a [Sustainability and Climate Change Photo Exhibition](#) from December 2023 to February 2024.*
- *[Arts Keele](#) events often have an environmental theme, which are open to the public, e.g. "Drawing From Nature"*
- *Inaugural lecture series lectures often have an environmental theme and cover planetary health.*
- *The annual Green Festival consists of events scheduled across 1 or 2 weeks, which are largely focused on sustainability and planetary health. These events are open to students as well as the general public.*
- *The Community Animation and Social Innovation Centre (CASIC), co-founded by Keele University, is primarily focused on community engagement in solutions to local and global environmental issues; the events organised by CASIC are entirely community-focused.*

3.3. Does your institution have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?

Yes, all students **regularly** receive communication updates dedicated to planetary health and/or sustainable healthcare. (2 points)

Yes, planetary health and/or sustainable healthcare topics are regularly included in communication updates to **some courses**. (1 point)

Students **do not** receive communications about planetary health or sustainable healthcare. (0 points)

Score Assigned:	2
<p><i>Score explanation: The medical school often advertises research surrounding deprescribing and social prescribing within regular communications to students. In terms of non-digital communications, there is a Green noticeboard in the entrance to the Medical School. On communications, there was an article linked to the Planetary Health Report Card, following the results and the improvements made since.</i></p> <p><i>Within the sustainability section on the university website, there is a News And Events page which contains communications on sustainability achievements across the university and frequently highlights advancements in sustainable healthcare achievements. An example is an article outlining some research carried out by University academics into Vertical Farming and Pest and Disease Management 23 and its role in food security. Our sustainability staff utilise social media for most of their communications, including the Life at Keele Facebook page, Student Union pages and Green Keele accounts to advertise sustainable events, green festival and volunteering opportunities. The Sustainability Bungalow pages provide practical advice for students to live more eco-friendly.</i></p> <p><i>In terms of email newsletter, sustainable issues often feature on the SU newsletter, KPA newsletter and the central university communications from the Vice Principal. In addition to this, the SU Activities of icer does frequent blog posts and podcasts on tips for sustainable living.</i></p> <p><i>This is the same as last year</i></p>	

3.4. Does the <u>institution</u> or <u>main affiliated hospital trust</u> engage in professional education activities targeting individuals post graduation with the aim of ensuring their knowledge and skills in planetary health and sustainable healthcare remain up to date during their professional career?	
Yes, the institution or main affiliated hospital trust offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health. (2 points)	
Yes, the institution or main affiliated hospital trust offers one course relating to planetary health and/or sustainable healthcare for post-graduate provider. (1 point)	
There are no such accessible courses for post-graduate providers. (0 points)	
Score Assigned:	2
<p><i>Score explanation: The University Hospital of North Midlands (UHNM) is the main affiliated hospital trust to Keele Medical School, which requires all professionals to complete e-learning modules on sustainable healthcare as part of their statutory training. This is the same as last year</i></p>	

3.5. Does your <u>institution</u> or its <u>affiliated teaching hospitals</u> have accessible educational materials for patients about environmental health exposures?

Yes, the medical school or all affiliated hospitals have accessible educational materials for patients. (2 points)	
Some affiliated hospitals have accessible educational materials for patients. (1 point)	
No affiliated medical centres have accessible educational materials for patients. (0 points)	
Score Assigned:	2
<p><i>Score explanation: UHNM has several patient information leaflets regarding air pollution and respiratory health, accessible in paper format from the respiratory outpatients department and via the staff intranet. There are also a few web articles referencing different environmental health exposures, relevant to specific diseases, e.g. explaining daily air quality index via Asthma Triggers, as well as highlighting their own role in mitigating environmental health exposures.</i></p> <p><i>Shrewsbury And Telford Hospital (SATH) trust does provide accessible online patient information leaflets regarding the impact of smoking & exposure to the sun, in an easy read format as well as a webpage format, as well as printed leaflets in outpatient departments.</i></p> <p><i>This is the same as last year.</i></p>	

3.6. Does your <u>institution</u> or its <u>affiliated teaching hospitals</u> have accessible educational materials for patients about the health impacts of climate change?	
Yes, the medical school or all affiliated hospitals have accessible educational materials for patients. (2 points)	
Some affiliated hospitals have accessible educational materials for patients. (1 point)	
No affiliated hospitals have accessible educational materials for patients. (0 points)	
Score Assigned:	2
<p><i>Score explanation: UHNM has several patient information leaflets regarding air pollution and respiratory health, accessible in paper format from the respiratory outpatients department and via the staff intranet. There are also a few web articles referencing different environmental health exposures, relevant to specific diseases, e.g. explaining daily air quality index via Asthma Triggers, as well as highlighting their own role in mitigating environmental health exposures. The same document also discusses climate change, its impact on health and the healthcare system, and strategies being put in place by UHNM to mitigate these effects. Moreover, UHNM and UHNM charity release articles outlining ongoing initiatives and campaigns to combat climate change.</i></p> <p><i>Shrewsbury And Telford Hospital (SATH) trust does provide accessible online patient information leaflets regarding the impact of smoking & exposure to the sun, in an easy read format as well as a webpage format, as well as printed leaflets in outpatient departments. SATH has a webpage dedicated to sustainability. In addition, SATH has a publically available report that includes information on climate changes and its adverse effects on health along with a detailed account of how they have been countering this and their plans for the future. A yearly update is provided on this report and these are also available online.</i></p>	

Section Total (14 out of 14)	100%
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Back to Summary Page [here](#)

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

Support for Student-Led Planetary Health Initiatives

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

4.1. Does your **institution** offer support for students interested in enacting a sustainability initiative/QI project?

Yes, the **institution** *either* offers grants for students to enact sustainability initiatives/QI projects *or* sustainability QI projects are part of the core curriculum. (2 points)

The **institution** encourages sustainability QI projects (to fulfil clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, **but** there is no student funding available and there is no requirement to participate. (1 point)

No, **neither** the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects. (0 points)

Score Assigned:

2

Score explanation:

- The [Sustainability Fund](#) has been established to support sustainability projects in Schools/Directorates and promote innovation in sustainability throughout the Keele community. Funding through the Sustainability Fund is available both for implementing new projects and developing existing initiatives.
- Additionally, there is a [Sustainability Microgrant](#) where students and student-run groups can get a small contribution to run sustainability events or activities. The Students Union uses some of the profits made from the [‘Weigh to Go’](#) shop and the [‘Great Donate’](#) to put back into sustainability projects via these applications.
- The Students Union also has a [Student Sustainability Award](#) to recognize a Keele University student or student group who has made a significant contribution on campus for sustainability by generating awareness, implementing projects and/or creating new initiatives.
- [The Key Fund](#) is another way students can apply for funding to contribute to their innovations/projects. Sustainability projects are eligible, such as the polytunnel in the student garden, weigh to go shop and planting a tree for every student who voted in the SU election.

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

The **institution** has a **specific** research program or fellowship for students interested in doing planetary health/sustainable healthcare/vetcare research. (2 points)

There are research opportunities for students to perform research related to planetary health/sustainable healthcare, but these require student initiative to seek these out and carry them out in their spare time. (1 point)	
There are no opportunities for students to engage in planetary health/sustainable healthcare research. (0 points)	
Score Assigned:	2
<p>Score explanation:</p> <ul style="list-style-type: none"> • The ASPIRE scheme offers funding for summer studentships to Year 1-3 pupils, of grants up to £1250 for summer projects, where projects in sustainability and planetary health are eligible. This is carried out in the student's time and would require student's initiative. There are discussions around including SUSQI projects into the curriculum, however this is not yet the case. This is the same as last year. • Through the Living Laboratories approach to embedding sustainability, undergraduate and masters students can also explore sustainability challenges linking their disciplines to campus operations through their dissertations and research projects. • For the medical school's students self-selected components there are some sustainable healthcare education projects available. Audit of faculty staff knowledge and interest in sustainable healthcare practice and education will be a student-led audit project which will aim at developing an understanding of faculty staff's level of interest, knowledge & skills and confidence regarding specific ESH learning areas. Interested students may also consider developing resources to support ESH learning for faculty. The Audit of the education for sustainable healthcare curriculum in the MBChB programme is also a student-led audit project which aims at ascertaining how Keele medical school delivers the ESH curriculum throughout the whole programme, identifying good practices as well as opportunities for improvements. Interested students may also develop curriculum resources to support specific areas where improvements may be needed. 	

4.3. Does the <u>institution</u> have a webpage where students can find specific information related to planetary health and/or sustainable healthcare/vetcare activities and mentors within the institution? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.	
The institution has a webpage with specific information related to planetary health or sustainable healthcare/vetcare that includes up-to-date information on relevant initiatives and contact information of potential mentors. (2 points)	
There is an institution webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the medical school, but it lacks key information. (1 point)	
There is no institution specific webpage for locating planetary health and/or sustainable healthcare projects or mentors. (0 points)	
Score Assigned:	2
Score explanation: There is a specific part of the medical school's website dedicated to its work within sustainability and planetary health. This includes details on specific research projects conducted within the medical school. Via the university's website, medical students can find details	

on the [Institute for Sustainable Futures](#) and their goal to create a healthy society. This page demonstrates the current research that is going on connecting the environment and health, happening within the whole university, not just the medical school. This is the same as last year.

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

Yes, there is a student organisation **with faculty support** at my medical school dedicated to planetary health or sustainability in healthcare. (2 points)

Yes, there is a student organisation at my medical school dedicated to planetary health or sustainability in healthcare but it **lacks faculty support**. (1 point)

No, there is **not** a student organisation at my institution dedicated to planetary health or sustainability in healthcare. (0 points)

Score Assigned:

2

Score explanation: The school has student voice representatives with one of these students dedicated to bringing up sustainability issues and solutions. The institution as a whole has the sustainability community and network Teams group, and we also contribute to the campus garden project (edible and allotment). These are all done with faculty support and there are opportunities to become carbon literacy facilitators and teach this content to other students with the help of faculty.

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

Yes, there is a student representative that serves on a department or institutional decision-making council/committee. (1 points)

No, there is no such student representative. (0 points)

Score Assigned:

1

Score explanation: The medical school's sustainability working group, has a student representative amongst other staff members with an interest in including planetary health within the curriculum, and head of school.

4.6. 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)

Score

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 organise hiking, backpacking, kayaking, or other outings for students)	1
<p><i>Score explanation:</i></p> <ol style="list-style-type: none"> 1) Keele runs a 'Student Eats' initiative in collaboration with NUS that encourages residents on campus to grow their own food in student allotments. This is to raise awareness of the ethical and environmental impacts of their food decisions. There is also a sustainability bungalow initiative where a group of students each year live as sustainably as possible and provide educational benefits to others around them, as well as providing food to those on campus from their organic garden. 2) Many events run throughout the year, such as the Grand Challenges lecture series that offers lectures to all students; this includes lectures focussing on climate change issues. 3) The students' union hosted a Veganuary Market which enabled students to meet local producers promoting a more eco-friendly and vegan lifestyle. 4) At Keele, we have the Green Festival where all across campus, there are art installations, activities and quizzes for the student population based on sustainability, pollution and how this affects our health. 5) There are volunteer opportunities through the student union to volunteer as part of the Campus Green Team with litter picks, student-led gardening and other sustainable projects on campus. 6) Keele students' union has several societies that organise outings for students, such as climbing, hiking, sailing, skydiving etc. 	

Section Total (15 out of 15)	100%
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Back to Summary Page [here](#)

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

Campus Sustainability

Section Overview: *This section evaluates the support and engagement in sustainability initiatives by the medical school and/or institution. The healthcare industry is a major contributor to greenhouse gas emissions as well as pollution that harms local, regional, and global ecosystems. While healthcare is, by nature, a resource-intensive endeavour, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinising 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 minimising environmental impact.*

5.1. Does your <u>institution</u> have an Office of Sustainability?	
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. (3 points)	
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 hospital sustainability. (2 points)	
There are no salaried sustainability staff , but there is a sustainability task force or committee. (1 point)	
There are no staff members or task force responsible for overseeing campus sustainability. (0 points)	
Score Assigned:	3
<p>Score explanation: Keele has multiple full-time staff members dedicated to campus sustainability alongside student interns who are dedicated to developing sustainable projects for the students. The medical school has a dedicated member of staff, covering the inclusion of sustainability into the curriculum, however this is not her full time job. She works closely with full time sustainability staff to include sustainability within the curriculum. There are sustainability student representatives as part of our Students Union who help to identify where sustainability is embedded within their course. At the hospital campus, there are also dedicated sustainability staff. This is the same as last year. There is also an informal group of educators and professional services staff (The Education for Sustainable Development (ESD) Community of Practice) who are interested in sustainability education. The group meets regularly to share good practice and discuss challenges and solutions to embedding sustainability in education and the student experience.</p>	

5.2. How ambitious is your <u>institution's</u> plan to reduce its own carbon footprint?
The institution has a written and approved plan to achieve carbon neutrality by 2030 (5 points)
The institution has a written and approved plan to achieve carbon neutrality by 2040 (3 points)

The institution has a stated goal of carbon neutrality by 2040 but has not created a plan to reach that goal or the plan is inadequate (1 point)	
The institution/medical school does not meet any of the requirements listed above (0 points)	
Score Assigned:	5
<i>Score explanation: Keele University has a written and approved goal of becoming carbon neutral by 2030. The plan to reach carbon neutrality is well set out with clear information being stated about this target on the website linked. This will be achieved through changes within each school and the use of on-site wind turbines and solar panel farms. This is the same as last year.</i>	

5.3. Do buildings/infrastructure used by the institution for teaching (not including the hospital) utilize renewable energy?	
Yes institution buildings are 100% powered by renewable energy. (3 points)	
Institution buildings source >80% of energy needs from off-site and/or on-site renewable energy. (2 points)	
Institution buildings source >20% of energy needs from off-site and/or on-site renewable energy. (1 point)	
Institution buildings source <20% of energy needs from off-site and/or on-site renewable energy. (0 points)	
Score Assigned:	3
<i>Score explanation: Keele University has a certificate to prove that any energy they currently purchase off of the national grid is from a renewable source. Therefore 100% of the energy used on campus and by the medical school is from a renewable source at this moment in time.</i> <i>Keele University has been seeking to generate up to 80% of its own electricity through solar and wind power. The sustainability scheme meant that since 2021, the installation of 26,000 solar photo-voltaic (PV) panels has begun at ground level in fields on the edge of the campus, and two wind turbines, which will power Keele's halls of residence, the chapel, teaching facilities, and Keele Hall. Currently the installation of 12,500 solar PV panels was completed in September 2021 and is now generating energy, and two wind turbines have finished being installed as of April 2022. Combined, they generate up to 50% of the University's campus electricity requirements from renewable sources, saving around 1,500 tonnes of carbon emissions each year. This is the same as last year.</i>	

5.4. Are sustainable building practices utilised for new and old buildings on the <u>institution's</u> campus, with design and construction of new buildings and remodelling of old buildings conforming to a published sustainability rating system or building code/guideline?

Yes, sustainable building practices are utilised for new buildings on the institution's campus and the majority of old buildings have been retrofitted to be more sustainable. (3 points)	
Sustainable building practices are utilised for new buildings on the institution's campus, but most old buildings have not been retrofitted . (2 points)	
Sustainable building practices are inadequately or incompletely implemented for new buildings. (1 point)	
Sustainability is not considered in the construction of new buildings. (0 points)	
Score Assigned:	3
<i>Score explanation: The estates team have developed a Sustainable Building Plan, which requires all new buildings to adhere to a certain standard. All new buildings are built following sustainable practices and the majority of old buildings have been retrofitted. For example by replacing inefficient lab equipment and replacing light bulbs with LEDs. This is the same as last year.</i>	

5.5. Has the <u>institution</u> implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?	
Yes, the institution 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-utilised by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default. (2 points)	
The institution has implemented some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised. (1 point)	
The institution has not implemented strategies to encourage and provide environmentally-friendly transportation options. (0 points)	
Score Assigned:	2
<i>Score explanation: The campus and medical school has several strategies to make environmentally-friendly transport accessible for students:</i> <ul style="list-style-type: none"> • <i>The main university campus and hospital campus is easily accessible via reliable bus connections and is the most utilised option by students. To incentivize the use of this system, Keele university has partnered with the transport provider to provide student discounts on travel cards.</i> • <i>The university campus has a very good biking infrastructure with dedicated cycling lanes spread all over the campus. Lockable bike stores are available for all students who live on campus.</i> • <i>The introduction of an electric scooter rental system has provided another environmentally-friendly transportation option.</i> • <i>The medical school runs a system where they try to group students with a car with those without a car so that they can car-share to shared placements.</i> • <i>The medical school ensures that all placements within the community should be easily reachable via public transport.</i> 	

- *Most recently the university has expanded on the previous electric car charging ports it developed in the medical school parking lot by adding more ports to the student union parking lot. They are free to students and thus encourage the use of cars that are much more environmentally friendly.*

This is the same as last year.

5.6. Does your institution have an organics recycling program (compost) and a conventional recycling program (aluminium/paper/plastic/glass)?

Yes, the institution has **both** compost **and** recycling programs accessible to students and faculty. (2 points)

The institution has **either** recycling **or** compost programs accessible to students and faculty, but not both. (1 point)

There is **no** compost or recycling program at the medical school. (0 points)

Score Assigned:

2

Score explanation: There are both compost and conventional recycling facilities available at the medical school for students and staff. There has been a full waste and recycling scheme since 2010 and has seen the recycling rate increase to 50%. The university also has onsite composting and gives students staying on campus accommodation the option to opt-in to having their food waste recycled. This is the same as last year.

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

Yes, the institution has **adequate** sustainability requirements for food and beverages, including meat-free days or no red-meat, and **is engaged** in efforts to increase food and beverage sustainability. (3 points)

There are sustainability guidelines for food and beverages, but they are **insufficient or optional**. The institution **is engaged** in efforts to increase food and beverage sustainability. (2 points)

There are sustainability guidelines for food and beverages, but they are **insufficient or optional**. The institution is **not** engaged in efforts to increase food and beverage sustainability. (1 point)

There are **no** sustainability guidelines for food and beverages. (0 points)

Score Assigned:

3

Score explanation: The [Sustainable Food Policy](#) at Keele covers all outlets and food, including food served within the medical school, served by the University and managed by Catering and Retail Services, Commercial and Facilities Management Directorate. This includes the inclusion of

more plant-based options, the use of local produce, seasonal vegetables and reduction of water and energy usage. This policy provides a framework for continual improvement in providing sustainable food for customers. Tender specification documents for [University food suppliers](#) include a requirement to comply with the University's sustainable food policy and with the targets committed to through the food for life catering mark certification. Multiple plant-based and vegan options are available at every food vendor on campus every day of the week for every meal. The University has been working with the Soil Association to implement the Food For Life Catering Mark at our main Refectory and at the Nursery. This is the same as last year.

5.8. Does the institution apply sustainability criteria when making decisions about supply procurement?

Yes, the institution has **adequate** sustainability requirements for supply procurement **and** is **engaged** in efforts to increase sustainability of procurement. (3 points)

There are sustainability guidelines for supply procurement, but they are **insufficient or optional**. The institution is **engaged** in efforts to increase sustainability of procurement. (2 points)

There are sustainability guidelines for supply procurement, but they are **insufficient or optional**. The institution is **not engaged** in efforts to increase sustainability of procurement. (1 point)

There are **no** sustainability guidelines for supply procurement. (0 points)

Score Assigned:

3

Score explanation: Keele's sustainable procurement goal is to procure goods and services in ways that maximise efficiency and effectiveness while minimising social, environmental and other risks. Keele University's Procurement team, with support from staff across the University, have achieved Level 4 of the Government's 'Flexible Framework'. This framework allows organisations to assess, measure and evaluate process and performance against a number of set sustainability criteria. This is the same as last year.

5.9. Are there sustainability requirements or guidelines for events hosted at the institution?

Every event hosted at the institution **must** abide by sustainability criteria. (2 points)

The institution **strongly recommends or incentivizes** sustainability measures, but they are **not required**. (1 point)

There are **no** sustainability guidelines for institution events. (0 points)

Score Assigned:

1

Score explanation: Keele University has a Green Conferencing and Event guidelines and the events team has certification using the ISO20121 system. ISO 20121 offers guidance and best practice to help manage our events and control their social, economic and environmental impact. The university also has its own system. for ensuring that events held are as sustainable as possible. This

includes things such as making sure the menus for events held on site utilise local produce and farming/fishing. There is also encouragement for visitors to events to have sustainable practices, e.g bringing a refillable water bottle. This applies for all external events and events run by staff. Despite this, there is no requirement for student-run events within the medical school to meet the same sustainability requirements. There is strong guidance and incentives from the SU, however it is not a necessity. This is the same as last year.

5.10. Does your institution have programs and initiatives to assist with making lab spaces more environmentally sustainable?

Yes, the institution has **programs** and **initiatives** to assist with making lab spaces more environmentally sustainable. (2 points)

There are **guidelines** on how to make lab spaces more environmentally sustainable, but not programs or initiatives. (1 point)

There are **no** efforts at the institution to make lab spaces more sustainable. (0 points)

Score Assigned:

2

Score explanation: Keele University runs a system where the labs are continuously updated to make them more and more sustainable. This includes innovations such as updating equipment and taps to make them more water saving, reducing the amount of single use plastics, utilising batch orders to create a need for less packaging, educational signs to promote saving electricity when it is not needed, replacing old energy inefficient equipment and replacing light bulbs to be LED. This is the same as last year.

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

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. (4 points)

The institution is **entirely divested** from fossil fuels. (3 points)

The institution has **partially divested** from fossil fuel companies **or** has made a **commitment to fully divest**, but **currently** still has fossil fuel investments. (2 points)

The institution has **not divested** from fossil-fuel companies, but faculty and/or students are **conducting organised advocacy** for divestment. (1 point)

Yes, the institution has investments with fossil-fuel companies and there have been **no efforts** to change that. (0 points)

Score Assigned:

4

Score explanation: Keele University is ensuring that financial investments are ethical and reflect the mission and values of the University. To support this commitment an Ethical Investment Code of

Practice has been in place and reviewed annually for a number of years. Keele University has made a commitment to increasingly focus its investments in companies with a positive environmental and/or societal impact, in particular in areas of clean energy and technology. The University's investments will be in line with its strategic aims and its environmental, social and ethical values. The university has made a commitment to [divest from fossil fuel extraction companies](#) as they have never had investments with fossil-fuel companies and have stated that they will never do so. This is the same as last year.

Section Total (31 out of 32)

96.88%

Back to Summary Page [here](#)

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

Grading

Section Overview

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

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

Planetary Health Grades for the Keele University School of Medicine

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

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	$(64/72) \times 100 = 88.89\%$	A
Interdisciplinary Research (17.5%)	$(16/17) \times 100 = 94.12\%$	A
Community Outreach and Advocacy (17.5%)	$(14/14) \times 100 = 100\%$	A+
Support for Student-led Planetary Health Initiatives (17.5%)	$(15/15) \times 100 = 100\%$	A+
Campus Sustainability (17.5%)	$(31/32) \times 100 = 96.88\%$	A+
Institutional Grade	95.09	A+

Report Card Trends

Section Overview

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

