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# Planetary Health Report Card (Medicine): *Keele University*

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## Summary of Findings

<b>Overall</b>	<b>A</b>
<b><u>Curriculum</u></b>	<b>A</b>
<ul style="list-style-type: none"> <li>The Keele Curriculum has strong integration of 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.</li> <li><b>Recommendations:</b> There is a lack of teaching about introducing conversations about planetary health into conversations with patients. This could be introduced in clinical skills, or early years GP teaching. There is also no discussion of the impact of surgery on the environment.</li> </ul>	
<b><u>Interdisciplinary Research</u></b>	<b>A-</b>
<ul style="list-style-type: none"> <li>Keele University as a whole has a strong research focus on sustainability and factors that affect planetary health. From sustainable energy to food security, the sustainability research at Keele is very varied. Also, the medical school has several members of staff undergoing sustainable research within prescribing in primary care.</li> <li><b>Recommendations:</b> 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.</li> </ul>	
<b><u>Community Outreach and Advocacy</u></b>	<b>A</b>
<ul style="list-style-type: none"> <li>Keele Medical School has meaningful links with several community organisations that form community placements for students. Keele is involved with many different community organisations aimed at promoting sustainability and planetary health to our local community. There are also Student Union events such as Green Festival focusing on the university community. Since the last report card, the hospital trusts have developed resources on patient exposures.</li> <li><b>Recommendations:</b> A community facing event regarding planetary health run by the medical school would be a great addition to the medical school's research focused events. Whilst community facing events regarding sustainability and planetary health are run by the university, the medical school is not involved in the planning or running of these.</li> </ul>	
<b><u>Support for Student-Led Initiatives</u></b>	<b>A-</b>
<ul style="list-style-type: none"> <li>Funding is available for student projects throughout Keele University, which medical students are eligible to apply. Since the 2020/21 report, the medical school has developed a sustainability focused webpage.</li> <li><b>Recommendations:</b> A student-led planetary health group should be formed. This is being set up for 2023/24.</li> </ul>	
<b><u>Campus Sustainability</u></b>	<b>A+</b>
<ul style="list-style-type: none"> <li>At Keele University, sustainability is very important and this is evident throughout the current projects and initiatives on our main university campus. It is hard to suggest improvements, with a clear carbon neutral goal and entirely renewable energy. Transport has been considered, with medical placements accessible by public transport.</li> <li><b>Recommendations:</b> Whilst there are Green Event Guidelines, these could be enforced for student led events.</li> </ul>	

# Statement of Purpose

*Planetary health is human health.*

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

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

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

# Definitions & Other Considerations

## Definitions:

- **Planetary Health:** is described by the Planetary Health Alliance as “the health of human 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 medical school education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term “planetary health” to satisfy the metric.
- **Sustainable Healthcare:** As defined by the Academy of Royal Colleges, sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental, and social constraints and demands within health care settings. A sustainable healthcare system maintains population health, reduces disease burden and 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 vs. Institution:** When “medical school” is specified in the report card, this only refers to curriculum and resources offered by the School of Medicine and does not include offerings from other parts of the university (e.g. undergraduate departments (USA), other related departments (e.g. Public Health, Population Health departments). In contrast, when “institution” is specified in the report card, we are referring to the university more

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

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

**Other considerations:**

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

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

# Planetary Health Curriculum

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

## Curriculum: General

1. Did your <u>medical school</u> offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
<b>3</b>	<b>Yes, the medical school has offered more than one elective whose primary focus is ESH/planetary health in the past year.</b>
2	Yes, the medical school has offered <b>one</b> elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does <b>not</b> have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a <b>lecture</b> on planetary health.
0	No, the medical school has <b>not</b> offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation: Keele University offers students the opportunity to explore sustainable healthcare as well as planetary health through several elective opportunities across the different phases of medical school. In Year 1, medical students complete academic mini reviews on topics such as 'what does the emergence of autochthonous dengue in France tell us about the risk to the UK from arboviral infections', 'Greener NHS- How can the national health services emit net zero carbon by 2040', '“Unless someone like you cares a whole awful lot, Nothing is going to get better. It's not" Developing sustainable approaches to 21st century healthcare challenges' and 'Global health access and vaccination can access really be equitable?'. 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 Housing and Care 21 and Emmaus North Staffordshire allowing for this. 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. This is the same as last year.</i></p>	

## Curriculum: Health Effects of Climate Change

2. Does your <u>medical school</u> curriculum address the relationship between extreme heat, health risks, and climate change?	
<b>3</b>	<b>This topic was explored in depth by the core curriculum.</b>
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.

1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: Keele Medical School provide 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, 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. This link is also further emphasised in the Year 3 session Sustainable Healthcare workshop and lecture. This is the same as last year. This is the same as last year.</i></p>	

<b>3. Does your <u>medical school</u> curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?</b>	
<b>3</b>	<b>This topic was explored in depth by the core curriculum.</b>
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: 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. During the annual interprofessional day, students work with other healthcare disciplines to prioritise and resume healthcare delivery in a flooded town. 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. In Problem Based Learning (PBL) cases, students are encouraged to consider the wider determinants of health such as how environmental factors can contribute to initiation of respiratory disease. This is the same as last year.</i></p>	

<b>4. Does your <u>medical school</u> curriculum address the impact of climate change on the changing patterns of infectious diseases?</b>	
<b>3</b>	<b>This topic was explored in depth by the core curriculum.</b>
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation: In 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 Health and Healthcare around the World' component, explore the burden of climate change on patterns of disease. 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. This is the same as last year.*

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

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

*Score explanation: In 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. This is the same as last year.*

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

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

*Score explanation: In 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. 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. This is the same as last year.*



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

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

*Score explanation: 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. 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<sup>st</sup> healthcare challenges' and 'healthcare for homeless people'. Here, students reflect on the impact of the consequences of climate change on patient mental health. This has not changed since last year. This is the same as last year.*

**8. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?**

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

*Score explanation: In the 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. 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. This has not changed since last year.*

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

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

1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: 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 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. 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.</i></p>	

<b>10. Does your <u>medical school</u> curriculum address the unequal regional health impacts of climate change globally?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	<b>This topic was briefly covered in the core curriculum.</b>
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<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, as well as covering the topic of health inequalities in great depth, both in lectures and seminars, within the first two years.</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 the topic of 'decolonizing the curriculum', which allows students to explore the unequal regional health impacts of climate change between the marginalised and non-marginalized populations within the country.</i></p> <p><i>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.</i></p>	

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

<b>11. Does your <u>medical school</u> curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.

2	<b>This topic was briefly covered in the core curriculum.</b>
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<i>Score explanation: In Phase 1, there is a lecture that covers the effect of air pollution exposure on the foetus and early development.</i>	

<b>12. Does your <u>medical school</u> curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: In Problem Based Learning, there have been cases that directly link the effects of mining on health and respiratory health long term, in the context of chronic lung disease and COPD.</i></p> <p><i>In addition, 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.</i></p> <p><i>In Year 3, Environmental Health of the Public lecture covers the effects of man-made water pollution on health long term, however this was not linked to the local community.</i></p>	

<b>13. To what extent does your <u>medical school</u> emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?</b>	
3	Indigenous knowledge and value systems are <b>integrated throughout</b> the medical school's planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included <b>briefly</b> in the core curriculum.
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in <b>elective</b> coursework.
0	<b>This topic was not covered.</b>
<i>Score explanation: This topic was not covered.</i>	

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

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

*Score explanation: In phase one, students take part in placements at charities or organisations such as Green Door, Housing and Care 21, Age UK and Emmaus North Staffs, that work with marginalised communities such as the elderly and the homeless. This opportunity allows students to explore how environmental factors affect these populations first hand.*

*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***

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

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

*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.*

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

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

17. Does your <u>medical school</u> curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (points for each)	
2	The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment
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 fulfill this metric.
1	The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK.
1	Environmental impact of <b>surgical</b> healthcare on planetary health and the climate crisis, and how can it be mitigated
1	The impact of anaesthetic gases on the healthcare carbon footprint and ways to reduce anesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions
1	The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
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)
<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. 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. 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.</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>
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### **Curriculum: Clinical Applications**

<b>18. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies to have conversations with patients about the health effects of climate change?</b>	
2	Yes, there are strategies introduced for having conversations with patients about climate change in the <b>core</b> curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in <b>elective</b> coursework.
<b>0</b>	<b>No, there are not strategies introduced for having conversations with patients about climate change</b>
Score explanation: This is not covered in the core curriculum.	

<b>19. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies for taking an environmental history or exposure history?</b>	
2	<b>Yes, the core curriculum includes strategies for taking an environmental history.</b>
1	Only <b>elective</b> coursework includes strategies for taking an environmental history.
0	No, the curriculum does <b>not</b> include strategies for taking an environmental history.
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**

20. Is your <b>medical school</b> currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?	
4	<b>Yes, the medical school is currently in the process of making major improvements to ESH/planetary health education.</b>
2	Yes, the medical school is currently in the process of making <b>minor</b> improvements to ESH/planetary health education.
0	No, there are <b>no</b> improvements to planetary health education in progress.
<p><i>Score explanation: 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.</i></p> <p><i>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.</i></p>	

21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the <b>core</b> curriculum?	
6	<b>Planetary health/ESH topics are well integrated into the core medical school curriculum.</b>
4	<b>Some</b> planetary health/ESH topics are appropriately integrated into the core medical student curriculum.
2	Planetary health/ESH is not integrated and is primarily addressed in <b>(a) standalone lecture(s)</b> .
0	There is <b>minimal/no</b> education for sustainable healthcare.
<p><i>Score explanation: 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.</i></p> <p><i>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.</i></p>	

*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.*

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

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

*Score explanation: There is the specific staff member 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. There is a sustainability working group which oversees the integration of planetary health into the curriculum as well as the general sustainability of the medical school.*

**Section Total (63 out of 72)**

**88%**

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# Interdisciplinary Research

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

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your <u>medical school</u> ?	
3	Yes, there are faculty members at the medical school who have a primary research focus in planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the <b>medical school</b> who are conducting research <b>related</b> to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the <b>institution</b> , but none associated with the medical school.
0	No, there are <b>no</b> planetary health and/or healthcare sustainability researchers at the <b>institution</b> or <b>medical school</b> at this time.

*Score explanation: Currently, there is a researcher, with one of their key research areas is sustainable inhaler prescribing. There is currently an MPhil student working with this researcher on this.*

*The [PROMPTT](https://www.keele.ac.uk/sustainable-futures/) study, based at the medical school, focuses on reducing the over prescribing of opioids. There are also several studies looking into social prescribing measures and their health benefits. <https://www.keele.ac.uk/sustainable-futures/>*

*One of the key goals of the Institute for Sustainable Futures is to create a healthy society . This institute collaborates with some of the staff members based at the Medical School in Medical Anthropology.*

*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).*

*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 is the same as last year.*

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

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

*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.*

**3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your medical school?**

3	Yes, there is a process in which community members impacted by climate and environmental injustice have <b>decision-making power</b> in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice <b>advise</b> the climate + environmental research agenda.
1	<b>No, but there are current efforts to establish a process for community members to advise or make decisions on the research agenda.</b>
0	There is <b>no</b> process, and <b>no</b> efforts to create such a process.

*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.*

**4. Does your institution have a planetary health website that centralizes ongoing and past research related to health and the environment?**

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

1	The <b>institution</b> has an <b>Office of Sustainability website</b> that includes <b>some</b> resources related to health and the environment.
0	There is <b>no</b> website.
<p><i>Score explanation: The medical school has a <a href="#">specific webpage on planetary health</a> within research and the curriculum.</i></p> <p><i>Our university has a <a href="#">main sustainability page</a> which covers the university as a whole as well as having a main page for <a href="#">student and staff sustainability</a>.</i></p> <p><i>Our SU also has a dedicated page aimed towards <a href="#">student sustainability projects</a> and sustainable volunteering opportunities.</i></p>	

<b>5. Has your <u>institution</u> recently hosted a conference or symposium on topics related to planetary health?</b>	
4	Yes, the <b>medical school</b> has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	<b>Yes, the institution has hosted at least one conference or symposium on topics related to planetary health in the past year.</b>
2	Yes, the <b>institution</b> has hosted a conference on topics related to planetary health in the past three years.
1	The <b>institution</b> has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the <b>institution</b> has not hosted a conference on topics related to planetary health in the past three years.
<p><i>Score explanation: Keele University runs a <a href="#">Great Challenges lecture series</a> where planetary health topics are frequently featured such as:</i></p> <ul style="list-style-type: none"> <li><i>-Soundscape Interfaces: Toward a transdisciplinary ecoacoustics for people and planet- Dr Alice Eldridge Dec 2022</i></li> <li><i>-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) Ashwani Muthoo April 2022</i></li> <li><i>- Can meaningful hope spring from revealing the depth of our climate failure?- Professor Kevin Anderson</i></li> <li><i>-‘Is the UK food secure? Does it Matter?’ - Professor Tim Lang</i></li> <li><i>- ‘Tackling Human Infections in the 21 st Century’- Professor Janet Hemingway</i></li> </ul> <p><i>The medical school was the host to 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. This was however over one year ago and therefore does not qualify as within the last year.</i></p> <p><i>There was a medical student-led event by the Keele Obstetrics And Gynaecology Society called the ‘Sustainable Period’ in January 2022.</i></p>	

6. Is your medical school a member of a national or international planetary health or ESH organization?

1 Yes, the medical school is a member of a national or international planetary health or ESH organization

0 No, the medical school is **not** a member of such an organization

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

Section Total (14 out of 17)

82%

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## Community Outreach and Advocacy

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

1. Does your <u>medical school</u> partner with community organizations to promote planetary and environmental health?	
3	Yes, the <b>medical school</b> meaningfully partners with multiple community organizations to promote planetary and environmental health.
2	Yes, the <b>medical school</b> meaningfully partners with <b>one</b> community organization to promote planetary and environmental health.
1	The <b>institution</b> partners with community organizations, but the medical school is not part of that partnership.
0	No, there is <b>no</b> such meaningful community partnership.
<p><i>Score explanation: The medical school does have several meaningful partners. Community Partnership Placements are a compulsory element of Year 2 of the Medicine course at Keele University, which provides an opportunity for students to have a long-term partnership with a local community organisation. For example, B-Arts and Chell Area Family Action both advocate for planetary health, which allows students to reflect on the impact of environmental issues on health and wellbeing.</i></p> <p><i>As an institution, Keele has multiple partnerships through <a href="#">CASIC (Community Animation and Social Innovation Centre)</a>, 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 <a href="#">KRISP scheme</a> was Green Gown nominated and provides specific support for local businesses for research and innovation for environmental and social sustainability.</i></p>	

2. Does your <u>medical school</u> offer community-facing courses or events regarding planetary health?	
3	The <b>medical school</b> offers community-facing courses or events at least once every year.
2	The <b>medical school</b> offers courses or events open to the community at least once per year, but they are not primarily created for a community audience.
1	The <b>institution</b> has offered community-facing courses or events, but the <b>medical school</b> was not involved in planning those courses or events.

0	The <b>institution/medical school</b> have not offered such community-facing courses or events.
<p><i>Score explanation: In late 2021, Keele hosted <a href="#">SAPC North's Annual Conference</a> 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.</i></p> <p><i>As an institution, Keele University hosts a variety of community-facing events each year:</i></p> <ul style="list-style-type: none"> <li>- <i><a href="#">Arts Keele</a> events often have an environmental theme, which are open to the public, e.g. "Drawing From Nature" events.</i></li> <li>- <i>Inaugural lecture series lectures often have an environmental theme and cover planetary health.</i></li> <li>- <i>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.</i></li> <li>- <i>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.</i></li> </ul>	

<b>3. Does your <u>medical school</u> have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?</b>	
2	<b>Yes, all students regularly receive communication updates dedicated to planetary health and/or sustainable healthcare.</b>
1	Yes, planetary health and/or sustainable healthcare topics are <b>sometimes</b> included in communication updates.
0	Students <b>do not</b> receive communications about planetary health or sustainable healthcare.
<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>	

*This is the same as last year.*

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

2	<b>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.</b>
1	Yes, the <b>institution</b> or <b>main affiliated hospital trust</b> offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are <b>no</b> such accessible courses for post-graduate providers

*Score explanation: The 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.*

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

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

*Score explanation: 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](#). 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.*

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

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

*Score explanation: Both the University Hospitals of North Midlands (UHNM) and [Shrewsbury and Telford Hospital \(SATH\)](#) trusts provide patient information regarding climate change. [The Sustainable Development Management Plan](#) published by UHNM outlines the importance of sustainability in healthcare and its impact on climate change. In addition, the SATH trust website contains a sustainability section, which highlights their efforts to reduce their carbon dioxide emissions to have a positive impact on climate change.*

**Section Total (13 out of 14)**

**93%**

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# Support for Student-Led Planetary Health Initiatives

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

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

*Score explanation: The Sustainability Fund has been established to support sustainability projects in Schools/Directorates and promote innovation in sustainability throughout the Keele community. 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 SU also has a separate fund for society sustainability development and has a [sustainability badges reward scheme](#).*

*[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.*

*This is the same as last year.*

2. Does your <b>institution</b> offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The <b>institution</b> has a <b>specific</b> research program or fellowship for students interested in doing planetary health/sustainable healthcare research.
1	<b>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.</b>
0	There are <b>no opportunities</b> for students to engage in planetary health/sustainable healthcare research.

*Score explanation: 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.*

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

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

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

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

*Score explanation: There is not currently a dedicated student group focussing on sustainability and planetary health. Lauren Franklin is in the process of sourcing funding for a new sustainability society with other medical students that will endeavour to fill this gap.*

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

1	<b>Yes, there is a student representative that serves on a medical school or institutional decision-making council/committee.</b>
0	No, there is no such student representative.
<p><i>Score explanation: Lauren Franklin, intercalating medical student, continues to be a student representative on the medical school's sustainability working group, amongst other staff members with an interest in including planetary health within the curriculum, and head of school.</i></p>	

<b>6. In the past year, has the <u>institution</u> had one or more co-curricular planetary health programs or initiatives in the following categories? (1 point each)</b>	
1	<b>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.</b>
1	<b>Panels, speaker series, or similar events related to planetary health that have students as an intended audience.</b>
1	<b>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.</b>
1	<b>Cultural arts events, installations or performances related to planetary health that have students as an intended audience.</b>
1	<b>Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.</b>
1	<b>Wilderness or outdoors programs (e.g., that organize hiking, backpacking, kayaking, or other outings for students)</b>
<p><i>Score explanation: Keele runs a '<a href="#">Student Eats</a>' 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. The students' union hosted a Veganuary Market which enabled students to meet local producers promoting a more eco-friendly and vegan lifestyle. There is also <a href="#">a sustainability bungalow initiative</a> 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. Many events run throughout the year, such as the <a href="#">Grand Challenges lecture</a> series that offers lectures to all students; this includes lectures focussing on climate change issues. At Keele, we have <a href="#">Green Week</a> 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. There are volunteer opportunities through the student union to volunteer as part of the <a href="#">Campus Green Team</a> with litter picks, student led gardening and other sustainable projects on campus.</i></p>	

<b>Section Total (12 out of 15)</b>	<b>80%</b>
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# Campus Sustainability

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

1. Does your <u>medical school</u> and/or <u>institution</u> have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is at least one designated staff member for sustainability at the hospital and/or medical school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but <b>no specific staff member</b> in charge of medical school and/or hospital sustainability.
1	There are <b>no salaried sustainability staff</b> , but there is a sustainability task force or committee
0	There are <b>no</b> staff members <b>or</b> task force responsible for overseeing campus sustainability
<p><i>Score explanation: The institution has multiple full-time staff dedicated to campus sustainability and with student interns dedicated to developing sustainable projects for the students. A list of the dedicated sustainability staff for the main campus can be found <a href="#">here</a>. Sarah Ainsley is our dedicated member of staff for the medical school, 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. At the hospital campus, there are also dedicated sustainability officers. This is the same as last year.</i></p>	

2. How ambitious is your <u>institution/medical school</u> plan to reduce its own carbon footprint?	
5	The institution/medical school has a written and approved plan to achieve carbon neutrality by 2030
3	The institution/medical school has a <b>written and approved plan</b> to achieve carbon neutrality by <b>2040</b>
1	The institution/medical school has a stated goal of carbon neutrality by <b>2040</b> but has <b>not created a plan</b> to reach that goal or the <b>plan is inadequate</b>
0	The institution/medical school does <b>not</b> meet any of the requirements listed above

	<p><i>Score explanation: The institution as a whole is clearly very ambitious with its plan to reduce its carbon footprint, through a partnership with ENGIE and the building of solar panel farms and wind turbines. The institution has a goal of becoming <a href="#">carbon neutral by 2030</a> and the medical school falls under this umbrella. The plan to reach carbon neutrality is well set out with clear information being stated about this target on the website linked. This is the same as last year.</i></p>
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**3. Do buildings/infrastructure used by the medical school for teaching (not including the hospital) utilize renewable energy?**

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

*Score explanation: Keele University has a certificate to prove that any energy they currently purchase off 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.*

*Keele University has been granted planning permission to generate up to 80% of its own electricity through solar and wind power. The sustainability scheme will see up to 26,000 solar photo-voltaic (PV) panels installed 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. This became operational in 2021. 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 ([link](#)). 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.*

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

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

*Score explanation: The estates team have developed a Sustainable Building Plan, which requires all new buildings to adhere to a certain standard. For all new buildings, habitats and ecological surveys*

have been considered. There is a budget to retrofit the pre-existing buildings, aiming to make the building more energy efficient, for example by replacing inefficient lab equipment and replacing light bulbs with LEDs. This is the same as last year.

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

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

*Score explanation: The campus and medical school has several strategies to make environmentally-friendly transport accessible for students:*

- *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 discount on travel cards.*
- *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.*
- *The introduction of an electric scooter rental system has provided another environmentally-friendly transportation option.*
- *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.*
- *The medical school ensures that all placements within the community should be easily reachable via public transport.*
- *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.*

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

2	<b>Yes, the medical school has both compost and recycling programs accessible to students and faculty.</b>
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1	The medical school has <b>either</b> recycling <b>or</b> compost programs accessible to students and faculty, but not both.
0	There is <b>no</b> compost or recycling program at the medical school.
<p><i>Score explanation: The medical school has both compost and a conventional recycling program that can be accessed by students and faculty. Keele University introduced a full waste and recycling scheme in 2010 and since then has seen the recycling rate rise from under 10% to now over 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.</i></p>	

7. Does the <u>medical school</u> apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?	
3	<b>Yes, the medical school has adequate sustainability requirements for food and beverages, including meat-free days or no red-meat, and is engaged in efforts to increase food and beverage sustainability.</b>
2	There are sustainability guidelines for food and beverages, but they are <b>insufficient or optional</b> . The medical school <b>is engaged</b> in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are <b>insufficient or optional</b> . The medical school is <b>not</b> engaged in efforts to increase food and beverage sustainability.
0	There are <b>no</b> sustainability guidelines for food and beverages.
<p><i>Score explanation: The <a href="#">Sustainable Food Policy</a> 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.</i></p>	

8. Does the <u>medical school</u> or <u>institution</u> apply sustainability criteria when making decisions about supply procurement?	
3	<b>Yes, the medical school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.</b>
2	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>engaged</b> in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>not engaged</b> in efforts to increase sustainability of procurement.

0	There are <b>no</b> sustainability guidelines for supply procurement.
<p><i>Score explanation: 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.</i></p>	

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

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

<b>11. Does your <u>institution's</u> endowment portfolio investments include fossil-fuel companies?</b>	
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4	The institution is entirely divested from fossil fuels and has made a commitment to reinvest divested funds into renewable energy companies or renewable energy campus initiatives.
3	The institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil fuel companies or has made a commitment to fully divest, but currently still has fossil fuel investments.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.

*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)	97%
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# 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 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
<b>Planetary Health Curriculum (30%)</b>	$(63/72) \times 100 = 87.5\%$	A
<b>Interdisciplinary Research (17.5%)</b>	$(14/17) \times 100 = 82.4\%$	A-
<b>Community Outreach and Advocacy (17.5%)</b>	$(13/14) \times 100 = 92.9\%$	A
<b>Support for Student-led Planetary Health Initiatives (17.5%)</b>	$(12/15) \times 100 = 80\%$	A-
<b>Campus Sustainability (17.5%)</b>	$(31/32) \times 100 = 96.9\%$	A+
<b>Institutional Grade</b>	<b>87.9%</b>	<b>A</b>

# Report Card Trends

## Section Overview

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

### PHRC Trends for Keele University School of Medicine

