

APRIL 2023

PLANETARY HEALTH REPORT CARD

FOR PHARMACY

2022-2023 SUMMARY REPORT
PHARMACY SCHOOL INITIATIVE



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ABOUT THE INITIATIVE

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” (1). 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 single biggest health threat facing humanity” (2) many pharmacy schools’ institutional priorities do not reflect the urgency of this danger to human health.

Fossil-fuelled electricity and gas, and medical or pharmaceutical products used in healthcare account for around 8% of the total global greenhouse gas footprint of healthcare (3) with pharmaceutical waste also providing a dangerous contaminant to our water systems (4). Metered dose inhalers contribute 500g CO₂eq per dose (5), whilst air pollution causes seven million deaths per year worldwide and exacerbates chronic respiratory disease (6). Pharmacy therefore has a direct and detrimental impact on planetary health and this contradiction in patient care must be addressed and actioned.

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 pharmacy training. It is imperative that we empower those who are educating pharmacy 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, and hold those who are not accountable. Because climate change and environmental threats disproportionately affect vulnerable populations (7) (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 providing recommendations and opportunities for improvement among pharmacy schools, we have adapted the Planetary Health Report Card (PHRC) to pharmacy which students internationally can use to grade and compare their institutions on an annual basis.

GOALS

- Assess the current level of planetary health and sustainability consideration and inclusion within pharmacy school education and wider institutions, using the metrics as a 'needs assessment' tool.
- As more schools begin to assess their baseline, measure improvements in planetary health and sustainability intra-institutionally each year.
- Encourage examples of planetary health and sustainability engagement and highlight opportunities for growth.
- Contribute to the international, interprofessional, and interinstitutional learning on planetary health and sustainable health care initiated by the PHRC in medical schools.
- Progress the global planetary health movement.

SECTIONS OF THE REPORT CARD

The PHRC utilises metrics in 5 distinct areas to highlight planetary health inclusion and consideration within the pharmacy school and wider institution. This allows for comparison of pharmacy schools internationally.

Planetary Health Curriculum

This section evaluates the integration of planetary health topics into the pharmacy school curriculum. Pharmacists will be on the frontlines of tackling and treating the health effects of climate and other environmental changes. Therefore, it is critical that pharmacy students understand planetary health issues and learn how to practice sustainably and reduce the environmental impact of medicines and devices.

Planetary Health Research

This section evaluates the quality and quantity of planetary health research at the pharmacy school and with the wider institution. Planetary health is an emerging field. To facilitate appropriate teaching on planetary health, pharmacy schools should support research in areas such as the health effects of climate change, adaptive measures and pharmacy's environmental impact.

Community Outreach and Advocacy

This section evaluates pharmacy school engagement in community outreach and advocacy efforts associated with planetary health. Climate change disproportionately impacts under-resourced populations and communities of colour, therefore, it is critical that pharmacy schools and their institutions directly engage with communities most affected by environmental health harms and provide opportunities for student involvement.

Support for Student-Led Planetary Health Initiatives

This section evaluates institutional support for student-led planetary health initiatives such as quality improvement and information sharing. Students are the future of the work force and shape the future of the pharmacy profession therefore, it is vital they are supported in engagement with emerging fields in healthcare such as planetary health.

Campus Sustainability

This section evaluates the support and engagement in sustainability by the pharmacy school and/or institution, considering aspects including carbon footprint and waste management. Our pharmacy schools and institutions must set the standard for sustainable practices and minimising environmental impact.



METRICS



PLANETARY HEALTH CURRICULUM

This section evaluates the integration of planetary health topics into the pharmacy school curriculum. Pharmacists will be on the frontlines of tackling and treating the health effects of climate and other environmental changes. Therefore, it is critical that pharmacy students understand planetary health issues and learn how to practice sustainably and reduce the environmental impact of medicines and devices.

- 1.1** Does your pharmacy school curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?
- 1.2** Does your pharmacy school curriculum address the environmental impact of medicines in terms of their pollution, ecological impact and contamination of water systems?
- 1.3** Does your pharmacy school curriculum address the health effects of the pharmaceutical industry- and manufacturing-related environmental toxins?
- 1.4** Does your pharmacy school curriculum address the carbon footprint of healthcare systems?
- 1.5** Does your pharmacy school curriculum address the impact of climate change on the changing patterns of infectious diseases and increased antimicrobial resistance?
- 1.6** Does your pharmacy school curriculum address the respiratory health effects of climate change and air pollution?
- 1.7** Does your pharmacy school curriculum address the cardiovascular health effects of climate change, including increased heat?
- 1.8** Does your pharmacy school curriculum address the relationship between climate change and allergies?
- 1.9** Does your pharmacy school curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?

For more detailed information on metric scoring, please visit our website at phreportcard.org.

METRICS

1.10 Does your pharmacy school curriculum address the unequal regional health impacts of climate change nationally and globally, including the impact of social inequality?

1.11 Does your pharmacy school curriculum address the relationship between climate change and social determinants of health (e.g., reduced nutritional value of food)?

1.12 Does your pharmacy school curriculum address the environmental and health co-benefits of a plant-based diet?

1.13 Does your pharmacy school curriculum cover these components of sustainable clinical practice? (1 point each)

- Waste production within the healthcare system and strategies for reducing waste in clinical activities such as single-use plastic and packaging.
- Patient counselling on safe disposal of medications. For example, what can be disposed of and how to locate recycling schemes, in addition to certain drugs or drug classes that are most important to dispose of properly (e.g. hormonal contraceptives, drugs that are excreted unchanged/active metabolites).
- The impact of extreme heat, on patients on medications which can interfere with thermoregulation.
- The impact of anaesthetic gases on the healthcare carbon footprint.
- The environmental impact of pharmaceuticals and over-prescribing as a cause of climate health harm. Alternatively, teaching on de-prescribing where clinically appropriate and its environmental and health co-benefits would fulfil this metric.
- The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes.
- The impact and benefits of benign by design pharmaceuticals through exploring medicinal chemistry concepts and/or discussing implications of excretion of active metabolites/unchanged drug products on ecological systems

For more detailed information on metric scoring, please visit our website at phreportcard.org.

METRICS

- 1.14** Does your pharmacy school curriculum discuss the environmental implications of various dosage forms, medication delivery devices, and/or excipients?
- 1.15** In training for patient communication, does your pharmacy school's curriculum introduce strategies for having conversations with patients about the health effects of climate change?
- 1.16** Does your pharmacy school curriculum guide students to consider the environmental impact of medications as a factor in addition to safety, efficacy, cost, and pill burden when comparing equivalent therapies?
- 1.17** Is your pharmacy school currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?
- 1.18** Does your pharmacy school have a member of faculty to incorporate planetary health and sustainable healthcare as a theme throughout the curriculum?
- 1.19** Does your pharmacy school curriculum offer clinical practice experiences (for example, IPPE/APPE rotations in the U.S. or placement opportunities in the UK) that allow for the exploration of planetary health topics?
- 1.20** Does your pharmacy school curriculum acknowledge a disparity in the effects of climate change? Specifically, does your curriculum address groups more vulnerable to environmental impacts, such as BIPOC, immigrant groups, low income populations, children, elderly, persons with disabilities, persons with pre-existing or chronic medical conditions?

For more detailed information on metric scoring, please visit our website at phreportcard.org.

METRICS



PLANETARY HEALTH RESEARCH

This section evaluates the quality and quantity of planetary health research at the pharmacy school and with the wider institution. Planetary health is an emerging field. To facilitate appropriate teaching on planetary health, pharmacy schools should support research in areas such as the health effects of climate change, adaptive measures and pharmacy's environmental impact.

-
- 2.1** Are there researchers engaged in planetary health research and healthcare sustainability research at your pharmacy school?
 - 2.2** Has your institution recently provided extra curricular talks or learning opportunities on topics related to planetary 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 pharmacy school?

For more detailed information on metric scoring, please visit our website at phreportcard.org.

METRICS



COMMUNITY OUTREACH AND ADVOCACY

This section evaluates pharmacy school engagement in community outreach and advocacy efforts associated with planetary health. Climate change disproportionately impacts under-resourced populations and communities of colour, therefore, it is critical that pharmacy schools and their institutions directly engage with communities most affected by environmental health harms and provide opportunities for student involvement.

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- 3.1** Does your pharmacy school partner with community organisations to promote planetary and environmental health?
 - 3.2** Does your pharmacy school have coverage of issues related to planetary health and/or sustainable healthcare in their update communications?
 - 3.3** Is your pharmacy school a member of a national or international planetary health or ESH organisation?

For more detailed information on metric scoring, please visit our website at phreportcard.org.

METRICS



SUPPORT FOR STUDENT-LED PLANETARY HEALTH INITIATIVES

This section evaluates institutional support for student-led planetary health initiatives such as quality improvement and information sharing. Students are the future of the work force and shape the future of the pharmacy profession therefore, it is vital they are supported in engagement with emerging fields in healthcare such as planetary health.

- 4.1** Does your institution offer opportunities for pharmacy students to do research related to planetary health and/or sustainable healthcare?
- 4.2** Does the pharmacy school provide access for students to specific information related to planetary health and/or sustainable healthcare activities and mentors within the school? For example, a web page detailing projects achieved, current initiatives underway at the pharmacy school, and/or contact information for potential mentors.
- 4.3** Does your University have registered student groups dedicated to fostering a culture of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?
- 4.4** In the past year, has the institution had one or more extra-curricular planetary health programs or initiatives in the following categories? (1 point each)
 - 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.
 - Panels, speaker series, or similar events related to planetary health that have students as an intended audience.
 - 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.
 - Cultural arts events, installations, or performances related to planetary health that have students as an intended audience.
 - Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.
 - Wilderness or outdoors programs (e.g., that organize hiking, backpacking, kayaking, or other outings for students)

For more detailed information on metric scoring, please visit our website at phreportcard.org.

METRICS



CAMPUS SUSTAINABILITY

This section evaluates the support and engagement in sustainability by the pharmacy school and/or institution, considering aspects including carbon footprint and waste management. Our pharmacy schools and institutions must set the standard for sustainable practices and minimising environmental impact.

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- 5.1** Does your University have an Office of Sustainability?
 - 5.2** How ambitious is your pharmacy school/institution's plan to reduce its own carbon footprint?
 - 5.3** Does your pharmacy school have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?
 - 5.4** Does your pharmacy school provide paperless teaching? e.g. lecture materials, exam papers, hand-outs
 - 5.5** Does your pharmacy school have programs and initiatives to assist with making lab spaces more environmentally sustainable?
 - 5.6** Does your institution have a strategy or timeline for divestment from fossil fuels?

For more detailed information on metric scoring, please visit our website at phreportcard.org.



2022-2023 Summary Report
Australia + United States

Planetary Health Report Card For Pharmacy

Overall
Planetary Health Curriculum
Planetary Health Research
Community Outreach and Advocacy
Support for Student-led Initiatives
Campus Sustainability

University of California San Francisco, USA	B-	B	B-	F+	C-	A-
University of Colorado Anschutz, USA	C	C	B-	D	C	C
Monash University, Australia	C	D+	B	C	B+	B
Virginia Commonwealth University, USA	D+	D-	C	F+	B	D+

80-100% = **A**, 60-79% = **B**, 40-59% = **C**, 20-39% = **D**, 0-19% = **F**

Scores within top or bottom 5% awarded + or -, respectively

RECOMMENDATIONS

Based on the information compiled in the school-specific planetary health report cards, we present the following recommendations:

1. Divest from Fossil Fuels

Research has shown that air pollution, resulting from burning fossil fuels, is responsible for around 1 in 5 deaths globally (9). This staggering statistic highlights the danger to public health associated with fossil fuels. It is a complete contradiction for our institutions and healthcare educators to fund this. It is vital that institutions move their investment portfolios away from fossil fuels.

Examples

Monash University has a policy to divest from fossil fuels, formalised in their first environmental, social and governance (ESG) statement. In the latest ESG statement, it is stated that since the commencement of an ESG working group, Monash has confirmed that there are no direct investments in businesses who primarily produce fossil fuels.

At the University of California, San Francisco on February 2019, a UCSF Memorial Vote on fossil fuel divestment passed, having the Regents completely divest from all companies on the Carbon Underground 200 List.

2. Include Teaching on Disaster Preparedness in the Curriculum

Our planet is unequivocally in crisis. We, as pharmacy professionals, must be equipped to provide care to our patients in the face of extreme weather events and natural disasters resulting from climate change. Therefore, it is imperative that we are made aware of such risks to global health and provided with the knowledge to adequately care for ourselves and our patients through these events as part of the core curriculum.

Examples

The University of California, San Francisco has a lecture entitled "Spare the Air", which discusses the impact of wildfires on airway diseases such as asthma. There is also an inquiry session entitled "Effects of Climate Change Events on Mental Health", which invites students to explore the effects of extreme weather events such as heat, floods, wildfires, and droughts, on mental health. They identify vulnerable populations that are more likely to be impacted by such events and counseling techniques for supporting patients in these circumstances.

At the University of Colorado Anschutz, as part of the core PharmD curriculum, the Public Health and Outcomes course covers extreme weather disasters and how pharmacists as healthcare providers should be prepared for them.

RECOMMENDATIONS

3. Embed Planetary Health within Core Clinical Teaching

The pharmacy curriculum is extremely full. As opposed to creating new courses or classes, approaching clinical teaching with planetary health as a common theme throughout the core curriculum will allow sustainability to be ingrained in pharmacy professional practice in the same way as person centered care or antimicrobial stewardship.

Examples

In the Virginia Commonwealth University's Infectious Disease clinical module, increasing climate temperatures are referenced and linked to a wider spread of vector borne illnesses and of warming waters leading to the growth and spread of pathogenic bacteria. Furthermore, in class discussions about risk factors for cardiovascular diseases, there is mention of air pollution and the disproportionate population affected by cardiovascular disease (ie. systemic racism) which influences proximity to pollution.

4. Link Planetary Health Teaching to Practical Healthcare Interventions and Measurable Improvements in Patient Outcomes

Providing teaching on practical strategies to improve both planetary health and individual conditions, facilitates learning on planetary health and encourages real multifactorial benefits both to patients and to global planetary health. It is imperative to provide students with the necessary skills to be able to practice in the best interests of their patients and planet as a pharmacist.

Examples

At the University of California, San Francisco, counseling strategies for patients affected by climate change are taught. Students practice providing guidance on coping with climate events and limiting exposure to pollutants/toxins. Their GI Science and Therapeutics Course discusses the importance of plant-based diets and explains how our microbiome reflects our environmental exposures and its implications for disease states.

Dr Tina Brock and Dr Hayley Blackburn at the University of Colorado Anschutz discuss ways that students and professionals can talk to their patients about the effects of climate change on health and what the patient can do to protect themselves. They also show how to access free resources to help educate patients.

RECOMMENDATIONS

5. Include Teaching on Waste Management in the Curriculum

Understanding pharmaceutical waste management is vital to reducing the environmental damage caused by pharmacy manufacture, provision and disposal of medicines. Waste management should also be considered in school laboratories, where hazardous materials, energy usage, and single use plastics contribute to the negative impact healthcare has on the environment. Patient waste includes vials, devices, active metabolites or unchanged drug, and more. Regulated medical waste and hazardous waste in the health system should also be discussed.

Examples

The University of California, San Francisco discusses how oral medications are introduced into the environment and their impacts (e.g. feminization of fish) and their “Climate and Health” mini-course, elaborates on the impacts of drug development on the environment, using the synthesis of Tamiflu as an example to illustrate Green Chemistry Principles.

Virginia Commonwealth University offers a dedicated webpage with resources for sustainable lab practices, such as ULT freezer rebates, lab waste practices, efficient energy policies, and water conservation programs. It also gives the option for labs to receive a sustainability certification.

6. Understand the Carbon Footprint of Pharmacy School and Institutional Activities

Elevated levels of carbon dioxide in the atmosphere poses a direct risk to human health. Understanding our carbon footprint enables us to identify areas for cost-saving and to slow down the acceleration of climate change. Calculating carbon footprint is applicable to understanding and reducing the carbon footprint of healthcare and reducing the negative global health outcomes related to climate change.

Examples

The University of Colorado Anschutz, Human Health & Climate Change elective course discuss environmental healthcare topics, including the carbon footprint of healthcare systems.

The University of California, San Francisco Carbon Neutrality Initiative Fellowship provides funding for students to lead projects on carbon neutrality. Three UCSF School of Pharmacy students have participated in the UCSF Carbon Neutrality Initiative Fellowship.

Monash University as a whole (multiple campuses), has expressed an aim to reach net 0 carbon emissions by 2030.

RECOMMENDATIONS

7. Facilitate Inter-professional and Interdisciplinary Collaboration

As healthcare professionals, we work as part of a multidisciplinary team. Facilitating shared learning through elective courses, conferences and talks by experts in planetary health and attending events/initiatives hosted by the wider institution, will provide better care for our patients and reduce the impact of health care on the environment. Environmental efforts require a multifaceted, collaborative approach to ensure support for and progression of initiatives.

8. Support Student-Led Organizations and Information Sharing

The student voice is a powerful tool for change as demonstrated by the PHRC in medical schools. Supporting student-led organizations, encourages enthusiasm and innovation in planetary health. Students develop leadership, team-building skills, and essential organisational qualities that will prepare them for a dynamic career in pharmacy. The School should recognize and amplify voices of students that catalyse positive action in climate and patient health efforts.

Examples

Monash University provides a compulsory interprofessional activity on thunderstorm asthma. Students explore a patient case and discuss the impacts of such an event on the health system with medical, nursing, health sciences pharmaceutical sciences students.

University of Colorado Anschutz provide courses in the Interprofessional Education series which cover cases where occupational heat exposure and air pollution are contributing factors to patient care.

Examples

Monash University has the Monash Sustainability association and Monash students for climate justice

University of California San Francisco has the UCSF Human Health and Climate Change Club which aims to bring awareness about climate change and global health challenges.

University of Colorado Anschutz has the Society of Herbal and Integrative Medicine Pharmacists, the Student National Pharmaceutical Association, as well as campus wide student organizations such as CHASE, Street Medicine.

Virginia Commonwealth University has the Sustainable Pharmacy Project; a student-created organization, focused on reducing the impact of pharmaceuticals on the environment through various efforts.

RECOMMENDATIONS

9. Include Teaching on Climate Change and Social Inequality in the Curriculum

Social inequality is inextricably linked to health inequality. Climate change exacerbates the existing burden of disease for vulnerable populations. Teaching on the social and environmental determinants of health must be included in the core curriculum to provide the knowledge and tools with which to overcome these barriers for our patients. It is known that populations most affected by poor climate are also most vulnerable to health disparities. Therefore, treating the patient is our utmost duty and that requires taking into consideration our patient's environment.

Examples

The University of California, San Francisco's "Social Determinants of Telehealth" lecture addresses the effect of air pollution on asthma in a social and community healthcare context. Also the elective "Climate and Health" mini-course discusses ways that social injustice and racism can be exacerbated by climate change as well as how it may be mitigated by climate action. Students look for solutions to reduce climate impact, improve resilience of communities and systems and identify synergies between policies that promote environmental sustainability.

The University of Colorado Anschutz elective courses Human Health & Climate Change discusses environmental healthcare topics, with notable emphasis on the unequal regional health impacts of climate change.

Virginia Commonwealth University has one guest speaker in a lecture titled "social determinants of health" which discusses the impact of redlining and other environmentally inequitable practices on the development of food deserts and lack of green space.

10. Provide Planetary Health Research Opportunities for Students

Providing teaching on planetary health and sustainability, requires research to be carried out to underpin such knowledge. Offering such research opportunities to students increases student engagement and understanding of planetary health and is vital to progressing sustainable pharmacy practice.

Examples

At the University of Colorado Anschutz School of Pharmacy has a Toxicology PhD program which can offer research opportunities in environmental healthcare for interested and eligible students.

Virginia Commonwealth University students are given an opportunity to connect with a faculty member and work on an independent research project, there is currently a student working on reducing Foundations lab waste.

SCHOOL-SPECIFIC REPORT CARDS



2022-2023 Summary Report Australia

Monash University Faculty of Pharmacy and Pharmaceutical Sciences

Overall

C

Planetary Health Curriculum

D+

Planetary health curriculum topics such as impacts of extreme weather events on individuals and healthcare systems, relationship between climate change and allergies, relationship between climate change and social determinants of health as well as acknowledging the disparity in the effects of climate change are outlined within elective curriculum across the four didactic years with specific learning objectives outlined. Interprofessional education workshops are introduced from first year and continue to fourth year studies where pharmacy students collaborate with medical and nursing students covering planetary health related curriculum, specifically addressing the relationship between climate change and allergies utilizing the thunderstorm asthma case study. Topics such as neuropsychological effects of environmental degradation, changing patterns of infectious diseases and increased antimicrobial resistance are covered within elective coursework in the form of workshop readings and lecture material. Planetary health education can be further strengthened within pharmacy curriculum by integrating planetary health topics into core curriculum and weaving learning materials across the four didactic years.

Planetary Health Research

B

Monash University School of Pharmacy has provided extra-curricular opportunities related to planetary health in the form of participating in a virtual planetary health placement for fourth year honors students as well as participation in the Planetary Health Report Card for Pharmacy initiative. Monash University is the first Australian School of Pharmacy to participate in the Planetary Health Report Card for Pharmacy initiative. Additionally there are also individual faculty members at the School of pharmacy who are conducting research related to planetary health or healthcare sustainability where fourth year honors students can be involved as part of their research project.

Community Outreach and Advocacy

C

Monash University School of Pharmacy partners with community organizations to promote planetary and environmental health by promoting the Green Steps program, a five-day intensive sustainability workshop run by the Monash Sustainable Development Institute which students are encouraged to participate in. Planetary health and sustainability initiatives such as sustainability week, 'Walk or Ride your Bike to School Day', 'Reusable KeepCup' initiatives are included in communication updates via the form of online newsletters to staff and students.

Support for Student-led Planetary Health Initiatives

B+

Faculty support for student-led initiatives is abundant in terms of planetary health and sustainable healthcare research, taking the form of research (honors) projects, intern year projects and participation in the virtual planetary health placement. Student committee-led sustainability initiatives including promoting KeepCups and implementation of environmentally focused activities such as rock-climbing is also greatly supported by the faculty.

Campus Sustainability

B

There is a Buildings and Property Division at the Faculty of Pharmacy and Pharmaceutical Sciences establishing a sustainability team. The sustainability team at the Buildings and Property Division run a program called 'Green Impact' where staff and students can form a workplace team and implement actions set out in the 'Green Impact Toolkit'. The pharmacy school delivers learning material through a paperless teaching method with lecture notes, reading materials, assessments and exams delivered in the online format. In the 'Impact 2030' Plan, Monash University has outlined its deep commitment through education and research to creating a more globally sustainable future.



2022-2023 Summary Report
USA

University of California, San Francisco School of Pharmacy

Overall

B-

Planetary Health Curriculum

B

The University of California, San Francisco (UCSF) School of Pharmacy (SOP) curriculum addresses several aspects of planetary health, however the depth of coverage is limited to three core lectures and a few elective lectures. Some topics are only briefly mentioned and limited to a single slide or two. Others are discussed in greater depth. Current curricular content focuses on relevant, real life examples for students to learn and practice applying their knowledge.

- Recommendation: Improvement in this domain could be achieved through integration of planetary health across the UCSF SOP curriculum.

This could be done by incorporating at least one planetary health topic per block. Additionally, faculty education on the impacts of climate on health could allow for more explicit connections between disease states and climate change during relevant lectures. We recommend the continued use of patient cases and other active learning methods to help students identify opportunities for planetary health mitigation and adaptation.

Planetary Health Research

B-

UCSF SOP researchers study a diverse range of fields, however few specifically focus on the impacts of climate on health. One UCSF SOP researcher has conducted studies evaluating the effect of instructional sessions about planetary health on student outcomes. Some researchers within the SOP focus on health disparities, but not specifically those caused by climate change or other environmental conditions. There are researchers within UCSF but outside of the SOP who do conduct research on the impacts of climate on health.

- Recommendation: Having researchers with a targeted focus on planetary health and pharmacy sustainability would be beneficial for many reasons. For example, researchers could teach students about their findings and invite them to collaborate on their research. They may also strengthen the connection between the San Francisco community and UCSF SOP to uplift the voices of those who are most deeply affected by environmental conditions.

Community Outreach and Advocacy

F+

UCSF SOP has not formally partnered with organizations that promote planetary health or sustainable practice. UCSF SOP is also not part of any national or international organization with this focus. UCSF as an institution does have two centers, the EaRTH center and Center for Climate, Health and Equity, that address these topics.

- Partnering with organizations would demonstrate dedication towards sustainable healthcare practice and education. This may also lead to opportunities for student participation in a variety of organizational experiences, such as educational programs.

Support for Student-led Planetary Health Initiatives

C-

The UCSF EaRTH Center, Center for Climate, Health and Equity, and Office of Sustainability provide support for student-led initiatives. UCSF also provides free access to outdoor programs for students.

- Recommendation: UCSF SOP may consider strengthening its relationships with the UCSF EaRTH Center, Center for Climate, Health, and Equity, and Office of Sustainability.

One way to achieve this is through pre-existing student organizations, such as the Alliance for Pharmacy Sustainability or the Human Health and Climate Change Club.

Campus Sustainability

A-

UCSF is committed to reducing their carbon footprint and transforming into a sustainable institution. Additionally, UCSF has sought to include sustainable practices throughout the institution, from the labs to the professional schools. UCSF has set a goal to become carbon neutral by 2025 and has voted to divest from all companies on the Carbon Underground 200 List.



2022-2023 Summary Report USA

University of Colorado Anschutz Skaggs School of Pharmacy and Pharmaceutical Sciences

Overall

C

Planetary Health Curriculum

C

In the 2022-2023 academic year, various updates were made to the PharmD core curriculum with notable changes to the P1 courses from previous years. Outside of the newly introduced Human Health and Climate Change elective courses, only a handful of core courses currently cover health in the context of climate change and social disparities. **We recommend;** continue and expand the Human Health and Climate Change elective courses and incorporate and/or elaborate upon the link between climate health and human health in the core curriculum, which presents numerous opportunities to acknowledge the direct and cyclical relationship between healthcare and climate health. Many courses already discuss non-pharmacological recommendations in conjunction with pharmacological therapy, with brief mentions of modifying diet, physical activity and time spent outdoors to minimize exposure to risk factors. Specifically, Pharmacotherapy 1, 4 and 6 briefly cover topics (respiratory health, inhalers, allergens, antimicrobial resistance) that can be linked to the environment as well. Additional conversations could be encouraged in climate change, the unintended environmental impacts of packaging and dosage forms, tailoring medication therapy and deprescribing, air/water/food quality and health, and more.

Planetary Health Research

B-

There are individual faculty members at the School of Pharmacy who have also engaged in planetary health and healthcare sustainability research topics, but it is not a primary research focus yet at the school. There is potential to influence research in this areas by raising awareness of groups like the Center for Drug Discovery and CU Technology Innovation Discovery Entrepreneurship. In the current academic year, the school has hosted two Dean's Leadership Convocation presentations which provided extra-curricular education on health in the context of sustainable and equitable systems. There are currently no processes identified in which community members can explicitly make decisions on the pharmacy school's research agenda, but opportunities to implement such a process exist via wider campus channels. **We recommend;** continue to support pharmacy faculty who engage in planetary health topics. We encourage exploring partnerships with researchers in the CU School of Medicine and the CU Consortium for Climate Change and Health as well as the Colorado School of Public Health. We also urge collaboration with the CU Anschutz Campus Office of Diversity, Equity, Inclusion and Community Engagement to inform and enable members of the community on how to provide input on the pharmacy school's research agenda, perhaps through existing initiatives like the Resident Leadership Council.

Community Outreach and Advocacy

D

The School of Pharmacy has partnerships with local community organizations (providing vaccine clinics, the rural commitment, service learning) but these efforts are not yet explicitly covering planetary and environmental health. Students on the CU Anschutz campus receive campus communications which occasionally cover sustainable healthcare (eg, announcements about Climate Rounds), but these topics could be highlighted more regularly. **We recommend;** implement environmental health into our P1 co-curricular elementary school service learning projects by teaching about topics like air quality. Providing information about the different color air quality indexes, we can spend time outside and teach them how to look up air quality. After values are determined, we can show them colored flags and how they can show what activities are safe to be doing outside based on the color flags that represent values of air quality index. Explore national or international planetary health organizations, and how the pharmacy school can become a member of these.

Support for Student-led Planetary Health Initiatives

C

There are many student organizations engaging with planetary health or sustainability with faculty support. There is also an annual President's Sustainable Solutions Challenge which encourages student ideas for innovations on campus. CU Anschutz offers a Climate & Health Science Policy Fellowship through the School of Medicine, but this is only available to physicians at this time. The Diploma in Climate Medicine however is open to all healthcare providers. There are research opportunities in the PharmD Research Honors program for interested and eligible students to pursue topics like planetary health, but these require student initiative to apply and seek out faculty mentors. **We recommend;** explore the possibility of introducing a research program or fellowship specific to pharmacy students on sustainable healthcare topics. Start a digital resource to collect information related to planetary health and sustainable healthcare activities and mentors. Consider making this resource in collaboration with the School of Medicine, and/or opening it to all Anschutz Medical Campus members to access and contribute information. Identify active student organizations and amplify projects for students to engage with local environmental justice.

Campus Sustainability

C

CU Anschutz has a full time Sustainability Manager dedicated to campus-wide sustainability. The campus has established a goal to reduce greenhouse gas emissions, but it is not one of carbon neutrality. The pharmacy school has conventional recycling available to students and faculty, but the university is working on expanding composting on campus following the 2022 President's Sustainable Solutions Challenge. All course materials, lecture materials and exams in the PharmD program are provided digitally, allowing the curriculum to be delivered to both in-person and remote cohorts simultaneously as well as eliminating paper handouts. **We recommend;** consider the possibility of expanding roles in Facilities Management to support the Sustainability Manager, and establish a formal Office of Sustainability. Expand composting to be made available throughout the campus, especially in high traffic areas like restrooms and dining areas. Implement parking that is prioritized for electrical vehicles beyond the Henderson Parking Garage. Consider discounts or parking incentives for hybrid and compact vehicles, and make sure all new students are aware of the carpool parking discount. Consider adding solar panels to campus, especially parking lots, as a covering and to take advantage of the reduced carbon footprint from electrical use. Highlight and emphasize accomplishments in campus sustainability. Raise awareness on the benefits and savings produced by the 5 LEED Gold rated facilities on campus.



Virginia Commonwealth University School of Pharmacy

Overall **D+**

Planetary Health Curriculum **D-**

Utilizing the method of reaching out to course coordinators to offer their insights on their respective metrics was very helpful to making sure our experience as students was accurate to the score that we awarded each metric. A common theme we found among the responses from various professors was their recognition of the importance of climate and health in the pharmacy curriculum; however, the most common barrier mentioned was the lack of specific interventions that can be made by pharmacists that can have an impact in mitigating the effects of climate and health. Another barrier also commonly expressed was the lack of time within the curriculum to include these important topics. Overall, this experience revealed a great deal of information and it was worthwhile to hear how much professors thought these topics were important.

Planetary Health Research **C**

Although there are many opportunities for research throughout the pharmacy student's career while at the School, there are no opportunities related in any sense to planetary health. If there was more encouragement for students to come up with their own research projects that can be proposed to faculty available for mentoring a project, potentially there would be more interest in climate and health research and this could have a positive impact on the overall variety of research coming out of the School.

Community Outreach and Advocacy **F+**

Richmond is a city with a rich history and the role of the School definitely has played a role in how things look today. There are many grass-roots community organizations that strive to increase engagement of the greater university with the local people that live in Richmond. We believe that there are many ways the School can promote student engagement in the greater Richmond community in addition to empowering the efforts of these community members in any way possible; especially with respect to health care access.

Support for Student-led Planetary Health Initiatives **B**

The student body within the School is very supportive of each other and the School takes an interest when reaching out to promote events or celebrate news. From a climate and health perspective, the School does not connect with other initiatives going on at the university level that may be of interest to the School's student body. However, it is great that the culture at the School continues to produce students with leadership skills and independence to start movements and initiatives when there are gaps.

Campus Sustainability **D+**

The School does not overtly make any effort to increase campus sustainability. There are minor interventions such as re-education of recycling to students, faculty, as well as custodial staff that can make a significant impact in improving waste reduction efforts. Collaborating with the other health professional schools would be another great start because there may be efforts being done elsewhere that can be easily implemented at the School. There is little information shared regarding the greater University's effort to improve campus sustainability; however, these efforts can be shared and supported by the School if it were communicated. VCU Health is another opportunity and a separate entity, but has a strong relationship with the School, that can be another area where campus sustainability measures can be implemented based on what is being done at other institutions with more robust sustainability protocols.

LIMITATIONS & FUTURE DIRECTIONS

Despite our extensive efforts in creating the Planetary Health Report Card for Pharmacy, we recognise that there are some limitations, which are outlined below. Following the discussion of our limitations, we outline future directions for the PHRC for Pharmacy and pharmacy training and discuss steps made since the PHRC for Pharmacy pilot last year.

LIMITATIONS

LIMITED REPRESENTATION OF SCHOOLS

As experienced with the pharmacy pilot, although fifteen teams from various pharmacy programs signed up to take part in the PHRC this year, factors such as the demands and high volume workload posed by the pharmacy degree plus apprehension from a number of institutions to share their reports, resulted in a smaller sample size. While we celebrate the contributions of the participating teams, we acknowledge that the data presented in this report may not fully represent the attitudes and approaches to planetary health taken by all pharmacy schools globally.

DISCREPANCIES IN INTERPRETATION

There will always be a degree of subjectivity in interpretation of the metrics. What one team may classify as “brief coverage,” another may rank as “in depth coverage,” thus potentially affecting overall grades. Since the pilot last year, we have been able to provide pharmacy specific examples of what constitutes 'brief' and 'in depth' to enhance clarity and provide a frame of reference when filling out the metrics. We intend to add to and appraise these examples annually. What's more, the University of Nottingham have offered a formal dissertation research project to their students evaluating the PHRC metrics themselves and discussing a standardised methodology. This will be invaluable to further developing the PHRC for Pharmacy as a research model.

FUTURE DIRECTION OF THE PHARMACY PHRC

INCREASE GLOBAL REACH

We plan on increasing the number of participating pharmacy schools in order to provide a wider understanding of planetary health topics in pharmacy programs and expand our impact across the globe. We are confident that as more pharmacy schools participate, this will quickly become an initiative which institutions are determined to be part of as is seen in medical schools. Furthermore, this year collaborations with the British Pharmaceutical Students' Association (BPSA) and International Pharmaceutical Students' Federation (IPSF) have been established; discussing developments such as student sustainability representatives within universities worldwide and increasing the global reach of the PHRC for Pharmacy. We are very grateful for the support from the BPSA and IPSF for the PHRC for Pharmacy.

CLARIFICATION AND STANDARDISATION OF METRIC SCORING AND COMPLETION

As discussed above, this year, we have been able to provide pharmacy specific examples of what constitutes 'brief' and 'in depth' to enhance clarity and provide a frame of reference when filling out the metrics. Furthermore, the University of Nottingham have used the PHRC for Pharmacy for their formal dissertation research project this year. The students have been analysing the metrics' robustness and content. They have also explored standardising the process in which schools approach filling out the metrics such as through using a pre-set questionnaire aiming to remove ambiguity. This is invaluable data and input which will inform and progress the PHRC moving forwards. Nonetheless, the emphasis of the PHRC for Pharmacy remains to encourage openness and transparency, willingness to evoke positive change and ultimately lead to a reduction in the negative environmental impact of pharmacy on our planet, as opposed to requiring perfectionism.

INCREASED FACULTY INVOLVEMENT

We welcome and value faculty involvement when completing the PHRC. There have been faculty mentor(s) associated with every team this year, which was not observed with the pharmacy pilot. We understand that faculty assist students in their own time and provide support extra to their teaching and academic commitments. Thus, funding faculty specific to planetary health teaching and research is desirable for further advancements in this area. Thank you to faculty assisting and encouraging the PHRC in Pharmacy.

FUTURE DIRECTION OF PHARMACY TRAINING

Planetary health and sustainability within healthcare is a rapidly emerging and evolving field and something which is increasingly in the consciousness of healthcare professionals around the world. Recent advancements made in planetary health education in pharmacy include the establishment of the Sustainability in Pharmacy Education (SPE) Working Group, involving faculty from all UK pharmacy schools, enabling collaboration and advancement in planetary health within pharmacy education. Also, Rx for Climate includes pharmacy academic tutors and students from USA and Australia and facilitates a similar forum for educational advancements in this area. The future direction of sustainability in pharmacy is exciting, however, there is still scope for more.

EXTRACURRICULAR ACTIVITIES

Pharmacy programs could consider providing extracurricular learning opportunities, such as talks featuring experts in planetary health or members of community organisations.

SUSTAINABILITY STUDENT REPRESENTATIVES

Establishing sustainability representatives within pharmacy student organisations in every university could create a key avenue by which pharmacy students are made aware of and motivated to join planetary health events, initiatives, and to encourage their institution to work sustainably. This would ensure that environmental pharmacy is understood by students and this can motivate them and their institution to take action when possible.

SUPPORT AND RESEARCH

The creation of formal planetary health or sustainable healthcare research programs or tracks would increase opportunities for students and faculty to partake in such research. This would require support and funding from institutions, such as the research using the PHRC done this year at the University of Nottingham.

ELECTIVE COURSES

Creating elective courses dedicated to planetary health and sustainable healthcare would allow pharmacy students to discuss the wide-ranging effects of pharmacy on the environment to the fullest extent.

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ACKNOWLEDGEMENTS

Thank you to Planetary Health Report Card leadership team, in particular, Karly Hampshire, Hannah Chase, Isabel Waters and Taylor Diedrich for your guidance and support throughout the development of the Planetary Health Report Card for Pharmacy.

Thank you to White Coats 4 Black Lives and their Racial Justice Report Card for the inspiration to start this endeavour.

We would also like to thank those who gifted their time and expertise to make the Planetary Health Report Card for Pharmacy possible:

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Pharmacy Declares - For more information please visit

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