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Pharmacy Education for Sustainable Healthcare:

A UK progress update and call to action

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Nuala Hampson declares that there are no conflicts of interest.

Lisa M. Fitzpatrick declares that there are no conflicts of interest.

Min Na Eii declares her roles as Chair of Sustainability, Guild of Healthcare Pharmacists and as Lead Author for the Royal Pharmaceutical Society Greener Pharmacy Guide.

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Each of the authors are current members of the Sustainability in Pharmacy Education group and contributed to the writing and review of this commentary piece.

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Each of the authors are current members of the Sustainability in Pharmacy Education group and have had access to all meeting agendas and minutes and have been involved in the development and progress of the group, which is the main topic of this commentary piece. They also have access to all the references used. Access is ongoing.

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35 The pharmacy profession is currently facing significant challenges, including increased service
36 demand, managing medication shortages, and financial pressures. Given these pressing issues, it is
37 understandable that the more obscure threat of climate change may not be a top priority for many
38 pharmacy professionals. The climate and ecological crisis represent the greatest health threat that
39 humanity has ever faced¹. Human health is already impacted both in the UK and globally, but the
40 effects are gradual and insidious, making the direct link difficult to see. To effectively tackle this
41 challenge, it is essential that we first acknowledge climate and ecological breakdown and then seek
42 to understand the specific problems it presents so that we can identify solutions for mitigation and
43 adaptation going forward. This underscores the importance of integrating education on planetary
44 health and sustainable healthcare into training for all pharmacy professionals – to raise awareness of
45 the challenges so that we can work together towards viable solutions.

46 In the United Kingdom (UK), climate change and its causes are having an increasingly negative
47 impact on population health. Air pollution is linked to multiple health issues and affects everyone
48 throughout their lifetime². Exposure to flooding increases the risk of mental health conditions, such
49 as depression, anxiety and post-traumatic stress disorder (PTSD), impacting individuals for years
50 after the flooding event³. Extreme heat poses health risks to the very young and elderly and those
51 with long term conditions, such as chronic kidney disease and heart conditions, while also creating
52 logistical challenges related to the transport, storage and administration of medicines⁴. National
53 Health Service (NHS) properties and pharmacy facilities are increasingly susceptible to flooding and
54 severe weather events, which have become more frequent and intense⁵. Pharmaceutical supply
55 chains, already strained, will likely face even greater pressures from extreme weather worldwide.
56 Going forward, pharmacy professionals will need to adapt to a new range of conditions as vector-
57 borne disease, such as dengue fever, moves northwards through Europe and as extreme weather
58 globally increases in frequency and severity, driving migration and food insecurity. The pharmacy
59 professionals of the future will face the challenge of delivering health services in an increasingly
60 unliveable world.

61 The UK General Pharmaceutical Council (GPhC) has recently published their climate action plan,
62 aimed at embedding sustainability within regulatory frameworks, including undergraduate
63 education and revalidation⁶. How this plan is executed is yet to be seen. The Royal Pharmaceutical
64 Society (RPS) has established sustainability policies, but there is still a need for these to be explicitly
65 integrated across professional frameworks⁷. Given the magnitude of the public health threat which
66 climate change represents, it is imperative that the pharmacy profession expedites and enhances its
67 preparedness to address the health impacts of climate change, to adapt to its physical threats and to
68 embed sustainability within pharmacy practice so that our contribution to the problem is
69 minimised.

70 Existing tools and frameworks, such as the principles of sustainable healthcare, can assist us on this
71 journey⁸, for example by placing greater emphasis on prevention of disease to reduce the need for
72 healthcare activity in the first place. The Association for Medical Education in Europe (AMEE) has
73 developed a consensus statement on education for sustainable healthcare⁹. Education for
74 sustainable healthcare goes beyond merely identifying principles; it requires an understanding of the
75 broader global contexts of human rights, social value, health inequalities, climate justice, and
76 harmony with nature. It also stresses environmental accountability: the commitment to ensure that
77 research and education actively promote environmentally sustainable solutions. For clinicians to
78 effectively engage with planetary health, it is essential they possess not only the requisite
79 knowledge and skills but also the appropriate values. Education in sustainable healthcare cultivates

values such as prioritising human rights, health equity and respect for life and nature - concepts that must be woven into all aspects of healthcare education.

To support this educational transition, the AMEE consensus statement outlines three key learning outcomes for sustainable healthcare⁹:

1. *“Describe how the environment and human health interact at different levels.*
2. *Demonstrate the knowledge and capabilities needed to improve the environmental sustainability of health systems, using systems thinking.*
3. *Discuss how the duty of health professionals to protect and promote health is impacted by the interdependence of health and ecosystems and implications for health professionals’ personal and professional lives”.*

The potential impact of educating health professionals about planetary health and climate change is substantial. Successful application of this education has the potential to enhance community health and convert healthcare facilities into sustainable institutions. A healthcare workforce engaged in sustainability could drive changes in social norms, policies, and investments, leading to rapid decarbonisation of health systems. Health professionals are trusted figures in their communities, and the healthcare sector commands significant purchasing power, accounting for over 10% of the global economy. As trusted voices, health professionals and organisations can profoundly influence the social and policy landscape to support decarbonisation initiatives¹⁰.

Other healthcare professions are making strides in this area. Medical, nursing, and allied health professions are actively seeking to integrate sustainability into best practice, professional frameworks, and educational curricula. In the UK, the General Medical Council's 'Good Medical Practice 2024' emphasises the effective and sustainable management of resources by physicians. Sustainability is one of the seven domains of quality as defined by the Royal College of Physicians. The Nursing and Midwifery Council's standards require midwives, at the time of registration, to demonstrate knowledge of sustainable healthcare principles and methods. Despite these advancements, the implementation of sustainability in education for health professions is still in the early stages. A recent survey of medical curricula across over 100 countries indicated that only 15% of medical schools incorporated climate change in their teaching¹¹.

Progress in pharmacy is gathering pace. In 2021, the International Pharmaceutical Federation (FIP) launched SustainabilityRx a programme of work to support the implementation of sustainability in pharmacy. Pharmacy organisation Rx4Climate, consisting of academic pharmacists in the United States of America, Australia, Canada and UK, have collaborated to deliver planetary health education in their respective schools of pharmacy.

The Sustainability in Pharmacy Education (SPE) group was established in the UK in 2022 to bring together pharmacy academics with the aim of embedding teaching on planetary health and sustainability within the pharmacy undergraduate curriculum. The founding SPE group members have invited representatives from all UK schools of pharmacy to participate on a voluntary basis. 35 UK schools of pharmacy are currently engaged in the group, including universities who are setting up new schools of pharmacy, along with two Irish schools of pharmacy. Multiple UK pharmacy stakeholders, such as representatives from the GPhC, RPS, Centre for Postgraduate Pharmacy Education (CPPE), and the Guild of Healthcare Pharmacists (GHP) have engaged with the group. The SPE group has also involved pharmacy students in their work, inviting MPharm students to present their work on sustainability projects and collaborating with the British Pharmacy Students Association (BPSA).

The aims of the SPE group are focused on embedding education for sustainable healthcare into pharmacy education, sharing existing resources, and providing peer support and encouragement to educators in pharmacy. It is an inclusive, supportive, proactive and aspirational group. The primary objective is to support the development of a professional workforce equipped with the knowledge, skills, and values necessary to drive the sustainable transformation of pharmacy practice. The SPE group's annual report summarising the sustainability projects and developments at each academic institution was collated and submitted to the GPhC for consideration to embed in future competency frameworks. Topics covered include clinical initiatives such as deprescribing, better inhaler use, preventative medicine, social prescribing and climate health; and scientific topics, such as green chemistry, antimicrobial stewardship and drug lifecycle analysis. SPE documents are currently hosted on the Pharmacy Declares website.

SPE meetings are held bi-monthly online, with members invited to share developments and progress within their institutions with opportunities for collaboration or replication in other schools of pharmacy. Invited speakers provide insight into sustainability work which is being developed within academia by both staff and students, other education bodies and the regulatory and professional bodies, including Care Quality Commission (CQC), GPhC and RPS. Several students have presented their work on the Planetary Health Report Card (PHRC), a metric-based tool developed to evaluate and improve planetary health content in medical schools¹². The tool now includes nursing, physiotherapy, dentistry, occupational therapy and pharmacy, and has been implemented in 15 nations, including the UK and Ireland. The SPE group has worked with the International Pharmaceutical Students Federation (IPSF) and BPSA to encourage more pharmacy students to engage with sustainability projects and the PHRC report.

A regular agenda item for the SPE group is the dissemination of relevant resources, training opportunities, conferences, publications, and research initiatives. The group chairs have also monitored developments in sustainability within other healthcare professions. Members have agreed to share sustainable pharmacy education resources through the Centre for Sustainable Healthcare's Pharmacy Network.

The SPE group intends to broaden its influence and foster collaboration across the wider pharmacy sector, promoting the integration of sustainability into the education and training of pharmacy technicians and postgraduate qualifications for pharmacy professionals. With appropriate capacity and resources, the group aims to engage all sectors of pharmacy, including regulatory bodies, public health, industry, and health education departments. Additionally, the group seeks to establish networks with other healthcare professionals through interprofessional training and placement opportunities. During 2022, members of the SPE group developed a document that maps the learning outcomes addressing planetary health and sustainable healthcare to the GPhC initial education and training of pharmacists (IETP) learning outcomes. This document was approved by the Pharmacy Schools Council UK in June 2023 and can be found in the Education section of the Pharmacy Declares website.

The SPE group is initiating innovative work on a voluntary basis. The advancement of this work is vital to ensure the future pharmacy profession is well-prepared and informed to address the challenges posed by the climate and ecological crisis. However, at present the rate of progress of this work is limited by lack of dedicated resources and competing priorities such as workforce challenges, public and system expectations of service provision, and other clinical demands. The dedication and voluntary contributions of the SPE group members are commendable, but this approach is (ironically) unsustainable. Demands of substantive roles understandably take precedence over voluntary commitments. As a result, the SPE group is calling for continued work in this field to be appropriately prioritised and funded. The climate and ecological crisis presents the greatest public health threat ever known. Health impacts are being felt here and now in the UK and globally. Urgent

widespread action is required to minimise the negative environmental impacts of healthcare. This is a call to action for the wider pharmacy profession to acknowledge the urgency of the climate and ecological crisis and the need to educate both the existing workforce, who have not previously received this training, and to prepare future generations for the challenges ahead. It needs time, funding, expertise, collaboration and consultation to ensure that as a profession we can be leaders in the transformation to sustainable healthcare. This work is essential and urgent and must be prioritised.

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