Sustainability in pharmacy: Global perspectives and practices

Report from an insight board

2025

International Pharmaceutical Federation

Colophon

International Pharmaceutical Federation (FIP)
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1 Insight board participants

FIP acknowledges and thanks the participants who came together to share their valuable knowledge and experience during this insight board.

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2 Introduction

Background

Sustainability in healthcare and the pharmaceutical sector is critical to ensuring the long-term health of both people and the planet. Embracing sustainable practices not only helps reduce carbon emissions and conserve natural resources but also enhances public health by minimising pollution and exposure to hazardous substances.[1] Moreover, integrating sustainability in the pharmaceutical sector fosters innovation, regulatory compliance, and social responsibility, supporting global efforts to combat environmental changes and promote equitable access to healthcare.[2]

Climate change is increasingly recognised as one of the most critical threats to global health. Its impacts are far-reaching, affecting both the environment and human well-being in complex and interconnected ways. The World Health Organization (WHO) estimates that between 2030 and 2050, climate change could result in an additional 250,000 deaths annually.[3] These figures highlight the need for coordinated action across all sectors of healthcare, including pharmacy, to mitigate its effects and protect global health.

Real-world pharmacy initiatives highlight the profession's growing role in climate action and resilience. Case studies from countries such as the UK, Sweden, and the USA show pharmacies helping to cut healthcare emissions, manage medicine access during disasters, and support vulnerable populations during climate events.[4] These examples show that when pharmacists are trained, supported, and recognised in policy, they can significantly bolster community resilience.

The International Pharmaceutical Federation (FIP) is leading global efforts to position pharmacy as a key contributor to climate-health strategies, ensuring meaningful contributions from the profession to a more sustainable and healthier future. This commitment is reflected in FIP Development Goal 21: Sustainability in pharmacy, which calls for the integration of sustainable practices across all areas of pharmaceutical education, workforce, and practice. In support of this, FIP's SustainabilityRx programme provides support, education, tools, and policy guidance to embed environmental responsibility into pharmaceutical practice, science, and education.[5] Pharmacists are empowered to mitigate medicine waste, reduce emissions, and promote eco-conscious health services.[6] From sustainable procurement to medicine take-back programmes and eco-friendly packaging, pharmacists are well positioned to reduce pharmaceutical pollution, protect public health, and contribute to the United Nations Sustainable Development Goals (SDGs).

Aims and objectives of the insight board

On 9 April 2025, FIP convened an insight board to gather experiences and perspectives from pharmacists and representatives of FIP member organisations on sustainability. The aim was to highlight good practices and explore how the profession can collaborate to mitigate the environmental impact of the pharmaceutical sector.

The specific objectives of the roundtable discussion were:

- To capture insights and experiences focusing on initiatives related to environmental sustainability.
- To deepen understanding on how countries are implementing environmental policies and strategies to mitigate the impact of pharmaceuticals on the environment.
- To explore possible regulatory and policy measures to reduce risks associated with pharmaceuticals in the environment, including specific active ingredients.

The discussion explored environmental challenges in pharmacy practice, access to medicines, policy, and stakeholder engagement for a sustainable pharmaceutical sector.

3 Key outcomes

The discussion centered on environmental sustainability in pharmacy practice. Participants shared national and local experiences and initiatives and emphasised strategies such as appropriate medicine disposal, take-back programmes, resource sharing, and cross-sector collaborations. Several innovative tools and practical approaches were explored to increase pharmacy's role in achieving sustainability goals.

3.1 Environmental challenges in pharmacy practice

3.1.1 Environmental sustainability in practice

Participants shared country-specific initiatives to tackle pharmaceutical waste, water pollution, and sustainable packaging.

Spain: The Sigre programme engages the entire medicine supply chain to facilitate widespread medicine take-back and safe disposal. The programme is widely implemented across the country, and the public is well-informed that pharmacies serve as collection points for unused medicines. It is integrated into daily pharmacy practice as part of broader efforts to support environmental sustainability. Around 90% of households in Spain participate in recycling medicine packaging, and one in three medicines sold in Spain now features environmentally improved packaging, including packaging with warnings and labels similar to tobacco products that aim to enhance eco-design and reduce waste. Public awareness and professional training are key focus areas, including annual education programmes available to Spanish pharmacists.

UK: Medicines account for 25% of National Health Service (NHS) carbon emissions—20% from manufacture, procurement, transport, and use of medicines, and 5% specifically from inhalers (3%) and anaesthetic gases (2%). Campaigns are being developed to promote medicine take-back and safe disposal, alongside efforts to reduce both use of inhalers and the volume of anaesthetic gases. There is a push for pharmacists to ensure appropriate medicine use, as an estimated 10% of dispensed items are not used correctly, contributing not only to adverse health effects but also to environmental harm. A significant challenge is the inability to reuse medicines returned by patients, leading to considerable waste. Adopting a circular economy approach could help reduce this waste, maximise product value, and enhance sustainability throughout the pharmaceutical supply chain.

This shift is particularly crucial for inhalers and anaesthetic gases, which together account for 5% of the NHS's total carbon footprint. In 2016/17 alone, more than 26 million metered dose inhalers (MDIs) were prescribed in England. When disposed of in landfills, these devices cause environmental damage through both material loss and the release of residual greenhouse gases. Even after use, MDIs often retain significant amounts of gas, contributing to nearly one million tonnes of CO_2 equivalent emissions annually in England.

Australia: The Return Unwanted Medicines campaign supports safe disposal of medicines. Guidelines for managing controlled substances and campaigns against inadequate disposal of antibiotics are in place, with support from the pharmaceutical sector. The pharmaceutical industry is aware of environmental impacts and is engaged to produce lower-emission options. Colleagues in the hospital setting are also improving waste management practices by appropriate separation of pharmaceutical waste. A significant focus in Australia is on sustainable packaging, which can positively impact both hospitals and community practices. Encouraging recycling, such as placing boxes in recycling bins without shiny or plastic-coated packaging and unnecessary leaflets, can greatly reduce the amount of paper waste. Collaboration with consumers is essential to keep waste out of the environment.

USA: Hospitals use sealed hazardous waste containers for incineration, while ambulatory settings rely on take-back bins. It was noted that mixing regular waste with pharmaceutical waste significantly increases disposal costs and should be avoided. Although many pharmacies provide take-back bins for unused medicines, actual consumer participation remains unclear. Special campaigns encourage participation, but measuring compliance is difficult due to the vast number of consumers.

United Arab Emirates (UAE): Insight board participants raised the issue of handling of unused but unexpired medicines in UAE, which are often not accepted due to concerns about storage conditions, raising questions about their integrity and effectiveness. Establishing a mechanism to verify their quality could enable safe reuse or recycling, particularly for commonly used medicines. Awareness and education were consistently identified as key for improving participation in take-back programmes. There is also a need for more research with quantifiable data to better understand consumer engagement with these systems. Additionally, various initiatives addressing environmental sustainability in pharmaceuticals are being implemented, such as national policies aimed at reducing chemical and biological pollution. For example, the UAE has introduced green hospital guidelines to promote sustainability in the healthcare sector.

3.2 Balancing sustainability and medicine access

3.2.1 Access to medicines

Participants stressed that sustainable pharmacy practices must not hinder access to essential medicines. Examples include:

Australia: The dispensing of hospital medicines through community pharmacies facilitates access for individuals with mobility issues and reduces travel-related carbon emissions, especially relevant in rural areas. In regional Australia, sustainable innovations to medicine distribution are being implemented. For example, pathology couriers transport medicines alongside laboratory samples, enabling more efficient use of resources. Smaller hospitals can also share stock and avoid over-purchasing. For instance, if a hospital has excess snake antivenom nearing expiration, it can be transferred to a larger hospital where it is more likely to be used. Health professionals in remote communities often develop innovative solutions to optimise limited resources.

Spain: In Spain, digitisation is advancing accessibility in the pharmaceutical sector. The Medicamento Accesible Plus app, promoted by the General Council of Official Colleges of Pharmacists, is a free mobile tool designed to provide accessible and up-to-date medicine information. It is especially beneficial for people with disabilities or those who may have difficulty reading standard medicine leaflets.

The dialogue during the insight board acknowledged the complexity of engaging the pharmaceutical industry in sustainability efforts, despite their crucial role in enabling large-scale change. Examples from Australia highlighted the need for innovative approaches to reduce carbon footprints in remote areas.

Participants noted that some of the “low hanging fruit” may lie in improving packaging, particularly in high income countries with robust recycling infrastructure. Further examples from Australia included programmes to minimise medicine stock wastage in remote areas, incentives to manufacturers to choose more sustainable options, and educational campaigns to raise awareness among the pharmaceutical workforce.

3.2.2 Risks of restricted access due to sustainability measures

A significant concern raised during the discussion was the potential for sustainability measures to inadvertently restrict access to medicines. Participants debated the balance between patient care and sustainability, suggesting that in many cases, ensuring access to necessary medicines must take precedence. For example, the use of inhalers presents a dilemma: while their environmental impact is considerable, restricting their availability—especially in cases of incorrect use—could compromise patient health.

Access to medicines remains a top priority for both healthcare professionals and patients, particularly when issues of sustainability intersect with patient care. Participants agreed that sustainability should not come at the expense of patient outcomes; in fact, the most sustainable form of healthcare is that which prevents future medical intervention. One example cited was the provision of non-recyclable boxes of tablets which keep a patient out of the hospital for years—demonstrating that sustainability and effective treatment can co-exist when viewed holistically. It was noted that local healthcare providers and patient advocates should be consulted to avoid unintended consequences.

Pharmacy professionals consistently prioritise patient treatment, yet restrictions on access—such as those caused by sustainability-driven packaging changes—can lead to worsening health conditions and increased

workload for pharmacists. Changes in medicine formulation or packaging can also impact patient adherence to treatment and could lead to medicine shortages, which is already a growing concern.

Finally, the discussion emphasised the importance of accounting for individual patient needs when implementing changes across the pharmaceutical supply chain. In the UK, for example, there is a growing interest in social prescribing, which encourages non-medical interventions like arts, gardening, and sports, particularly for mental health, alongside conventional medical treatments.

3.2.3 Antimicrobial resistance

The conversation emphasised the importance of antimicrobial stewardship programmes in hospitals to combat antimicrobial resistance (AMR). Effective collaboration between government bodies, healthcare providers, and the private sectors was deemed essential for addressing these challenges, especially when take-back programmes can help reduce the presence of antibiotic compounds in the environment.

Growing concerns about AMR, exacerbated by antibiotics in the environment, have prompted proactive responses in several countries. In Spain, the pharmaceutical profession is actively engaging in a national plan to address this issue. Public campaigns have been launched to educate both pharmacists and patients on the responsible use of antibiotics, including those used in veterinary settings, under a One Health approach that recognises the interconnectedness of human, animal, and environmental health.

Balancing sustainability with other challenges, such as access, affordability, and staffing shortages, is crucial. Due to the complexity of healthcare systems and competing demands within the sector, participants recognised that it can be difficult to prioritise sustainability in healthcare.

3.3 Policies and stakeholder engagement for sustainable pharmacy

3.3.1 Capacity building for healthcare professionals and pharmacists

A key discussion point revolved around the need for clear guidance to support healthcare professionals in initiating and expanding sustainability efforts. Many individuals are already engaging in environmentally conscious practices without realising it and, often, small actions can lead to significant impact.

In Australia, participants noted that Monash University is developing a guide titled "Transition to a sustainable health care guide for Australia", which underscores the importance of incorporating a pharmacy perspective into broader, multidisciplinary efforts to build a more sustainable health system. This guide provides practical suggestions ranging from increasing recycling bins to installing solar panels, alongside case studies that demonstrate how sustainability can be achieved without compromising patient care or overburdening staff.

Additionally, a toolkit by the Royal Pharmaceutical Society in Great Britain has been launched to assist hospital and community pharmacy teams in reducing their environmental impact. This toolkit, developed in collaboration with NHS England, allows pharmacies to earn bronze, silver, or gold certificates based on their sustainability efforts, providing a visible recognition of their commitment. Furthermore, environmental sustainability has been integrated into the code of ethics for pharmacists, highlighting the efficient use of resources and the educational role that pharmacists play regarding environmental health issues. Complementing this, an annual social innovation award recognises pharmacists who enhance environmental visibility in the sector, and collaboration with NGOs focuses on training related to the pharmacy sector's carbon footprint and promoting decarbonisation.

Participants also proposed implementing a scoring system to evaluate the impact of various sustainability interventions, enabling pharmacies to assess their performance and benchmark against others. This approach could help identify high-impact practices and encourage further engagement in sustainability initiatives from policy and decision makers.

3.3.2 Collaborations across the healthcare system

Collaboration with governments and other stakeholders is crucial for promoting and delivering sustainability in pharmacy. Significant changes in pharmaceutical practices often require government action, such as legislation or incentives, to encourage companies and establishments to adopt sustainable practices, which may be more costly without such support. A notable example is the partnership between Spanish non-profit organisation ECODES and the General Council of Official Colleges of Pharmacists, which supported the #PorElClima healthcare platform in 2022. This initiative included training on the pharmacy sector's carbon footprint and strategies to reduce it, demonstrating how the sector can lead meaningful climate action.

Participants recognised the need for a comprehensive global guide or toolkit to consolidate and support ongoing initiatives. Collaboration and sharing resources among countries can help avoid duplication of efforts and support those that may not be as advanced in their sustainability initiatives. A resource developed for multiple countries can be beneficial across different sectors, emphasising the importance of collective efforts in promoting sustainability in pharmacy. A shared document could facilitate the exchange of good practices and ideas in procurement, transport, and pharmaceutical disposal, enabling mutual learning and support across regions. Participants emphasised the need for a broader discussion that could leverage technology to share resources and experiences under this point.

Creating incentives within the pharmaceutical industry may also drive sustainability efforts and initiatives. For example, procurement policies that prioritise products with reduced packaging could motivate companies to adopt more sustainable practices to remain competitive. Colleagues from the UAE supported this approach, noting that while mandating specific regulations may not always be feasible, sustainability can still be encouraged through the medicines registration process. One suggestion was to eliminate the requirement for paper leaflets during the product registration process, which would reduce packaging waste. Companies that adopt such initiatives could be given priority in registration or tender evaluations.

4 Conclusions

Key points from the discussion highlighted the importance of improving medicines management—particularly with products like inhalers— to reduce environmental waste. Participants called for expanded pharmacies to increase take-back initiatives to minimise waste and combat antimicrobial resistance. Additionally, the discussion touched on exploring the effectiveness of sustainability efforts in different countries through assessment measures.

The discussion also addressed the critical need to balance sustainability with equitable access to medicines. For example, changing in packaging driven by environmental concerns must consider their potential impact on patient adherence and healthcare professionals.

The group discussed the growing interest in social prescribing and the need to think about sustainability across the pharmaceutical sector, keeping all stakeholders engaged.

To promote sustainability in pharmacy while ensuring access to medicines, supportive policies and targeted education initiatives are necessary. FIP and similar organisations have a clear opportunity to guide the profession by identifying strategies to reduce carbon footprints and improve waste management in pharmacies. Developing self-assessment tools or checklists could help pharmacies evaluate their current practices and identify additional actions to strengthen their environmental impact. Colleagues across the globe are already implementing some sustainable practices, but there may be additional strategies they have not yet explored.

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