

FIP-UNESCO UNITWIN Strategic Roadmap: Focus on the European Region

Report from a FIP insight
board

2025



ACADEMIC
CAPACITY



WORKING
WITH OTHERS

FIP Development Goals



International
Pharmaceutical
Federation

Colophon

Copyright 2025 International Pharmaceutical Federation (FIP)

International Pharmaceutical Federation (FIP)
Andries Bickerweg 5
2517 JP The Hague
The Netherlands
www.fip.org

All rights reserved. No part of this publication may be stored in any retrieval system or transcribed by any form or means – electronic, mechanical, recording, or otherwise without citation of the source. FIP shall not be held liable for any damages incurred resulting from the use of any data and information from this report. All measures have been taken to ensure accuracy of the data and information presented in this report.

Authors

Genuine Desireh, UNITWIN and Provision Manager
Hanadi Alolimi, UNITWIN and Provision Coordinator
Chanda Nkandu, UNITWIN Programme Intern
Tabarek Ahmed Shah, UNITWIN Programme Intern

Editor

Dalia Bajis, Head of Programmes and Provision

Recommended citation

International Pharmaceutical Federation (FIP). FIP-UNESCO UNITWIN Strategic Roadmap: Focus on the European Region. Report from a FIP insight board. The Hague: FIP, 2025

Cover image

Adapted from Vladimir Omelchenko | iStockphoto.com

Contents

1	Acknowledgements.....	4
2	About this report	6
3	Background.....	7
3.1	Introduction.....	7
3.1	European Region (EUR): Regional snapshot	10
4	Snapshot: Challenges, emerging needs, and priorities in pharmacy education, science, and practice in the EUR.....	12
4.1	Key challenges facing pharmacy education, science and practice in the EUR	12
4.1.1	<i>Research and professional recognition</i>	<i>12</i>
4.1.2	<i>Interprofessional collaboration and integration.....</i>	<i>12</i>
4.1.3	<i>Technological advancements, industrial pharmacy and regional diversity.....</i>	<i>13</i>
4.2	Emerging needs in pharmacy education, science, and practice in the EUR.....	14
4.2.1	<i>Competencies aligned with emerging needs and lifelong learning.....</i>	<i>14</i>
4.2.2	<i>Digital health and artificial intelligence in education.....</i>	<i>14</i>
4.2.3	<i>Regional collaboration and advocacy</i>	<i>15</i>
4.2.4	<i>Advanced and specialist practice</i>	<i>16</i>
4.2.5	<i>Supply chain resilience and production</i>	<i>16</i>
4.3	Priorities to advance pharmacy education, science, and practice in the EUR	16
4.3.1	<i>Curriculum alignment and competency framework implementation</i>	<i>16</i>
4.3.2	<i>Regional collaboration and visibility.....</i>	<i>17</i>
5	Successful initiatives and best practices in pharmacy education, science and practice in the EUR	19
5.1	Croatian national competency alignment in pharmacy curricula.....	19
5.2	Community pharmacy contractual framework.....	19
5.3	Pharmacy First programme	19
5.4	University College London (UCL) holistic approach to leadership and clinical skills	19
5.5	Student engagement in research and practice-based learning.....	20
5.6	Centre for pharmaceutical data science education.....	20
5.7	Joint academic leadership between pharmacy and medicine	20
5.8	AI literacy and cultural competency training	20
6	Conclusion and recommendations	21
7	References	23

1 Acknowledgements

FIP appreciates all the FIP officers, volunteers and staff who took part in this insight board. The list of all insight board participants is available below:

Chairs		
Lilian M. Azzopardi	Professor, University of Malta FIP AIM Chair	Malta
Barrie Kellam	Professor, University of Nottingham AIM advisory committee member	UK

Facilitators		
Dalia Bajis	Head of Programmes and Provision, FIP	The Netherlands
Genuine Desireh	UNITWIN and Provision Programme Manager, FIP	The Netherlands
Hanadi Alolimi	UNITWIN and Provision Programme Coordinator, FIP	The Netherlands

Note takers		
Mfonobong Timothy	Disease Prevention and Self-Care Programme Coordinator, FIP	The Netherlands
Ruben Viegas	Sustainability and Humanitarian Programme Manager, FIP	The Netherlands
Chanda Nkandu	UNITWIN Remote Intern	The Netherlands
Tabarek Shah	UNITWIN Remote Intern	The Netherlands

Participants from the European Region (EUR)		
Lourdes Arevado	Associate professor, Faculty of Health and Medical Sciences, University of Copenhagen	Denmark
Astrid Czock	CEO, QualiCCare; FIP Hub lead – Development Goal 8	Switzerland
Sherly Meilanti	Lecturer in clinical practice, Robert Gordon University; FIP Hub lead – Development Goal 11	UK
Christos Petrou	Associate professor of pharmacognosy, School of Life and Health Sciences, University of Nicosia	Cyprus
Zrinka Rajic	Dean, Faculty of Pharmacy and Biochemistry, University of Zagreb	Croatia
Indre Treciokiene	Associate professor, Pharmacy and Pharmacology Centre, Faculty of Medicine, Vilnius University	Lithuania
Li Wei	Head of research, practice and policy, UCL School of Pharmacy, University College London	UK
Cate Whittlesea	Professor, Pharmacy practice, and director, UCL School of Pharmacy, University College London	UK

Observers		
Goncalo Sousa Pinto	Head of Membership and Regional Engagement, FIP	The Netherlands
Catherine Duggan	Chief Executive Officer, FIP	The Netherlands

2 About this report

This report synthesises key insights gathered from discussions during an insight board meeting with colleagues from the European Region (EUR) to inform the establishment of a FIP-UNESCO UNITWIN Centre for Excellence (CfE) in the region. Drawing on an in-depth analysis of stakeholder input, the report outlines region-specific challenges, emerging priorities, and collaborative opportunities aligned with the FIP Developmental Goals. The report is structured around two primary questions posed to participants and concludes with strategic recommendations.

The objectives of this insight board meeting were to:

1. Understand the emerging needs and priorities from the region.
2. Map and align regional CfE priorities to FIP Calls to Action projects and regional forum priorities.
3. Revise/prioritise regional roadmap activities based on current regional needs and alignment with wider FIP strategic goals.
4. Inform the launch of the FIP-UNESCO UNITWIN CfE in the EUR.

The main questions discussed during the meeting were:

1. How does your regional roadmap contribute to delivering on the objectives of the FIP-UNESCO UNITWIN agreement (2023-2027)?
 - a. How do your CfE's current priorities align with FIP's priorities and calls to action?
 - b. Since the 2021 regional roadmap workshops, what emerging needs or challenges have become more prominent in your region's pharmacy education, science, or practice?
2. Can you share one example from your region where an activity or initiative successfully delivered a UNITWIN objective?
 - a. How do you envision networking, collaboration, and sharing of best practices across institutions and regions?
 - b. What resources, support, or partnerships would best enable your CfE to respond effectively to regional challenges and accelerate progress?

Disclaimer

The views expressed during the insight board reflect the personal expertise and experience of participants in pharmacy education, science, and practice within their countries and the region. These views do not represent official FIP policy or positions, though they may build upon existing FIP positions and statements. FIP will use these insights to consider what further support will be required by colleagues in the region to operationalise the Centre for Excellence following its launch.

3 Background

3.1 Introduction

The International Pharmaceutical Federation (FIP) is the global federation representing pharmacists, pharmaceutical scientists and pharmaceutical educators dedicated to improving the access to and value of appropriate medicine use, and contributing to changes in science, practice and health policies worldwide. FIP—through official NGO status—has been in official relations with the World Health Organization (WHO) since 1948.

Our vision: A world where everyone benefits from access to safe, effective, quality and affordable medicines and health technologies, as well as from pharmaceutical care services provided by pharmacists, in collaboration with other healthcare professionals.

Our mission: To support global health by enabling the advancement of pharmaceutical practice, sciences and education.

UNESCO

UNESCO, the United Nations Educational, Scientific and Cultural Organization, is a specialised agency focused on promoting education, science, culture, and communication to enhance global unity. It sets standards, develops tools, and generates knowledge to address major global challenges while fostering equality and peace. Its work includes protecting biodiversity, responding to artificial intelligence, advancing quality education, safeguarding heritage, and ensuring access to reliable information in collaboration with its 194 Member States worldwide.

UNESCO has four key strategic objectives:

- a. **To ensure equitable and inclusive education for all:** For UNESCO, education is a fundamental human right and UNESCO commits to supporting lifelong learning by promoting early childhood education, literacy for all and technical and vocational training.
- b. **To build sustainable societies by sharing scientific progress:** UNESCO has established programmes that mobilise international experts to help preserve biodiversity and build more sustainable societies.
- c. **To make the world more just and inclusive:** As the United Nations agency for intercultural understanding and cultural diversity, UNESCO works to build inclusive, just and peaceful knowledge societies, while protecting human rights and fundamental freedoms.
- d. **To guarantee that new technologies benefit humanity:** UNESCO is committed to ensuring that emerging technologies are accessible to all, and users are equipped with the skills to navigate the ever-evolving digital landscape.

UNESCO UNITWIN/UNESCO Chairs Programme

The UNESCO UNITWIN/UNESCO Chairs Programme was established in 1992 to foster international inter-university cooperation and networking to enhance institutional capacities through knowledge sharing and collaborative work.¹ The UNITWIN/UNESCO Chairs Programme (further referred to by UNESCO as “the UNITWIN Programme”, where UNITWIN stands for University Twinning and Networking) is a unique intellectual and strategic resource of hundreds of institutions from over 120 countries aimed at strengthening connections between research and development, policy and practice at country, regional and global levels. It has contributed to strengthening higher education systems and fostering collaborative research partnerships and networks.

FIP-UNESCO UNITWIN Network

In 2010, FIP and UNESCO, in collaboration with the FIP University College London School of Pharmacy Collaborating Centre, established an innovative global programme under the UNITWIN framework—the FIP-UNESCO UNITWIN Cooperation Programme in Global Pharmacy Education Development (GPhEd). Recognised as the **FIP-UNESCO UNITWIN** programme, it stands as a pioneering initiative, being the first in higher education for health professionals and the first dedicated to global pharmaceutical education.

The [FIP-UNESCO UNITWIN Network](#) on Global Pharmacy Education Development aims to promote an integrated system of research, teaching, and training, as well as community engagement and communication. It facilitates collaboration between high-level, internationally recognised researchers and teaching staff of the coordinating institution (FIP), member institutions and other institutions across different regions of the

world. The network's priority workstreams for transforming pharmacy education, practice and science are shown in figure 1.

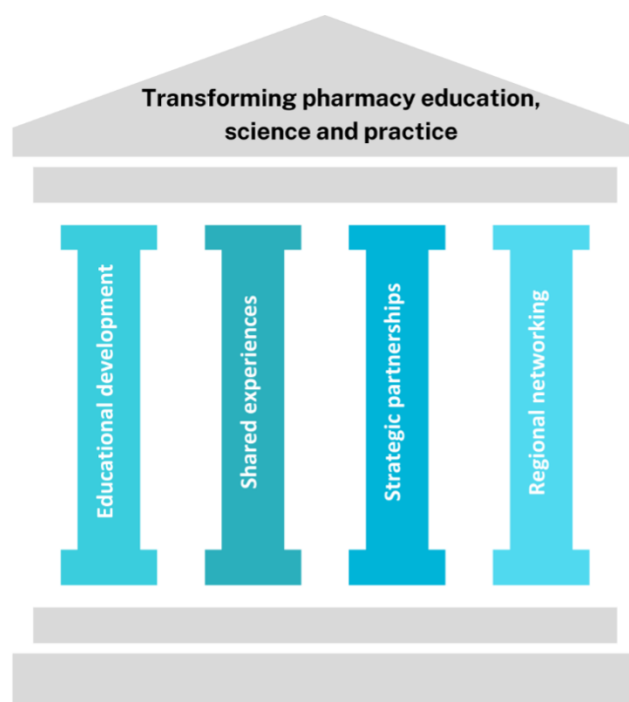


Figure 1: Priority workstreams for transforming pharmacy education, practice and science

In accordance with the agreement with UNESCO (2023–2027), FIP has established new regional centres for excellence, set to cover each of the World Health Organization (WHO) regions. Centres for excellence have already been launched in Africa, Southeast Asia and the Western Pacific regions. These centres bring together experts and resources in the region to advance the transformation of pharmaceutical education inspired by the FIP-UNITWIN regional roadmaps on pharmaceutical education and the [global call to action on pharmaceutical education](#). The centres aim to facilitate the transformation of pharmaceutical education regionally underpinned by the following principles:

- Alignment with specific objectives of the UNESCO agreement to promote an integrated system of research, teaching, and training, as well as community engagement and communication.
- Recognition of the fact that one size does not fit all for pharmaceutical education transformation because of the diverse needs and systems across different countries and regions.
- Leveraging the achievements and expertise gained from the pioneering FIP-UNESCO UNITWIN Network and its distinguished FIP UNITWIN Centre for Excellence in Africa.
- Acknowledging emerging and evolving global health priorities to guide the advancement of pharmacy and pharmaceutical education in alignment with practice needs and scientific progress.
- Alignment with the FIP Development Goals as guiding principles for driving the transformation journey.

The objectives for the FIP-UNESCO UNITWIN Network as outlined in the renewed agreement with UNESCO (2023-2027) are to:

1. Enhance the integrated system of research, training, information and documentation activities in the field of global pharmacy education, addressing issues of academic capacity, quality assurance of educational systems and workforce competency;
2. Lead educational and scientific transformations, and promote global collaboration to address sustainability, inequities and technology in education through the establishment of new regional centres for excellence across all regions of the world, namely in Southeast Asia, Western Pacific, Europe, in the Americas and Eastern Mediterranean regions;
3. Contribute to the improvement of global health; and,
4. Cooperate closely with UNESCO, other UNESCO Chairs and UNITWIN Networks on relevant programmes and activities.

Key milestones for the FIP-UNESCO UNITWIN network are shown in figure 2.

FIP-UNESCO UNITWIN Programme - Key milestones

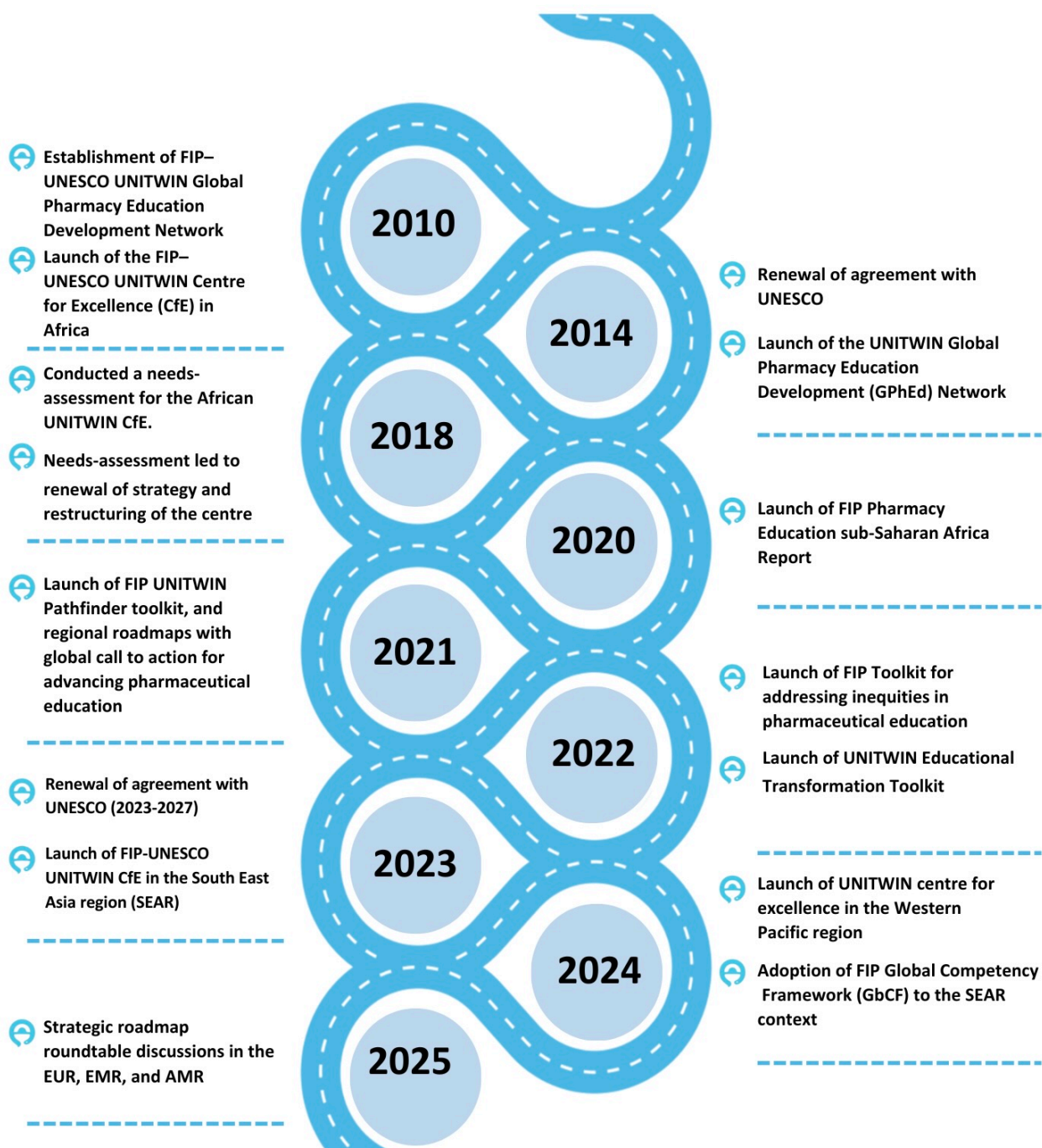


Figure 2: Key milestones for the FIP-UNESCO UNITWIN network

3.1 European Region (EUR): Regional snapshot

Regional challenges and evolving health needs

The WHO European Region (EUR) comprises 53 countries: Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Türkiye, Turkmenistan, Ukraine, United Kingdom of Great Britain and Northern Ireland, and Uzbekistan.²

This region encompasses a wide diversity of political systems, economic capacities, cultural backgrounds, and healthcare infrastructures. While this diversity creates valuable opportunities for cross-country learning and innovation, it also poses complex challenges in harmonising pharmacy education, regulation, and practice.

Overall, health outcomes in the EUR are improving, but this progress faces growing threats. Rapid globalisation, increased migration and urbanisation, climate change, resource scarcity, and digital transformation are reshaping people's lives and health systems.³ Long-standing social and political norms are being questioned, and the uncertain global economic climate is straining public finances—challenges which are further compounded by disease outbreaks and geopolitical instability.⁴ Non-communicable diseases and mental illness are on the rise, and antimicrobial resistance jeopardises the effective treatment of common infections.³ Ageing populations, growing patient expectations, rising healthcare costs, and health workforce shortages—especially in rural and underserved areas—affect every country in the region.⁴

Education and professional regulation

Pharmacy education and professional regulation in the region is shaped by diverse legal and administrative traditions.⁵ The WHO provides a legal and regulatory framework that covers the pharmacy workforce and pharmacy education.⁵ The European Union's Directive 2005/36/EC (currently under revision) provides a standard framework for the recognition of professional qualifications, mandating a five-year integrated pharmacy programme in EU member states.⁶ However, non-EU countries follow varied timelines and competency standards. This diversity results in a patchwork of educational models—ranging from nationally standardised programmes to decentralised systems—which complicates workforce mobility, outcome comparability, and regional alignment.⁵ Continuing education and continuous professional development (CPD) requirements also vary significantly across the region, limiting consistency in lifelong learning and professional growth.⁷

Pharmacy workforce capacity and distribution

The pharmacy workforce across Europe displays significant variation in density, autonomy, and integration into healthcare systems. In countries such as the UK and the Netherlands, pharmacists have taken on expanded roles in prescribing, chronic disease management, and public health services.⁸ Elsewhere in the region, pharmacists remain underutilised, with limited involvement beyond traditional dispensing roles. Pharmacist shortages are reported across all sectors, often tied to imbalances in geographic distribution and workforce planning. Countries are increasingly exploring specialisation and advanced practice development to strengthen service delivery, especially in underserved areas.⁹

These regional challenges reflect a broader global trend. The WHO estimates a healthcare workforce shortfall of 7.2 million—projected to rise to 12.9 million by 2035.¹⁰ This reinforces the urgent need for strategic investment in health workforce education, planning, and more efficient utilisation of existing capacity.^{11–13}

In Europe, pharmacist workforce levels generally correlate with population size and national economic indicators.¹⁴ As some of the most accessible healthcare professionals, pharmacists are critical to expanding primary care services and improving health equity across the region.¹⁵

Digital readiness and innovation gaps

Digital health solutions—such as telepharmacy—are emerging as key enablers of access, cost-efficiency, and improved patient experience. However, as noted in a review by Viegas and colleagues, implementation remains limited due to technological, human, economic, and organisational barriers.¹⁶ FIP's 2021 report on *Digital Health in Pharmacy Education* highlighted the global need to integrate digital health, telehealth, and mobile health into pharmacy curricula—yet disparities in adoption persist across Europe.¹⁷

Despite these challenges, the region demonstrates strong momentum towards harmonisation and

innovation. The UNITWIN Centre for Excellence has the potential to catalyse this progress by supporting context-responsive reforms, scaling effective innovations, and fostering the co-development of regionally aligned solutions. Recognising the diversity of the European Region—while working towards shared goals—is essential to advancing equitable, high-quality pharmacy education, regulation, and practice.

4 Snapshot: Challenges, emerging needs, and priorities in pharmacy education, science, and practice in the EUR

4.1 Key challenges facing pharmacy education, science and practice in the EUR

Participants from across the EUR shared the critical barriers and gaps being faced in pharmacy education, science, and practice. These challenges span institutional limitations, curriculum gaps, evolving digital needs, and regional diversity. They represent foundational issues that must be addressed to strengthen pharmacy education and align the workforce with future healthcare needs within the region.

4.1.1 Research and professional recognition

Barriers to pharmacist-led research in clinical settings

Participants noted that pharmacist-led research remains underdeveloped across much of the EUR. This is primarily due to structural barriers within clinical environments. The view is that pharmacists face difficulty balancing their clinical responsibilities with research duties, and many institutions do not provide protected time or resources for scholarly activities. This perspective undermines both innovation and professional development, limiting pharmacists' ability to contribute to evidence-based healthcare advancements.

“One of the biggest problems we’re facing... is the protected time within the workplace to actually undertake meaningful research.” – UK

Limited pharmacy representation at interprofessional conferences

Despite growing recognition of pharmacists' roles in health systems in most parts of the EUR, their participation in high-level interdisciplinary conferences remains minimal. Events such as the Association for Medical Education in Europe (AMEE) or the International Diabetes Federation (IDF) are often dominated by physicians and nurses. This underrepresentation reduces opportunities for networking, interdisciplinary learning, and strategic visibility in policy-making and academic discourse. This lack of visibility also reinforces professional silos and prevents pharmacy from being fully integrated into broader health workforce discussions and interprofessional education reforms.

“I don’t know if at any point pharmacists were represented there [Healthcare Professional Education Conference]. It could help make pharmacies more visible.” – Lithuania

4.1.2 Interprofessional collaboration and integration

Barriers to pharmacy policy and practice integration

Participants shared that in many countries across the European Region, pharmacy policy development and practice advancement are hindered by resistance from institutional stakeholders and regulatory bodies. Academic institutions and practicing professionals often operate in silos, which slows reforms and fragments professional advocacy. Better alignment is needed between educators, policymakers, and practitioners to drive cohesive system-wide change.

“There can be some real intransigency in those particular bodies... how we manage those tensions with parochial regionality and nudge politics.” – UK

Gaps in interprofessional collaboration and leadership

Participants acknowledged that while interprofessional education (IPE) and collaboration are widely recognised as important in principle, practical implementation remains limited across many institutions. They noted that although there is broad agreement on the value of IPE, few institutions have successfully integrated it into education programmes or healthcare delivery models in a meaningful way. Several participants highlighted a lack of clear leadership in advancing IPE, with no single entity or individual taking ownership. They emphasised the need for shared, domain-specific leadership to drive genuine collaboration

across health professions. Many underscored the importance of introducing interprofessional experiences early in training to build mutual respect, understanding, and teamwork skills. It was also stressed that interprofessional collaboration should not be confined to initial education but should continue as part of lifelong learning for pharmacists and other health professionals.

“Everybody says, ‘Yeah, we have to do it,’ but nobody’s actually doing it... We need interprofessional leadership. Everybody has to lead in their domain but have combined leadership.” – Switzerland

“It is a real need to teach interprofessional collaboration, this must start from basic education together with other professional schools.” – UK

4.1.3 Technological advancements, industrial pharmacy and regional diversity

Digital health and AI literacy

Participants observed that the rapid advancement of artificial intelligence (AI) and digital health technologies is outpacing both policy development and academic adaptation. They reported that pharmacy schools are struggling to integrate these topics into curricula and to equip faculty with the necessary skills to teach them. Additionally, many noted that the current pharmacy workforce often lacks adequate digital competence. Without deliberate and sustained investment in digital health education, participants warned that both students and practicing professionals risk being left behind—ultimately compromising the sector’s preparedness for future healthcare environments.

“You could develop policy and ideas, and they’ll be out of date within a fortnight, as the next large language model kicks in... universities are struggling with AI just from the sheer pace of change.” – UK

“We currently have no national initiatives for digital health education; however, we have incorporated several digital health topics into our curriculum.” – Lithuania

“We have a legacy workforce... with a spectrum of technological skills and competency... and how they grapple with new technology such as AI.” – UK

Industrial pharmacy

Participants noted that despite the increasing importance of pharmaceutical manufacturing and supply chain resilience, pharmacists are frequently excluded from industrial roles. This exclusion was attributed to perceptions of higher employment costs and a preference for hiring chemists and technicians. Some participants highlighted that while universities are encouraged to establish small-scale production units for both educational and practical training, high costs and regulatory complexity pose significant barriers. To address this gap, participants emphasised the need for targeted financial investment and stronger alignment with national workforce development strategies.

“It’s not about students not having skills... the pharmaceutical industry does not hire pharmacists because they cost too much — they hire chemists, biologists, technical staff.” – Lithuania

“Maybe we should have at the university a small line to produce medicines... part educational, part practical... but actually this costs a fortune.” – Lithuania

Regional diversity

Participants highlighted that the diversity within the European Region—particularly the differences between EU and non-EU countries—poses a significant challenge to harmonising pharmacy education and practice. They noted that variations in regulatory frameworks, scopes of practice, and educational curricula complicate the development of unified strategies. To overcome these challenges, participants stressed the need for robust regional data systems, sustained dialogue platforms, and context-sensitive policy approaches that acknowledge and accommodate the region’s complexity.

“Highlighting the diversified aspect at the moment also because of the political aspects and the EU Directive for education [referring to the influence of current developments in Malta and how recent European Union directives on pharmacy education are leading to a

broader, more varied approach to pharmacy education and training in the country].” – Malta

Emergency preparedness for pharmacists

Participants emphasised that crisis situations—such as pandemics, natural disasters, and geopolitical conflicts—have highlighted the critical need to include pharmacists in emergency preparedness frameworks. They called for enhanced training in areas such as crisis response, maintaining supply chain continuity, and supporting mental health resilience. Participants also stressed the importance of advocacy to ensure that pharmacists are formally recognised and empowered within national and regional emergency response plans.

“That’s a very important topic, addressing shortages and crisis preparedness.” – Lithuania

4.2 Emerging needs in pharmacy education, science, and practice in the EUR

As pharmacy practice evolves in response to healthcare system demands and technological innovation, there is an urgent need to align education and workforce strategies accordingly. Participants from the European Region identified key areas for transformation, including competency-based education, digital integration, regional cooperation, and diversification of practice settings. These emerging needs reflect a growing emphasis on agility, foresight, and collaboration in preparing a future-ready pharmaceutical workforce.

4.2.1 Competencies aligned with emerging needs and lifelong learning

Horizon scanning in pharmacy

Participants underscored the importance of horizon scanning in pharmacy as a means to anticipate future roles and system needs, ensuring the continued relevance and impact of pharmacy education. They emphasised that horizon scanning—identifying emerging trends and challenges—should become a standard component of curriculum development and workforce planning. By proactively defining the competencies pharmacists will require over the next five to ten years, participants noted that educational institutions can better prepare students for a rapidly evolving professional landscape shaped by technological advances, policy changes, and demographic shifts.

“Society has to say: what kind of competencies will we need in 10 years’ time?” – Switzerland

“It’s about skating to where the puck is going, not where it’s been, and future scoping which is so critical.” – UK

Promote continuous professional development and research in pharmacy education

Participants emphasised that building a sustainable and adaptable pharmacy workforce requires viewing pharmacists not only as service providers but also as lifelong learners and active contributors to research. They stressed the importance of embedding a culture of continuous professional development throughout all stages of a pharmacist’s career. Integrating real-world, interdisciplinary learning opportunities into pharmacy curricula was seen as essential. Participants also highlighted the need for faculties to cultivate research-mindedness and to create space for collaborative inquiry within both education and practice settings.

“Practitioners are starting to devote some time to research... It is important for them to understand they are also lifelong learners and researchers.” – Cyprus

“The scope of the competencies was expanded throughout Europe... especially on the interdisciplinary approach... how we will develop those skills.” – Lithuania

4.2.2 Digital health and artificial intelligence in education

Digital health

Participants noted that digital transformation is fundamentally reshaping healthcare delivery, and pharmacy education must adapt to keep pace. While some institutions have begun integrating digital health topics into their curricula, participants observed that comprehensive national-level strategies remain largely absent across much of the region. There was broad consensus on the need to equip both students and practicing

professionals with essential digital competencies—such as telepharmacy, remote communication, and digital therapeutics—to ensure pharmacists are prepared to operate confidently in increasingly technology-driven healthcare environments.

“We don’t have any national initiatives for education [on digital health], but we did include in our curriculum some topics including digital health.” – Lithuania

“Use of AI and digital health and associated curriculum being developed nationally for initial education and training and also considering how this links to the current workforce too.” – UK

Artificial intelligence

Participants reaffirmed the importance of incorporating artificial intelligence (AI) into pharmacy education. As AI tools become increasingly embedded in healthcare, they emphasised the need for education to focus on foundational principles that promote critical thinking and ethical application. Rather than centring training on specific technologies, participants advocated for developing students’ ability to interpret, question, and responsibly apply AI-generated outputs. This approach, they noted, should also extend to the current workforce, ensuring practicing pharmacists are equipped to navigate a healthcare landscape increasingly shaped by AI.

“There’s no point hiding from AI. It’s going to be the absolute driver.” – UK

“The whole critical thinking framework that you need to take the outputs of AI and use them appropriately.” – UK

“What we need to tease out are what are the fundamental principles we need to embed within our initial education and training for the pharmacy workforce.” – UK

4.2.3 Regional collaboration and advocacy

Entrustable professional activities (EPAs)

Participants highlighted the growing need to develop and implement a framework for Entrustable Professional Activities (EPAs) in pharmacy education. They noted that EPAs offer a structured, progressive approach to competency development, enabling students to demonstrate practical readiness through milestone-based assessments. Participants emphasised that adopting EPAs would help align expectations between educational institutions and employers, ensuring graduates are better prepared for real-world practice. Establishing a regional EPA framework was seen as a key step toward harmonising standards and enhancing the quality of experiential learning across the region.

“...a framework of EPAs that [students] will be working [their] way through in a progressive, stratified way across the four years of [their] education and then into foundational training that aligns with the workforce in a better way.” – UK

International and regional advocacy

Participants expressed concern that the lack of unified representation has left pharmacists increasingly marginalised in national and regional policy discussions. The European Centre for Excellence, supported at the global level, could play a pivotal role in influencing policy and fostering collaboration through the co-development of regionally relevant initiatives. Participants envisioned this platform not merely as a venue for showcasing best practices, but as a space for building them collectively — addressing pressing issues such as AI integration and medicine shortages through thematic networking and knowledge-sharing groups.

“Plenty going on at the moment that is disenfranchising... and we need another voice... something that has international backing... this European Centre of Excellence is very, very timely.” – UK

“Best practices are easy to write but implementing them in practice is super difficult... maybe participants could come together and work on a project together.” – Switzerland

“Maybe we can have networking groups on specific topics like AI and medicine shortages.” – UK

4.2.4 Advanced and specialist practice

Integrate interprofessional collaboration in pharmacy education

Participants emphasised that effective team-based care relies on pharmacists working collaboratively with other health professionals. Participants also noted that fostering interprofessional dialogue and mutual respect early in education helps lay the foundation for improved care coordination—particularly in primary care settings where services are often fragmented.

“It’s a real need to teach interprofessional collaboration... something that has to start from basic education together with other professional schools.” – Switzerland

“Pharmacists and GPs are often disconnected... We need to build bridges through shared professional dialogue.” – Switzerland

Diversifying practice settings

Participants noted a growing need for pharmacists in non-traditional settings such as mental health services, correctional facilities, sports medicine, and elder care. They stressed that expanding training and clinical placements into these areas would better equip pharmacists for specialised and community-based roles. Participants highlighted the implications of Europe’s ageing population, emphasising the importance of targeted services such as geriatric pharmacotherapy, deprescribing, and care focused on frailty management.

“Diversifying practice settings—sports, mental-health, prison, elder-care—requires flexible placement frameworks.” – Cyprus

“[The] longevity boom heightens [the] need for geriatric pharmacotherapy, deprescribing, frailty-focused services.” – Cyprus

4.2.5 Supply chain resilience and production

Commodity security

Participants highlighted Europe’s growing vulnerability to medicine shortages, driven in part by heavy reliance on pharmaceutical production outside the region. They noted that only a small proportion of medicines used in Europe are manufactured locally, raising concerns about supply chain security and national resilience. In response, participants emphasised the need for pharmacy education to incorporate supply chain topics, ensuring that graduates are equipped to contribute meaningfully to policy discussions, support local production initiatives, and advocate for sustainable and resilient supply strategies.

“It’s such a massive problem across the European network... and the geopolitical environment is not going to make that any easier... is this something we should look at?” – UK

“We need lobbying and policy decisions to return at least some basic production to Europe to overcome these issues.” – Lithuania

4.3 Priorities to advance pharmacy education, science, and practice in the EUR

As the European Region prepares to launch its UNITWIN Centre for Excellence, insight board participants identified several strategic priorities that will guide the centre’s early actions and long-term vision. These priorities reflect the region’s urgent need for curriculum reform, collaborative implementation frameworks, and increased visibility of the pharmacy profession in broader health discussions. The following thematic priorities were highlighted as critical to building a future-ready pharmacy workforce and strengthening education-science-practice alignment.

4.3.1 Curriculum alignment and competency framework implementation

Aligning pharmacy education and practice

Participants observed that the evolving healthcare landscape—shaped by digital transformation, a shift towards community-based care, and a growing focus on prevention—requires a corresponding

transformation in pharmacy education and practice. They pointed to national health systems such as the NHS, which are already restructuring around these priorities, and emphasised that pharmacy must adapt to remain relevant. The UNITWIN Centre for Excellence was identified as a strategic platform for aligning pharmacy education with these emerging system needs, helping to ensure that the profession remains an integral part of future healthcare delivery.

“...the move from analogue to digital, the move from secondary to primary care, as being one of the substantive hubs, the move from cure to prevention around health and disease are the three key pillars of [the] NHS’ future direction.” – UK

Adapting and implementing EU pharmacy competencies

Participants discussed the forthcoming changes to the EU directive on pharmacist training and education. These changes introduce new compulsory competencies in areas such as clinical pharmacy, pharmaceutical care, and pharmacoconomics. Participants emphasised that updating pharmacy curricula to align with these new legal and professional standards is now a top priority for faculties across Europe. While the expanded competency framework has already been introduced, the current focus is on effective implementation—translating the updated requirements into curriculum content, teaching methods, and assessment approaches. Participants also highlighted the need to ensure that faculties are adequately prepared and resourced to support the transition.

“There are new compulsory competencies... competencies in [different fields of pharmacy] meet the priorities of the FIP and the objectives of [UNITWIN].” – Cyprus

“Competency development was introduced throughout Europe with the new European Directive... The question is how we will implement this.” – Lithuania

Advanced and specialist competencies

Participants emphasised that whether educating future pharmacists or reskilling the existing workforce, developing advanced competencies is essential—particularly in areas such as critical thinking, diagnostic reasoning, and the ethical use of AI. As pharmacists take on expanded roles in prescribing and leadership within primary care, participants noted that training must equip them for complex decision-making across diverse clinical settings. They also stressed that maintaining a shared focus on core competencies enables educational programmes to stay relevant and responsive, even as technologies and healthcare environments continue to evolve rapidly.

“When you identify [the fundamentals] and support people... you don’t have to worry about the next large language model.” – UK

4.3.2 Regional collaboration and visibility

Regional collaboration hub

Participants identified the establishment of a regional platform for collaboration, knowledge exchange, and project co-creation as a key role for the UNITWIN Centre for Excellence. They envisioned this hub as a connector of pharmacy schools, professional networks, and healthcare institutions, working together to tackle shared challenges such as strengthening supply chain resilience, improving equitable access to medicines, and supporting region-specific implementation of FIP frameworks. Participants also emphasised the importance of the Centre in helping to contextualise global data and resources to align with national priorities and local realities.

“That could be an activity the Centre of Excellence for Europe could drive... not only focus on successful projects but on what we want to think about and learn from each other.” – Malta

“We could extract actionable tools from the FIP Hub that national platforms can use.” – Malta

Boosting visibility of pharmacy in international and national forums

Participants noted that despite pharmacy's increasing contributions to public health, the profession remains underrepresented in interdisciplinary and policy-making platforms. They emphasised the need to raise FIP's visibility at national and international events—particularly at cross-professional or non-disease-specific conferences—to help shift perceptions of pharmacists' capabilities. Participants suggested that greater presence in these spaces could reduce professional silos, foster broader healthcare collaboration, and support the redefinition of pharmacy's role within evolving health systems across Europe. They viewed advocacy at this level as critical to advancing the profession's integration and influence.

“FIP should be more present at professional conferences—not only disease-specific ones but general interprofessional ones too.” – Switzerland

“FIP visibility should be increased at the national level.” – Croatia

Agile micro-credential ecosystem

Participants highlighted the potential of micro-credentials as a flexible and responsive approach to continuous upskilling across the pharmacy workforce. They proposed the development of a regionally endorsed ecosystem of agile micro-credentials, supported by digital platforms, to enable pharmacists to gain targeted competencies in real time—adapting to shifts in clinical practice, emerging technologies, and evolving policy landscapes. Participants noted that such a system could play a vital role in harmonising professional standards across the region while still accommodating national differences in workforce maturity and development.

“Agile micro-credential ecosystem enables just-in-time lifelong learning across Europe's workforce.” – Cyprus

5 Successful initiatives and best practices in pharmacy education, science and practice in the EUR

While challenges across the European Region are numerous, several successful initiatives demonstrate promising models for pharmacy education and practice transformation. These examples reflect innovation, leadership, and alignment with real-world health system needs. They also highlight how national strategies, university-led programmes, and interdisciplinary partnerships can collectively strengthen the pharmacy profession. Below is a summary of best practices shared by participants from the region.

5.1 Croatian national competency alignment in pharmacy curricula

Croatia has led a nationwide effort to align pharmacy curricula with core competencies for both community and industrial pharmacists. Grounded in a thorough assessment of pharmacist roles across sectors, the project has informed evidence-based updates to pharmacy education programmes. This national initiative serves as a model for other countries aiming to implement competency-based curriculum reform.

“We identified competencies and learning outcomes for the programme of... the community pharmacist and also for the industrial pharmacist... we improved our study programmes.” – Croatia

5.2 Community pharmacy contractual framework

The UK's 2024–2026 Community Pharmacy Contractual Framework has expanded pharmacists' clinical responsibilities significantly.¹⁸ Under this policy, pharmacists now lead services in mental health care, contraception, and chronic disease management. It marks a systemic shift towards community pharmacists as essential providers of accessible, front-line care.

“The contractual framework for [2024 to 2026] has significantly expanded the clinical role of pharmacists.” – UK

5.3 Pharmacy First programme

The Pharmacy First initiative allows patients in England to receive diagnosis and treatment for common conditions directly from local pharmacies.¹⁹ It reduces the burden on general practitioners while empowering pharmacists with prescribing authority. The programme has proven highly scalable and responsive to patient needs.

“[The] Pharmacy First programme [was] originally rolled out in Scotland and now is very much embedded in the UK around the prescribing framework.” – UK

5.4 University College London (UCL) holistic approach to leadership and clinical skills

UCL integrates prescribing education, leadership development, and research engagement across the five-year pharmacy curriculum. Teaching is led by NHS clinical pharmacists using real patient cases, and students are encouraged to conduct research through interaction with academic mentors. The programme fosters both competence and identity formation.

“Teaching is case-driven... a case study which they see daily in clinical life into the class... UCL now encourages research-led education... Students interact with research staff and develop their own focus.” – UK

5.5 Student engagement in research and practice-based learning

In Cyprus, final-year pharmacy students conduct six-month research projects closely tied to clinical placements. This hands-on experience fosters a strong connection between academic learning and real-world practice. It also stimulates practitioner interest in research and enhances collaboration between academia and healthcare providers.

“The students are obliged, in a 6-month timeframe, to conduct their research... I see the interest of the practitioners growing now... to devote some time for research.” – Cyprus

5.6 Centre for pharmaceutical data science education

This newly launched centre addresses the rising demand for professionals trained in pharmaceutical data science. Located at the University of Copenhagen, it aims to train future-ready experts capable of handling large-scale data, digital health analytics, and research informatics which are key areas for the future of pharmacy and medicine.²⁰

“The centre’s mission is to educate the future workforce of pharmaceutical data science professionals and researchers.” – Denmark

5.7 Joint academic leadership between pharmacy and medicine

The Institute of Primary Health Care (BIHAM) at the University of Bern features a unique academic leadership model: a shared chair held jointly by a pharmacist and a general practitioner. While still in the early stages, the initiative exemplifies institutional commitment to interdisciplinary education and shared leadership.

“In Bern, a combined chair: a pharmacist and a GP. But that’s the beginning.” – Switzerland

5.8 AI literacy and cultural competency training

Robert Gordon University (RGU) has taken an innovative approach to preparing students for digital futures. Pharmacy students are trained in AI literacy by critically analysing outputs from ChatGPT. This is paired with cultural competency training that ensures pharmacists are sensitive to patient diversity and personalised care.

“We kind of built a series of questions and then asked students to put it into ChatGPT... and critically analyse the answer... so they know you can use AI, but you need to make sure there’s a downside.” – UK

“One thing I would like to highlight from our course is about cultural competency, how students can tailor their services according to the diversity that patients have.” – UK

6 Conclusion and recommendations

This report has highlighted that institutions across the European Region are actively responding to evolving healthcare demands through innovation in pharmacy education, research, and workforce development. Despite challenges such as a lack of digital readiness among member countries within the region, limited interprofessional integration, and varied regulatory frameworks, several country-level initiatives demonstrate significant potential for scale-up, regional adaptation, and long-term impact.

Successful examples such as Croatia's national competency alignment, the UK's Community Pharmacy Contractual Framework and Pharmacy First programme, and UCL's research-led education model illustrate the region's capacity for reform. These initiatives reflect a broader shift toward experiential learning, clinical leadership, digital health integration, and cross-sector collaboration. They also demonstrate the feasibility of aligning pharmacy education and practice with the complex, fast-changing needs of 21st-century health systems.

Participants from across the region emphasised that future-oriented planning is now essential in anticipating the roles pharmacists will need to play over the next decade and embedding those competencies into undergraduate and continuing education. There was strong support for incorporating AI literacy, critical thinking, telepharmacy, and system leadership into both curricula and workforce development strategies. Several contributors also noted that integrating EPAs, promoting interprofessional collaboration, and restoring regional pharmaceutical manufacturing capacity are critical areas for joint action.

Crucially, the proposed UNITWIN Centre for Excellence was seen as a timely and transformative platform. Participants viewed it as a mechanism to connect fragmented efforts, build shared priorities, and coordinate education reform across diverse settings. The centre is expected to facilitate co-development of curricula, advocate for pharmacy inclusion in health policy, support rapid workforce upskilling through micro-credentials, and enable mutual learning through thematic working groups.

While contexts vary greatly across the EUR, common priorities and needs emerged, including:

1. Strengthening research capacity and practitioner engagement
2. Aligning curriculum with regional and EU-mandated competencies
3. Embedding digital health and artificial intelligence education
4. Promoting pharmacy leadership in multidisciplinary and policy settings
5. Supporting flexible upskilling through micro-credential ecosystems
6. Enhancing regional data sharing and education benchmarking.

The UNITWIN Centre for Excellence for the European Region offers a unique opportunity to unify these efforts, create strategic alignment, and accelerate pharmacy's contribution to resilient, equitable, and future-ready healthcare systems.

Recommendations from the region to support the advancement of pharmaceutical science, education and practice in the EUR:

1. Support the establishment of the FIP-UNESCO UNITWIN Centre for Excellence as a regional hub to unify expertise and coordinate improvements in pharmacy education, science, and practice across Europe.
2. Integrate digital health, AI literacy, and data ethics and embed these topics into undergraduate curricula and CPD to support technological transformation in healthcare delivery.
3. Develop a European micro-credential ecosystem to support just-in-time lifelong learning and upskilling for pharmacists across diverse practice areas and professional stages.
4. Align national curricula with revised EU pharmacy competencies and prioritise implementation of the EU directive on pharmacy training, including competencies in clinical care, pharmacoeconomics, and diagnostics.
5. Advocate for pharmacist participation in interdisciplinary education and policy platforms that increase pharmacy's visibility at national and international health education conferences to strengthen professional identity and interprofessional collaboration.
6. Support practitioner-led research and faculty development to increase opportunities for pharmacists to participate in meaningful research and encourage partnerships between academia and practice settings.

7. Foster region-wide collaboration through thematic networking groups on AI, medicine shortages, supply chain resilience, and practice innovation to facilitate mutual learning and project co-creation.

These recommendations are intended to shape the strategic direction of the UNITWIN Centre for Excellence in the European Region and guide stakeholders in advancing pharmacy education, science, and practice with a focus on sustainability, equity, and system impact.

7 References

1. United Nations Educational Scientific and Cultural Organization. The UNITWIN/UNESCO Chairs Programme - Guidelines and procedures. 2022. Available at: https://www.unesco.it/wp-content/uploads/2023/11/Unitwin_Guidelines-and-Procedures_March2022-3.pdf.
2. World Health Organization. About WHO/Europe: 2025. [Accessed: 2 July 2025]. Available at: <https://www.who.int/europe/about-us/about-who-europe>.
3. Health and Food Safety Directorate. State of Health in the EU: Synthesis Report 2023. Luxembourg. 2023. Available at: https://health.ec.europa.eu/system/files/2023-12/state_2023_synthesis-report_en.pdf.
4. World Health Organization. Vision and strategic directions: 2025. [Accessed: 2 July 2025]. Available at: <https://www.who.int/europe/about-us/about-who-europe/regional-director/vision-and-strategic-directions>.
5. WHO Regional Office for Europe. The legal and regulatory framework for community pharmacies in the WHO European Region. Copenhagen. 2019. Available at: <https://iris.who.int/bitstream/handle/10665/326394/9789289054249-eng.pdf>.
6. The European Parliament and the Council of the European Union. DIRECTIVE 2005/36/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 September 2005 on the recognition of professional qualifications. Strasbourg. 2005. Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:255:0022:0142:EN:PDF>.
7. International Pharmaceutical Federation (FIP). Continuing Professional Development/Continuing Education in Pharmacy: Global Report. The Hague. 2014. Available at: https://www.fip.org/files/fip/PharmacyEducation/CPD_CE_report/FIP_2014_Global_Report_CPD_CE_online_version.pdf.
8. Kempen TGH, Benaissa Y, Molema H et al. Pharmacists' current and potential prescribing roles in primary care in the Netherlands: a case study. J Interprof Care. 2024;38(5):787-98. DOI: 10.1080/13561820.2024.2374017.
9. Pharmaceutical Group of the European Union (PGEU). Position Paper on Pharmacists Workforce Shortages. PGEU. 2024. Available at: <https://www.pgeu.eu/wp-content/uploads/2024/11/PGEU-position-on-Pharmacists-Workforce-Shortages.pdf>.
10. Campbell J DG, Buchan J, Pozo-Martin F, Guerra Arias M, Leone C, Siyam A, Cometto G,. A universal truth: no health without a workforce. Geneva. 2013. Available at: https://cdn.who.int/media/docs/default-source/health-workforce/ghwn/ghwa/ghwa_auniversaltruthreport.pdf?sfvrsn=966aa7ab_7&download=true.
11. World Health Organization. The world health report 2006: working together for health. Geneva. 2006. Available at: https://iris.who.int/bitstream/handle/10665/43432/9241563176_eng.pdf.
12. World Health Organization. The world health report 2008 : primary health care now more than ever. Geneva. 2008. Available at: <https://iris.who.int/handle/10665/43949>.
13. World Health Organization. The world health report: health systems financing: the path to universal coverage. Geneva. 2010. Available at: https://iris.who.int/bitstream/handle/10665/44371/9789241564021_eng.pdf?sequence=1.
14. Bates I, John C, Seegobin P et al. An analysis of the global pharmacy workforce capacity trends from 2006 to 2012. Hum Resour Health. 2018;16(1):3. DOI: 10.1186/s12960-018-0267-y.
15. International Pharmaceutical Federation (FIP). FIP Global Pharmacy Workforce Report. The Hague. 2012. Available at: https://www.fip.org/files/members/library/FIP_workforce_Report_2012.pdf.
16. Viegas R, Dineen-Griffin S, Soderlund LA et al. Telepharmacy and pharmaceutical care: A narrative review by International Pharmaceutical Federation. Farm Hosp. 2022;46(7):86-91. DOI: 10.7399/fh.13244.

17. International Pharmaceutical Federation (FIP). FIP Digital health in pharmacy education. The Hague. 2021. Available at: <https://www.fip.org/file/4958>.
18. NHS England. Community Pharmacy Contractual Framework: 2019 to 2024: 2019. [Accessed: 2 July]. Available at: <https://www.gov.uk/government/publications/community-pharmacy-contractual-framework-2019-to-2024>.
19. NHS England. Pharmacy First: 2024. [Accessed: 2 July]. Available at: <https://www.england.nhs.uk/primary-care/pharmacy/pharmacy-services/pharmacy-first/>.
20. University of Copenhagen. The Center for Pharmaceutical Data Science Education: 2025. [Accessed: 2 July 2025]. Available at: <https://cpdse.ku.dk>.

International
Pharmaceutical
Federation

Fédération
Internationale
Pharmaceutique

Andries Bickerweg 5
2517 JP The Hague
The Netherlands

-

T +31 (0)70 302 19 70
F +31 (0)70 302 19 99
fip@fip.org

-

www.fip.org

July 2025 | FIP-UNESCO UNITWIN strategic roadmap: Focus on the European Region