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Abstract

Objectives: This study aims to gain a better understanding of the drivers and barriers to the development of advanced practice and specialised systems around the world. Through the synthesis of in-depth country case studies, this paper aims to identify current models of advanced practice and specialisation in pharmacy and illustrate trends, drivers and barriers in policy development. This is the first analysis of its kind to examine pharmacy specialisation and advanced practice in this depth from a global perspective.

Methods: A synthesis of country case studies was carried out. The country case study template was reviewed & approved by an expert working group drawn from a cross-section of International Pharmaceutical Federations (FIP) experts and special-interest groups. FIP member organisations and country level contacts from regulatory, professional and government agencies, and universities, were approached to contribute to the case study database. The data was collected between January and May 2015. Descriptive comparative analysis and qualitative thematic analysis were both used to analyse the data.

Key findings: Case study submissions were received from 17 countries. The findings demonstrate that the pace and depth of change in advanced practice and specialisation are occurring at different rates across countries and regions, although many countries appear to be moving towards recognising advanced and specialised practice of pharmacists and developing frameworks and/or formalised recognition systems.

Conclusions: Country-specific examples are useful in identifying factors that may contribute to the rate at which developments in advanced practice and specialisation in pharmacy are taking place and enable progress in around the world.

Key words

Advanced practice, specialization, scope of practice, professional development

Introduction

Recent decades have witnessed significant changes in the scope of medicines-related pharmacist-delivered care, and advanced practice and specialised pharmacists are being professionally recognised and credentialed around the world.[1] Despite this, there is a relative lack of clear understanding of the extent and organisation of advanced and specialised pharmacy practice recognition and credentialing globally.

Recognizing this scarcity of information on the topic, the International Pharmaceutical Federation (FIP) set out to expand the evidence base by providing a baseline on advanced practice and specialisation through two significant initiatives: (1) the publication of the Global Report on Advanced Practice and Specialisation in 2015 [1] and (2) the launch of the global transformative Pharmaceutical Workforce Development Goals (PWDGs) which include Advanced Practice and Specialisation as a specific goal (PWDG4).[2]

In 2000, the International Council of Nursing set up the International Nurse Practitioner-Advanced Practice Nursing Network (INP-APNN), intended to promote networking and provide support to advanced practice nurses around the world – signalling a global movement of the advancement of nurses' professional and role development initiated two decades ago. With a recent enhanced focus on the primary health care agenda from WHO 2018 Astana Declaration on Primary Health Care and the global workforce challenges health systems are facing, there is renewed interest in how national pharmacy workforce transformation can be undertaken.

Professional recognition is therefore identified as a means to maximizing benefits of health workers mobility, and the certification trend reported in this study provides experience for a universal working model of a qualification recognition system. One of the UN Commission Recommendations is to: "advance international recognition of health workers' qualifications to optimize skills use, increase the benefits from and reduce the negative effects of health worker migration, and safeguard migrants' rights."

Previous work on a global survey collected data from 48 countries and territories from the majority of World Health Organisation regions [1]. The study provided a comprehensive overview of data concerning the availability of nationally agreed definitions, frameworks for advanced practice and/or specialisation, forms and benefits of professional recognition, and the prevalence of pharmacists' prescribing rights. The

study found that while wide variances exists on these issues between countries, evidence suggests that professional development and recognition of advanced and/or specialised pharmacists is developing worldwide.

To gain a better understanding of the drivers and barriers to the development of advanced practice and specialised systems, in-depth country case studies were sought. Country-specific examples are useful in identifying factors that may contribute to the rate at which developments in advanced practice and specialisation in pharmacy are taking place. Through the synthesis of the country case studies and by secondary analysis of the data, this paper aims to identify current models of advanced practice and specialisation in pharmacy and illustrate trends, and identifies drivers and barriers in policy development.

Methods

A synthesis of country case studies was carried out. The data collection template was developed as a result of collaboration between FIP Collaborating Centre, University College London School of Pharmacy, Faculty of Pharmacy and Pharmaceutical Sciences at Monash University, and FIP. The template was reviewed & approved by an expert working group drawn from a cross-section of FIP experts and special-interest groups. Respondents (listed in Table 1) were asked to describe the activity occurring in their country to develop, implement and recognise advanced

practice and specialization. A series of prompts guided the responses, and also asked respondents to provide information on relevant definitions in use, and the availability of formal titles to recognise pharmacists who were deemed to be advanced or specialized.

All 190 FIP member organisations at the time were invited by email to contribute to the case study database. FIP's official contact database was used and responses were coordinated by an FIP staff member working to support the research team. The data was collected between January and May 2015, and included two reminders sent 4 and 2 weeks before the deadline respectively Organisations could refuse to consent to provide information. Information was not confidential and was available in the public domain. No patient, private citizen or personal information was collected. Approval for conducted the work was granted by the FIP Executive Committee.

Descriptive comparative analysis and qualitative thematic analysis were both used to analyse the data. All data were coded by an experience qualitative researcher and entered into Excel 2010. Case study authors and co-authors contact details were also stored for the record and where needed; the authors were contacted for clarification purposes. Responses to open ended questions were analysed with the aid of the qualitative analysis software package NVivo 10. The responses were read and re-read to identify emerging themes largely aligning with concepts and topic areas pre-identified in the 2015 Global Report on Advanced Practice and Specialisation. A coding framework was developed based on these themes and all transcripts were coded with this framework; overarching codes included 'drivers', 'barriers', frameworks and tools', and 'professional recognition'. Selected data were independently coded by a second researcher to validate initial analysis and the framework. Key themes present in each of the case studies were identified and organized in groups, focusing on the detection of general themes and noteworthy exceptions to trends.

Results

18 case study submissions were received from 17 countries (2 responses were received from the USA), shown in Table 1. With the exception of the Eastern Mediterranean, all WHO regions are represented in the sample with the majority of the cases originating from the Western Pacific (n=7), Europe (n=5) and Americas (n=4) regions. These results describe variations and themes emerging spanning the following areas: state of terminology and definitions of advanced practice and specialisation; formal credentialing and professional recognition processes; certification, tools, frameworks and support mechanisms; as well as an analysis of identified barriers and drivers to implementation of national advanced practice and specialisation systems

Terminology and definitions

Only seven of the seventeen (41%) terms in the case study template were identified to be in use by more than half of all respondents. The two most commonly used terms were found to be 'specialization' and 'accreditation', with 82% and 78% of the respondents reporting them to be in formal use respectively. The least used terms by the countries were 'continuing fitness to practice', 'extended practice', and 'foundation practice'.

Wide variance on the agreed definitions is also evident. Some case study countries reported that definitions overlapped between terms. For example, in Malaysia, 'credentialing' and 'professional recognition' are often used interchangeably. Similarly, India uses both 'internship' and 'residency' to describe pre-registration postings undertaken by pharmacy students. In contrast, 'residency' is taken to mean post-registration training in Argentina, Canada, USA, Japan, Malaysia, Singapore and Spain. In some cases, commonly used terms are not formally defined. Despite the terms 'advanced practice' and 'credential/credentialing', and 'pharmacist specialisation' being common terminology in Canada, they are not defined. In countries such as USA and Canada, decentralized laws across provinces and states often result in the existence of multiple definitions for any one term.

Formal credentialing and professional recognition

Formal credentialing for pharmacists is reported in eleven countries, and scopes of practice encompass a broad range of sectors and activities for both specialised and advanced practice (listed in Table 2). It is clear from these results that respondents use the term credentialing in different ways, with some countries credentialing pharmacists in the sector of work (e.g. hospital pharmacy), and others according to their patient mix (e.g. oncology). Japan, South Africa and Singapore offer credentials for specialised practice areas. In the USA, formal credentialing is in existence for specialties at the national-level and for advanced practice in selected states. In Great Britain, the national professional association has developed an advance practice credentialing mechanism. In other countries – Argentina, Portugal, Spain and Switzerland – formally credentialed specialty titles are generally themed as practice sectors (e.g. community, hospital). Canada, China, Malaysia, Philippines, India, and Ireland reported having no formal credentialing systems in place. Advanced services are reported to be provided in Ireland, Malaysia, New Zealand, Portugal, South Africa and the USA. More advanced pharmacy practice in the form of legal prescribing rights exists in some countries including South Africa, New Zealand and Great Britain.

Eleven out of seventeen countries reported that professional recognition of advanced practice and/or specialisation is available. Professional recognition is reportedly offered in a number of forms that include one or a combination of the following: formal credentials, protected titles and post-nominal titles, a separate register, career progression tracks, and financial incentives. Formal credentialing is the standard

professional recognition mechanism shared across all eleven countries, indicating that it is usually the first step towards professional recognition. Protected titles and designations are reported in Australia, Canada, New Zealand, Portugal, Singapore, Spain and the UK. While financial incentives, remuneration or reimbursement are generally uncommon, they are often indirectly linked to career progression. In some countries, certain posts require having a specialised and/or advanced credential and these posts come with a higher salary scale. In South Africa, some public and private institutions hire specialised pharmacists at more senior levels with higher pay scales than non-specialised practitioners. Additionally, Primary Care Drug Therapy Pharmacists and Authorised Prescribers can charge fees for services. The UK and New Zealand also report that some fees for certain services (e.g. medicine reviews, screenings, immunisation, emergency contraception etc.) are reimbursed.

Certification mechanisms

There are certification mechanisms in place for obtaining formal credentials, but they vary across and within countries, both in terms of the requirements and the certifying authority. Certification requirements are different in every case study (See Table 2) and are usually a combination of several requirements including examinations, peer-reviews, postgraduate qualifications/certificates/training courses, portfolio assessments, work experience, specialty residence, internships, work-related theses, and scope of practice evidence. Certifying authorities span specialist professional groups and societies (e.g. Japan), pharmacy professional bodies (e.g. Great Britain), pharmacy regulatory bodies (e.g. New Zealand), governmental bodies or agencies (e.g. Singapore) or a combination of more than one authority depending on the credential (e.g. South Africa). Cross-country certification is common and in one case mandatory. Pharmacists in Canada, Australia, and Philippines are encouraged to pursue international certification by the US Board of Pharmacy Specialties (BPS). The Philippine Pharmacists Association offers educational support for pharmacists who want to pursue BPS certification. In Singapore, it is mandatory for pharmacists wishing to become specialists to acquire certification from the BPS.

Tools, frameworks and support mechanisms

Advanced and specialist frameworks have been developed in some countries and have either been developed entirely at the national level or adopted and revised from another country or profession. The UK's Competency Development and Evaluation Group (CoDEG) formed the foundation for building the country's advanced practice frameworks. Australia's Advanced Pharmacy Practice Framework (APPF)[3] was also based on the CoDEG [4] work and adapted for Australian needs. As an example of using other profession's frameworks, Singapore's pharmacy specialist accreditation framework was developed with reference to the existing medical and dental specialisations frameworks. In New Zealand, a Pharmacist Services Framework defines pharmacy services offered in primary care and/or secondary care. Some countries reported that frameworks are under development. In Portugal, a competency-based model for its four specialisations was reported to be under development by the national pharmacy association. Argentina was also developing a standards of practice document for the sterilization speciality. South Africa reported that specialist frameworks were developed in close alignment with national higher education frameworks and health legislations.

Bodies, agencies, or committees that are specifically charged with overseeing credentialing mechanisms are reported in several countries. Japan's Council on Pharmacists Credentials is an independent agency that was established to evaluate and accredit continuing education and pharmacy specialities credentialing programmes that are usually run by specialist societies. In Portugal, a National Board within the country's national association was created as the authorising body for specialisation; the National Board also provides education and training opportunities through close collaboration with each Specialist Board. Singapore's Pharmacy Specialists Accreditation Board is responsible for defining pharmacy practice specialities and certifying those who have met the requirements for registration as specialists. The UK's pharmacy leadership body - the Royal Pharmaceutical Society – established the 'Faculty', a professional recognition programme of advanced practice in Great Britain. The US Board of Pharmacy Specialties certification programmes grant recognition of specialities locally and globally.

Drivers and barriers

Thematic coding of the data identified eight main areas that present barriers and/or drivers to formalised advanced and specialty practice: regulation and governmental strategies, educational institutions and academic capacity, human resources and logistical capabilities, professional leadership and support, the level of alignment with national health strategies, health system organisation factors, interprofessional collaboration, and multi-stakeholder engagement.

Regulations and governmental strategies

In addition to national funding strategies that support the advanced practice and specialisation of pharmacists, laws and regulations play a key role in progressing these avenues in pharmacy. For example, Argentina considers the Ministry of Health the main driver since it has passed a resolution that recognises the formal specialization of pharmacists.

Educational institutions and academic capacity

Case studies identify education providers, namely pharmacy schools, as key stakeholders in driving advanced practice and specialisation. In Malaysia and the Philippines, pharmacy schools provide support in the form of postgraduate training. On the other hand, the reportedly out-dated curricula in China's pharmaceutical education hinders the capacity of graduates to practice in clinical settings thus preventing the general advancement of clinical practitioners. The role of education providers is identified as a driver by Argentina, Canada, and South Africa.

Human resources and logistics

Just as credentialing boards and bodies help support professional recognition programmes, the lack of human resources and logistical capacity can pose a barrier. Portugal reports that its main challenges include allocating human resources exclusively for the management and administration of the specialisations. Another recurring challenge faced by professional associations in delivering their specialist certification is the constant need to find and recruit peer reviewers for their various specialisation boards. Sustainability is identified as a requirement for workforce transformation.

Professional leadership and support

The role of professional associations is a critical determinant of the status of advanced practice and specialisation. The capacity of professional associations to provide leadership support for the workforce's specialization and advanced practice relies on a number of factors including their ability to: advocate for the recognition of advanced and specialised pharmacists; develop models, frameworks, tools and support mechanisms; align development plans with national health strategies and service needs; develop communication strategies for the pharmaceutical workforce; provide educational resources and opportunities for professional development; staff human resources to oversee programme delivery; actively engage with all stakeholders; and have a financially viable and sustainable structure.

Alignment with national health strategies

Strong support and integrated workforce planning strategies from health governmental bodies for advanced pharmacy practice and specialisation is an important driver. While Canada does not have formalised advanced practice and specialisation for its pharmacists, the country recognises that the drive for pharmacists' specialisation needs to be based on improvements to patient care and improved efficiencies with health systems. In Great Britain, the Royal Pharmaceutical Society long-term vision for advancement is aligned with strategic drivers such as population demographics, advancements in healthcare delivery, medicines technology, health policy directives and macro-economic needs.

Health system organisation

Argentina's case study reported that its decentralized health system results in varied workforce regulation and policies across the country and poses a barrier to implementing a national model. Similarly, state-level regulations in the USA result in different systems nationally. The two countries rely on different approaches to overcome these effects. In Argentina, a Joint Commission for hospitals helps to mitigate provincial differences by enforcing policy on its member hospitals, some of which concern the practice of clinical pharmacists. The development of frameworks and models of practice also reportedly help reduce inter-jurisdictional differences.

Interprofessional collaboration

Interprofessional collaboration and active engagement with other health professions was identified as a driver for advanced practice and specialisation. Before additional work can occur in Canada, it is

recognised that other health professions should have a clear understanding of the definition and role of pharmacist specialisation. China also recognises the importance of factoring in the needs of not only patients, but also physicians. In Great Britain, it is deemed important that the quality of support, development and assessment process of the Royal Pharmaceutical Society is highly regarded by other Royal Colleges and professions. Malaysia acknowledges that one of the challenges faced is recognition from medical doctors and other health professionals; this is similar to New Zealand, the US, Singapore and South Africa where a lack of recognition or acceptance by physicians of advanced pharmacy roles were reported.

Multi-stakeholder engagement

It is unanimously agreed by the country case studies that engagement between all stakeholders is essential to developing advanced and speciality practice. Stakeholder groups identified include pharmacy associations and leadership bodies, regulators, governmental agencies, educational providers, other health professions, employers in the private sectors, pharmacists themselves and the pharmacy support workforce. It is often the case that professional recognition is driven by pharmacists themselves therefore ensuring the preparedness of pharmacists themselves to embrace expanded roles is clearly important. Engagement and joint planning with the pharmacy support workforce was identified to be an important driver to advanced roles in New Zealand, South Africa, and the USA.

Discussion

Summary of findings

This is the first analysis of its kind to examine pharmacy specialisation and advanced practice in this depth from a global perspective. This synthesis of 17 country case studies demonstrates that the pace and depth of change in advanced practice and specialisation are occurring at different rates across countries and regions, although many countries appear to be moving towards recognising advanced and specialised practice of pharmacists and developing frameworks and/or formalised recognition systems. This is consistent with the state of advanced practice in the nursing profession, which also demonstrates wide variations in the emergence of advanced roles.[5] The results of this study describe the current state of terminology and definitions, formal credentialing, certification mechanisms, and professional recognition around the world. The study also reports on the various tools and support mechanisms available, such as

frameworks for advanced and specialist practice, funding models and schemes, and the role credentialing bodies play in facilitating professional recognition.

Despite efforts to represent all regions in the reporting of the findings, this was not possible as no representative case study was received from the Eastern Mediterranean region. Therefore, FIP is currently engaged in expanding the database to include more case studies to widen the knowledge base and facilitate the understanding and dissemination of best practices.[17] It is important to acknowledge the markedly different states both between regions and within regions but that these are case studies submitted by individuals or organisations which may not reflect the experience of the entire country. The potential variations in the interpretation of the questionnaire items between countries may have affected what and how information was provided and presented, especially that the questionnaire was in English and Spanish only and language may have been problematic for some participants. The languages the survey was offered in resulted in a significantly higher response rate from the countries where these languages are used as official or main academia language. Additionally, the case study informants were often involved with FIP and have an appreciation for the international scope of the development of pharmacy. Their views and knowledge may not therefore be representative of the national perspective. In this analysis, efforts were made to introduce the terms advanced practice and specialisation to case study authors; but with the absence of universal definitions, the respondents' answers may have depended on their perceived understanding of the terms – urging caution with interpreting the findings.

Implications for development

The results indicate there is wide variance between - and even within - nations on the terms used and how they are defined. The lack of a consensus-based, universal catalogue of terminology and definitions likely contributes to this inconsistency. Confusion about advanced and specialty practice terminology is reported by other health professionals[6, 7] and has been demonstrated to negatively influence the introduction of advanced practice roles in nursing.[8] Global agreement on nomenclature is necessary for a shared understanding of issues around advanced practice and specialisation. A better understanding of the language of specialisation and advanced practice by stakeholders has been linked to a better understanding of how to develop advanced and specialty practice for health professionals.[9]

The pharmacy profession could look to nursing for an example on driving the development of a terminology database; the previously mentioned International Council of Nursing INP-APNN had an important role in facilitating the development of universally recognized terms. [10] Reaching consensus on nomenclature and terminology could result in a more uniform level of training and educational requirements around the world.

It was consistently reported in the case studies that multi-stakeholder engagement and integrated planning (especially with education institutions and other health care professions) are important to drive advanced practice and specialisation. Close collaboration with educational providers to prepare students for expanded service delivery has been shown to be beneficial.[11] For example, in an attempt to address this challenge, researchers in advanced nursing developed a tool that aims to illustrate the dimensions of practice of the advanced practice role to help other health professions as well as nurses themselves better understand skill mix and organize service delivery.[12]

Future work

This is the first study of its kind to collect in depth data on advanced and specialty practice in pharmacy from around the world. More research is needed to examine the impact of needs-based extended pharmacy roles, which would in turn catalyse local and global action and influence policymakers. While this analysis attempted to identify the current position of advanced practice internationally, there is a need to continue to monitor existing and emerging roles, possibly though a future longitudinal study.[13, 14] In addition, tools and resources are required to assist healthcare providers and policymakers to assess which service needs can or should be met by advanced and/or specialized pharmacists. Narrative analysis of advanced practice has also been used to develop an advanced practice model in nursing,[15] and the Delphi technique has been used to develop an advanced practice competency framework for nephrology nurses.[16] While the exact figures are unknown, the number of advanced and/or specialised practice pharmacists has been growing. There is therefore work to be done in determining the size and capacity of this segment of the workforce through collecting comprehensive workforce intelligence. In addition, there is an identified need to better understand how and why some countries have progressed in this area while others haven’t. While the barriers and facilitators derived from this current study shed some light on this

topic; a more in-depth understanding of the 'typology' of countries and the various models (and health system factors) in which advanced practice and specialisation can develop is being examine by FIP.

Conclusions

Professional advancement and formal recognition of advancement and specialisation in pharmacy practice is a developing trend worldwide. As the scope of pharmacy practice evolves, more pharmacists are pursuing advanced training and board certification in a growing number of specialties. This study highlighted that there is wide variance between professional recognition systems, methods and policy developments around the world. This study is one of the first attempts to expand the knowledge base and map out global trends in professional recognitions of pharmacists. These findings of this study are aimed to trigger dialogue, and action towards stronger policies to transform the global pharmaceutical workforce.

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Table 1 List of respondent countries and frequencies by WHO region

Respondents by WHO Region	Number of responses	Percentage of total countries (%)
Africa South Africa	1	6
AmericasArgentina; Canada; USA (California and North Carolina)	4	18
Western Pacific Australia; China; Japan; Malaysia; New Zealand; Philippines; Singapore	7	41
South-East Asia India	1	6
Europe Great Britain (UK); Ireland; Portugal; Spain; Switzerland	5	29
Total responses	**18**	**100**

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Table 2 Formal credentialing and certification mechanisms in eleven countries.

Country	***Formal credentials***	***Certifying authority(s)***	***Certification requirement(s)***
Argentina	Hospital pharmacy; Community pharmacy; Sterilisation; Industrial pharmacy; Health and legal pharmacy; Nutrition and food analysis; Biopharmacy	Argentine Association of Hospital Pharmacy for 'Hospital Pharmacy'; Ministry of Health for the rest	Accredited residency; written assessments for experienced pharmacists (5 years); postgraduate diplomas; or University Professor in one of specialty areas

Australia	Consultant Pharmacist	Society of Hospital Pharmacists of Australia (SHPA); Australian Association of Consultant Pharmacy (AACP)	SHPA: be certified by the US Board of Pharmacy Specialties; or be a Certified Geriatric Pharmacist (CGP); or be credentialed by the National Alliance for Pharmacy Education. AACP: Preparatory training (phase 1); competency-based assessment process (phase 2)
South Africa	Primary Care Drug Therapy pharmacist; Radiopharmacist; Pharmacokineticist; Authorised pharmacist prescriber[1]; Clinical Pharmacist[1]; Public Health Pharmacy and Management[1]	Department of Health for 'Primary Care Drug Therapy'; South African Pharmacy Council for the rest	Postgraduate diplomas; or specialized undergraduate track plus work experience
USA	*Nation-level:* Ambulatory care pharmacy; Nuclear pharmacy; Critical Care; Nutrition Support; Oncology; Paediatrics; Psychiatry; Pharmacotherapy; Certified Geriatric Pharmacist (CGP); *State-level:* Advanced Practice Pharmacist (California only); Clinical Pharmacist Practitioner (Montana and North Carolina); Pharmacist Clinician (New Mexico)	*Nation-level*: Board of Pharmacy Specialties (except for CGPs who are certified by their specialty Commission) *State-level*: state Board of Pharmacy	Varies across credentials and states but nation-level specialty requirements generally include work experience, specialty residence and examination
Japan	JSPHS-certified Oncology Pharmacist / Senior Pharmacist; Board Certified (BC) Infection Control Pharmacist/ Specialist; BC Psychiatric Pharmacist/ Specialist; BC Pharmacist/ Specialist in Pharmacotherapy during Pregnancy and Lactation; BC HIV Pharmacist/ Specialist; JSDPT JPEC Certified Pharmacist in Paediatric Pharmacotherapy; BC Pharmacist in Kanpo-pharmacognosy; BC Primary Care Pharmacist; BC home care supporting pharmacist; BC Emergency care pharmacist; BC Sports pharmacist; BC Infectious Disease	Japanese Society of Pharmaceutical Health Care and Sciences for oncology; Japanese Society of Hospital Pharmacists for infection control, psychiatry, pregnancy and lactation pharmacotherapy, and	Varies across credentials

	Chemotherapy Pharmacist; BC Pharmacist in Palliative Pharmacy; BC Pharmacist in drug information	HIV; Specialist societies for the rest	
New Zealand	Pharmacist Prescriber; Medicines Therapy Assessment (MTA) Pharmacist; Community Pharmacy Anticoagulation Management Service (CPAMS) pharmacist; Pharmacist Vaccinator; Medicines Use Review Pharmacist	Pharmacy Council of New Zealand	Varies across credentials but all require university-taught postgraduate certificates/ courses
Singapore	Advanced Pharmacotherapy Specialist in Cardiology Pharmacy; Advanced Pharmacotherapy Specialist in Geriatric Pharmacy; Advanced Pharmacotherapy Specialist in Infectious Diseases Pharmacy; Advanced Pharmacotherapy Specialist in Psychiatric Pharmacy; Oncology Pharmacy Specialist	Pharmacy Specialists Accreditation Board (PSAB), appointed by Ministry of Health	Relevant postgraduate qualification, working experience, USA specialty board certification
Great Britain	Advanced Stage I Faculty Member; Advanced Stage II Faculty Member; Mastery- Faculty Fellow	The Royal Pharmaceutical Society	Review of a submitted professional practice portfolio, peer-assessment evidence and scope of practice evidence
Portugal	Pharmacist specialized in Clinical Analysis; Pharmacist specialized in Regulatory Affairs; Pharmacist specialized in Hospital Pharmacy; Pharmacist specialized in Pharmaceutical Industry	National Board of the Portuguese Pharmaceutical Society	Exams, and/or internships and/or presentation of a work-related thesis
Spain	Hospital Pharmacy and Primary Care; Clinical analysis and biochemistry; Clinical genetics; Immunology; Microbiology and Parasitology; Nuclear Pharmacy; Doctor; Master	General Pharmaceutical Council of Spain	Varies across credentials but generally involves an entrance exam and minimum training requirements
Switzerland	Federal Postgraduate title in community pharmacy; Federal Postgraduate title in hospital pharmacy; Postgraduate title FPH in classical homeopathy[2]	Federal Office of Public Health	N/A[3]

[1]Credential proposed and under development. [2]Can only be acquired until end of 2017, after that one can only acquire a postgraduate certificate in classical homeopathy.[3]Data not provided.

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