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Pharmacists as independent prescribers in community pharmacy: A scoping review

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A B S T R A C T

Background: There has been a growing interest in granting prescribing rights to pharmacists as a strategy to improve healthcare access. Researchers continue to explore the impact and implementation of pharmacist prescribing. Given the recent international changes in this field, an overview of current territories allowing pharmacist independent prescribing would provide a comprehensive understanding for researchers and policymakers.

Aim: This scoping review aims to summarize the countries and specific jurisdictions where pharmacists can prescribe independently in community pharmacy, and map the conditions they can prescribe for, required training, and reimbursement policies.

Method: This scoping review was conducted in October 2024 and has been reported following the PRISMA-ScR guidelines. Searches were performed in Scopus, Web of Science, CINAHL, PubMed, and Cochrane databases, along with grey literature searches using Google.

Results: A total of 88 studies and reports were identified. The countries where pharmacist can prescribe independently include the United Kingdom, the United States, Canada, Australia, Poland, Switzerland, and Denmark. Pharmacists authorized as independent prescribers generally require post-registration training and are authorized to initiate, adapt, renew, or substitute prescriptions. For the payment and reimbursement, this service is publicly funded only in Canada, Denmark, France, and the United Kingdom.

Conclusion: Pharmacist prescribing practices vary significantly worldwide, with differences in terminology, legislation, and training requirements. This scoping review provides the necessary information to visualize and conceptualize the current scope of pharmacist independent prescribers, offering a foundation for advancing this practice in new jurisdictions. Further research should address current models in under-studied regions, explore the scope for pharmacists to prescribe for undiagnosed conditions, and analyze payment structures in non-funded jurisdictions.

1. Introduction

1.1. General overview

Health care systems worldwide are under increasing pressure due to rising life expectancy, a growing prevalence of comorbidities, and a projected global shortage of ten million health care workers by 2030.[1–4] In response, several countries, such as the United Kingdom, the United States, Australia, France, New Zealand, and Canada, have extended prescribing authority (PA) to non-medical health care professionals, including community pharmacists.[5–7] Importantly, these legislative changes recognize the pharmacist's ability to differentially diagnose either explicitly stated or by inference within the policy change. This policy change is driven with the objective of increasing access to primary care due to increased population demand, a shortage of general medical practitioners, inappropriate use of emergency departments, and costs. The visibility and trust pharmacists gained during the COVID-19 pandemic has also contributed to an increase in awareness by governments of the potential use of community pharmacy.[8–11]

Pharmacists PA refers to the legal and professional ability for pharmacists to prescribe medical prescription-only drugs, enabling them to initiate, continue, or discontinue medications.[12] Prescribing by community pharmacists represents an innovative shift in professional practice, reshaping the pharmacists' role in patient care, while apparently improving patient outcomes and health care system efficiency.[12–14] The main challenges are to ensure that prescribing by pharmacists is undertaken, alongside increasing accessibility, in a safe and efficient manner without creating equity imbalances.

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1.2. Prescribing models

Pharmacist prescribing models usually fall within two categories: dependent and independent prescribing. Both models require community pharmacists to assess the patient, justify treatment options, and establish follow-up plans.[15–21] While the dependent model requires pharmacists to prescribe under the supervision or under collaborative agreement with a physician. The independent model allows pharmacists to prescribe autonomously based on their professional judgment and usually limited by protocols or guidelines.[12,22] Pharmacists who operate under the independent model are referred to as Pharmacist Independent Prescribers (PIPs).[5]

According to Adams et al.,[12] PIPs operate under two main prescribing modes: "government protocols" and the "standard of care prescribing". Protocols authorize community pharmacists to prescribe certain medications, previously only available through medical prescribing for specific conditions, with jurisdictions-specific restrictions.[23,24] In contrast, the standard of care prescribing model allows community pharmacists to use their professional judgement without predefined lists of conditions or drugs, guided by accepted medical standards or existing therapeutic guideline recommendations.[12,22] These therapeutic guidelines are usually those applying to the prescribing practices of physicians.[25] Any deviation from these standards, protocols or guidelines, may result in regulatory sanctions on the pharmacist prescriber.[7,24,26]

Depending on the legislative authority PIPs can initiation, adapt, renew, therapeutically substitute, and prescribe in emergencies.[3,27,28] Initiation consists in writing a new prescription order, including specifying the dose and posology.[12,29] For example, PIPs may prescribe trimethoprim for uncomplicated urinary tract infections, or varenicline tartrate and bupropion hydrochloride for smoking cessation.[30,31] Adaptation refers to modifying a prescription, such as altering the dosage form, dose, posology, or route of administration.[18,28] For instance, if a patient experiences a drug-related problem or a medication is unavailable, PIPs may change the medication's dosage form or adjust the dose required. Renewals ensure continuity of the therapy by extending an existing prescription.[32,33] Therapeutic substitution allows PIPs to replace a drug with a therapeutically equivalent alternative.[34,35] Lastly, emergency prescribing occurs when immediate medication therapy is needed, e.g., an anaphylactic shock.[19,32,36] Table 1 provides a glossary of relevant terms related to pharmacist prescribing.

Pharmacists' PA is expanding worldwide, with important variations in its characteristics and implementation across different healthcare systems. A scoping review would serve as a valuable resource for researchers and relevant stakeholders such as policymakers and health care professionals, by providing an understanding of the global role and characteristics of PIPs in community pharmacy. Mapping the landscape of existing literature can inform future research and policy making, potentially enhancing PIP implementation and further integration in healthcare systems around the globe.

Table 1
Pharmacists prescribing glossary.

Concept	Definition
Dependent prescribing	A prescribing model that allows pharmacists to prescribe under the supervision of another health care professional through a practice agreement with a physician.[22]
Government protocol	An independent prescribing model for pharmacists, containing specific conditions and/or drugs pharmacists can prescribe for.[22]
Independent prescribing	A prescribing model that allows pharmacists to prescribe autonomously without the need of previous agreement with a physician.[22] Pharmacists who operate under this model are Pharmacist Independent Prescribers (PIPs).[22]
Standard of care	An independent prescribing model for pharmacists, without specific conditions and/or drugs pharmacists can prescribe for, guided by accepted medical guideline recommendations.[12]
Prescriptive authority (PA)	A regulatory framework that depending on the jurisdiction allows pharmacists to initiate, continue, or discontinue medications following a patient assessment.[12]

2. Aim

This scoping review aims to explore and summarize PIPs PA models worldwide. Secondary objectives include.

1. To identify the territories where community pharmacists are authorized to initiate, adapt, or renew prescription-only drugs or devices independently in community pharmacies.
2. To determine the range of treatments and medical conditions for which community pharmacists are authorized to prescribe in community pharmacy.
3. To report a preliminary analysis of the educational requirements and payment for PIPs.

3. Methods

This scoping review is reported according to the PRISMA extension for scoping reviews (PRISMA-ScR).[37]

3.1. Search strategy

A literature search was undertaken in October 2024 in the following databases: PubMed, CINAHL, Scopus, Cochrane Library, Web of Science, and the Google search engine for grey literature. The detailed query is described in Appendix A.

3.2. Article selection

One investigator (ZM) conducted the database search. Identified studies were imported into RefWorks to remove duplicates and then screened in Rayyan® software based on predetermined eligibility criteria. Uncertainties regarding inclusion or exclusion were resolved through discussion with CPM and VGC.

Grey literature, including regulatory and pharmacy bodies websites, and policy and practice guidelines, was searched using Google, following Godin et al.'s recommendations.[38] Results were exported into an Excel spreadsheet using Google Search Results Scraper extension. Initial screening involved reviewing the first paragraph, introduction, or abstract of the reports and webpages.

After the screening, the scientific and grey literature was consolidated into a single Excel spreadsheet, organized by country, year, title, and URL. A supplementary manual search of reference lists and bibliographies ensured no relevant studies were overlooked.

3.3. Inclusion and exclusion criteria

Literature describing the current PA of PIPs in community pharmacy, and the types of treatments and conditions for which they can prescribe. The following exclusion criteria were applied.

- Literature describing prescribing models using only over the counter medications (i.e. non-prescription medications).
- Dependent prescribing models, where pharmacists cannot prescribe autonomously or require supervision from another health care professional.
- Articles and reports where pharmacists prescribe outside community pharmacy settings.
- Studies, reports, abstracts, which expressed opinion and attitudes from professionals, patients, and stakeholders, as well as those addressing barriers to or the implementation and expansion of PA.
- Studies and reports reporting describing economic and clinical outcomes evaluations derived from pharmacists prescribing.

3.4. Data extraction

Information from each article and report was extracted into a table comprising six sections.

1. **Author/Source and Year of Publication:** Capturing the primary details of each study or report.
2. **Jurisdiction:** Referring to the specific territory (state/nation/region/province) where community pharmacists possess PA.
3. **Requirements for Prescribing:** Encompassing additional training, certification, and assessment criteria necessary for community pharmacists to gain PA.
4. **Conditions and Medications Eligible for Prescription:** Detailing the scope of treatments and medical conditions that community pharmacists are authorized to manage.
5. **Additional Information:** Any other relevant details that contribute to understanding the context or implementation of PIPs.

The extracted information from each country was reported in four tables: Prescribing models in each country; required training; reimbursement policies; and ongoing pilot programs. The PA for each country is described below, with details provided for each jurisdiction based on the data available at the time of this review.

4. Results

A total of 4140 records were identified from different databases, 88 of which were included in this review. Nine countries were identified as allowing community pharmacists to perform as PIPs: the United Kingdom, Canada, the United States, Australia, Switzerland, Denmark, France, Poland, and Ireland. The PRISMA flow diagram is represented in Fig. 1.

4.1. Independent prescribing models, activities and eligible conditions in each country

Table 2 provides an overview of the prescribing models and eligible conditions for PIPs across various jurisdictions. The prescribing models are categorized into protocol-based prescribing and the standard of care prescribing.

PIPs can prescribe in the United Kingdom, United States, Canada, Australia (all being dependent on province or state legislation), Switzerland, Denmark, France, and Poland. The standard of care prescribing model is present in the United Kingdom, United States (only Idaho, Colorado, and Montana), Canada for renewals and adaptation in all states except Manitoba and for initiation in Alberta, and lastly in Poland only for pro-auctore and pro-familiale prescribing.[12] The government protocols prescribing model is also present in the United States, and Canada as well, along Australia, Switzerland, Denmark, and France.[7,24,32,33,39–42] In Denmark PIPs can only renew prescriptions once, and only if the patient has been using the same medication at the same dose for more than six months. However, the renewal can only be done once; for subsequent renewals, the patient needs to visit the physician.[33,43,44] In some countries, PIPs can initiate prescriptions for specific medications: adapalene or erythromycin for mild acne, mebendazole for pinworms/threadworms, and fosfomycin and trimethoprim for uncomplicated urinary tract infections.[31] Additional details on medications and conditions are provided in Appendix B.

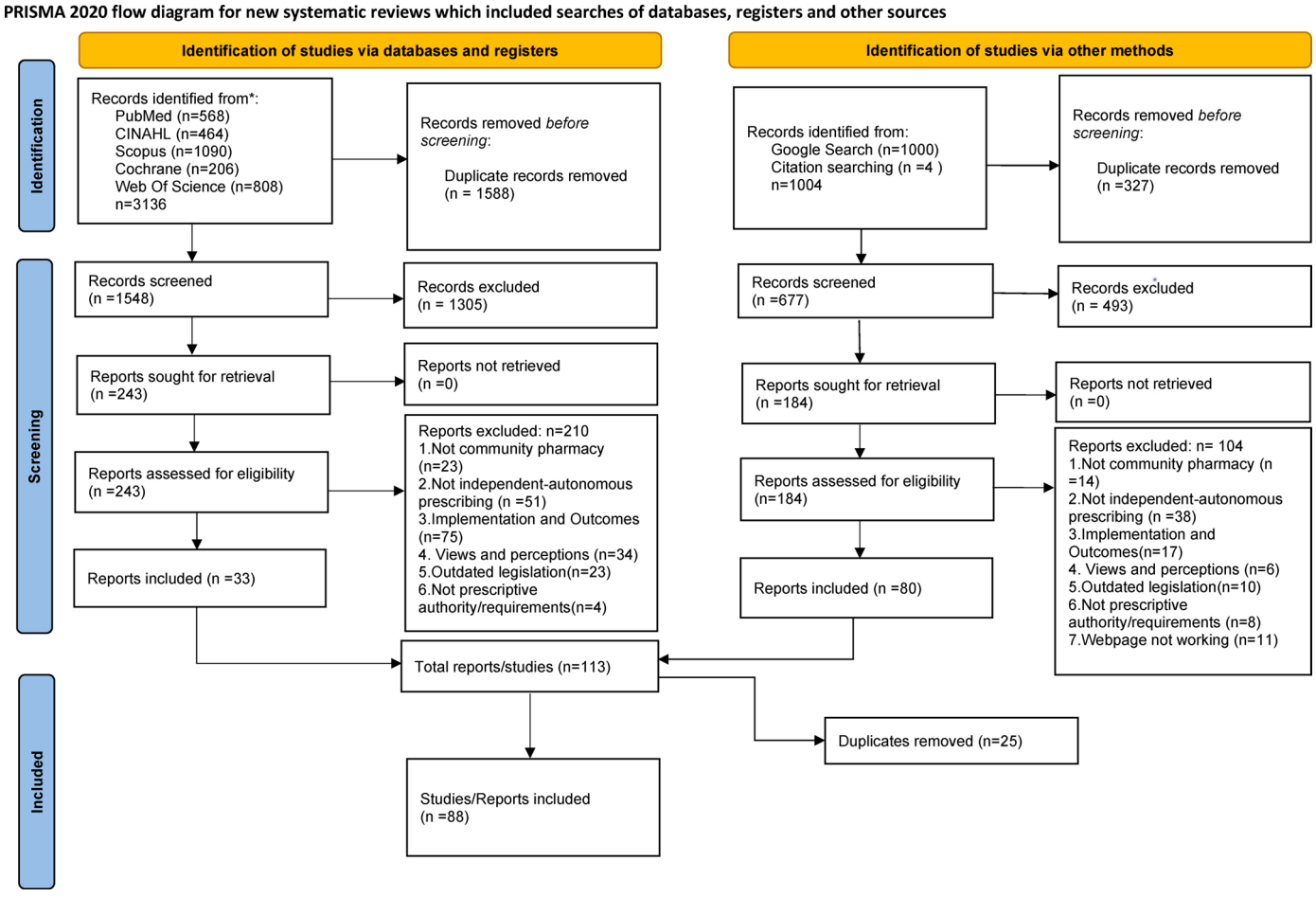

Fig. 1. Prisma 2020 flowchart.

Table 2
Pharmacist independent prescribing models and eligible conditions by country.

Country Territory		Model	Prescribing Activities and Eligible Conditions
United Kingdom[24,47,92,93]	England, Northern Ireland, Scotland, and Wales	Standard of care	Initiate, renew, or adapt for any diagnosed or undiagnosed conditions within the PIPs competence
United States[15,26,30,49,75,76,84–86,88–90,94–103]	Alaska, Arizona, California, Colorado, District of Columbia, Hawaii, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Tennessee, Utah, Vermont, Virginia, West Virginia	GovP[a]	Initiate prescriptions for contraception, HIV pre-exposure and prophylaxis, naloxone, and smoking cessation
	Colorado, Montana	Standard of care	Initiate prescriptions diagnosed conditions through a pharmacy test. Renew prescriptions for already diagnosed conditions (e.g., diabetes)
	Idaho	Standard of care	Initiate, renew or adapt for any diagnosed or undiagnosed conditions within the PIPs competence
Canada[7,9,15–20,28,31,104–109]	Alberta	GovP[a]	Initiate prescriptions for acne, dermatitis, fungal infections, hormonal contraception, impetigo, shingles (Herpes Zoster), smoking cessation, uncomplicated urinary tract infections, and hormonal contraception
		Standard of care	Initiate, renew, or adapt for any diagnosed or undiagnosed conditions within the PIPs competence
	British Columbia, New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Ontario, Quebec, Saskatchewan	GovP[a]	Initiate prescriptions for acne, dermatitis, fungal infections, hormonal contraception, impetigo, shingles (Herpes Zoster), smoking cessation, uncomplicated urinary tract infections, and hormonal contraception
		Standard of care	Renew and adapt prescriptions
Australia[48,58,60,63,71,78,79,110,111]	Queensland, Northern Territory	Gov P	Initiate prescriptions for urinary tract infections
	Australian Capital Territory, New South Wales, South Australia, and Western Territory		Initiate prescriptions for urinary tract infections and contraception. Renew prescriptions for contraception
	Tasmania		Renew prescriptions for contraception
Switzerland[40,51,112]		GovP[a]	Initiate or renew prescriptions for allergic rhinitis, gastro-esophageal reflux, constipation, obesity, bacterial skin infections, viral infections, mycosis, bacterial and fungal vaginal infections, smoking cessation
Denmark[33,43,44]		GovP[a]	Renew prescriptions for gastrointestinal reflux, prophylaxis of ulcerative colitis, diabetes type 1 and type 2 eczema and psoriasis, hypertension, hypercholesterolemia, hormonal contraception
France[39,52]		GovP	Initiate prescriptions for urinary tract infections and bacterial tonsilitis
Poland[8,32,81]		Standard of care	Initiate or renew prescriptions for any drug (except narcotics) for themselves (pro auctore), their immediate family, or cohabitants (pro familiae)
			Renew prescriptions for any patient (except narcotic and psychotropics)

GovP: Government protocol. Additional information on the conditions PIPs can prescribe for within each jurisdiction or country is provided in Appendix B.

4.2. Training requirements for pharmacist independent prescribers across jurisdictions

The training to become a PIP can be part of the university curricula or can be completed after registration as a practicing pharmacist, Table 3 provides information on the training requirements to become PIPs in each country. In the United Kingdom from 2026, Idaho, Montana, Colorado, Switzerland the post-registration training is not required, since it is considered to be part of the competencies of pharmacists.[12,23,40] In Alberta, post-graduate training is not required to prescribe as to obtain the Additional Prescribing Authorization, PIPs must meet certain criteria, such as demonstrate strong relationships with other health care professionals, possess clinical judgement and have access to the required information to ensure effective care.[45] The rest of countries and territories require PIPs to go through additional training.[7,10,46,47] In Canada and Denmark a set of postgraduate training conditions is included, while in the United States, Australia, and France each condition requires the completion of a specific course (e.g. training for prescribing contraception, or for urinary tract infections).[30,47–50]

4.3. Reimbursement and payment methods

The reimbursement for PIPs varies significantly across jurisdictions. Publicly funded systems include Canada (20 CAD per service) and France (€15 per assessment).[53–56] Denmark operates a partially funded model, where patients pay 2.58 USD, and the government covers 2.78 USD.[33,43,44] In contrast, out-of-pocket payments are common in the United States, Switzerland (22.3–33.5 USD per service), and Australia.[51,57,58] Payment methods primarily include fee-for-service, where PIPs charge per patient assessed, and pay-for-performance, which may involve a fixed base fee tied to specific performance metrics, although this model is only being used in the United Kingdom.[51,59,60]

4.4. Ongoing pilot programs for pharmacist prescribing

It appears that the acceptance that pharmacist prescribing evolves from a pilot or research phase and then proceeds to usual practice. These pilot programs are described in Table 4 and are ongoing initiatives predominantly under protocols which are legislated by government to allow the implementation of PIP models, including timelines, eligible conditions, and payment methods. Ireland has defined the list of conditions PIPs will be able to prescribe for, but training requirements and payment methods have not been defined yet.[61,62] However, Australian pilots define the training requirements and payment methods in all pilots.[63–70] These programs aim to expand the scope of community pharmacists as PIPs, with mandatory training programs expected to support their implementation.[71,72]

5. Discussion

The PA of community pharmacists has emerged as a transformative policy component of primary healthcare systems, addressing critical gaps in access, efficiency, and patient-centered care.[4,11,14,22] This scoping review explores the PA of PIPs in community pharmacy, with a specific focus on reporting the current status and evolution. It offers an analysis of which and how jurisdictions have operationalized this expanded role for pharmacists. These countries were the United Kingdom, the United States, Canada, Australia, Poland, Switzerland, Denmark, and France. It would be expected that in the future other governments might take this same policy direction and that PIP will expand. Pharmacist independent prescribing is a natural step for countries where community pharmacy services have been established.

Two primary prescribing models dominate emerged globally: government protocols and the standard of care model, characterized by greater flexibility in clinical decision making, adopting the medical model and responsiveness to evolving clinical evidence. This second notion has been particularly favored by authors advocating for less bureaucratic restrictions. These model empowers pharmacists to tailor prescribing decisions to clinical updates and patient needs.[29] However, it has also raised concerns regarding the lack of structure and standardization, particularly in the early stages of the practice, which some argue could undermine consistency in practice. The emergence of data on the patient outcomes, safety and efficacy of pharmacist led prescribing using the medical model might provide evidence for future decision making. Balance. From the patient safety and efficacy perspective, specific pharmacists' protocols and guidelines with commensurate e and data collection forms are essential to ensure that community pharmacists maintain a high level of accountability and evidence-based decision-making.[12] Currently the most implemented

Table 3
Training requirements for pharmacist independent prescribers across jurisdictions.

Country	Model	Post-Registration Training Required	Details
United Kingdom[47,82,113,114]	Standard of care[a]	Yes	Training is required and consists in 26 days of structured learning and 90 h of supervised practice with an independent prescribing practitioner
United States[12,26,30,75,84,85,89,90,94–100]	GovP	Yes	Training varies by state and condition, e.g., smoking cessation and hormonal contraception
	Standard of care	No	Competencies acquired during undergraduate studies
Canada[7,30,45,115]	GovP[b]	Yes	Training is required for initiating prescriptions, such as urinary tract infections, smoking cessation, and contraception
	Standard of care	No	Competencies acquired during undergraduate studies
Australia[41,42,48,59,71,116]	GovP[c]	Yes	A course for each condition accredited by the Australian College of Pharmacy or the Pharmaceutical Society of Australia
Switzerland[51]	GovP	No	Competencies acquired during undergraduate studies
Denmark[46]	GovP	Yes	Training is required and consists in completing three-day course and online exam accredited by Pharmakon
France[39]	GovP	Yes	Training is required and consists in completing a 4-h course
Poland[8]	Standard of care	No	Competencies acquired during undergraduate studies

GovP: Government protocol.
[a] The training has been incorporated into the MPharm Degree, from 2026 all newly registered pharmacists will automatically qualify as PIPs upon registration.
[b] In Alberta training is not required for government protocols.
[c] In New South Wales and the Australian Capital Territory it was not described.

Table 4
Ongoing pilot programs for Pharmacist Prescribing.

Country Territory		Timeline	Eligible Conditions and Prescribing Activities	Payment Method	Fees
Ireland[61,62]		Starting by mid-2025	Initiate prescriptions for allergic rhinitis, cold sores, conjunctivitis, shingles (Herpes Zoster), impetigo, oral thrush, uncomplicated urinary tract infections/cystitis, and vulvovaginal thrush	Still being developed	Still being developed
Australia[57,63–70,72,117,118]	Queensland	April 2024 to June 2026	To initiate, adapt, renew prescriptions, and therapeutical substitution. For gastro-esophageal reflux, nausea/vomiting, allergic and non-allergic rhinitis, skin conditions (Shingles (Herpes Zoster), atopic dermatitis, mild plaque psoriasis, acne), acute would management, acute diffuse otitis, musculoskeletal pain and inflammation, smoking cessation, oral health screening and fluoride application, travel health	Out-of-pocket	From 18.85 AUD (12,68 USD) to 68.10 AUD (45,8 USD) per service
		August 2024 to June 2025	Initiate hormonal contraception (oral, injected medication, and contraceptive devices)	Out-of-pocket	From 18.85 AUD (12,68 USD) to 68.10 AUD (45,8 USD) per service
	New South Wales Australian Capital Territory	July 2024 to February 2025	To initiate prescriptions for: Shingles (Herpes Zoster), impetigo, eczema, and mild-plaque psoriasis	Publicly funded (New South Wales). Out-of-pocket (Australian Capital Territory)	35 AUD (23,54 USD) fee-for-service
		Starting by 2025	Acute conditions; Chronic conditions	Not reported	Not reported
	Victoria	October 2023 to June 2025	Initiate prescriptions for shingles (Herpes Zoster), mild plaque psoriasis flare-ups, travel health, urinary tract infections, renewal of oral contraception, and skin conditions	Out-of-pocket	20 AUD (13,45 USD) fee-for-service
	Tasmania	Starting by March 2024	Initiate prescriptions for urinary tract infections	Out-of-pocket	20 AUD (13.05 USD) fee-for-service
	South Australia	Starting by 2026	Initiate prescriptions for Shingles (Herpes Zoster), psoriasis, dermatitis, ear infections, gastro-esophageal reflux, nausea/vomiting, musculoskeletal pain, rhinitis, wound care	Out-of-pocket	Not reported
	Western Australia	Starting by 2027	Initiate prescriptions for Acne, dermatitis, Shingles (Herpes Zoster), nausea and vomiting, pain, and wound management	Out-of-pocket	Not reported

model for PIPs and starting point in most countries appears to be pharmacist prescribing led protocols, despite the benefits adopting the medical prescribing guidelines.

Nine countries across North America, Europe and Australia allowed PIPs, most jurisdictions authorized to prescribe for conditions such as, uncomplicated urinary tract infections, hormonal contraception, smoking cessation, as well as adapt or renew prescriptions for previously diagnosed conditions (e.g. diabetes and hypertension).[12,33] However there is an emerging trend to permit initiation of treatment for common chronic conditions such as diabetes and hypertension. It is important to note that the policy driven these changes could revolutionary primary care specifically since these practices have been associated with improved access to healthcare services, with high levels of patient satisfaction.[14,73,74] The literature is still at its infancy regarding the evidence base for patient safety and efficacy, particularly in comparative studies related to other prescribers such as medical physicians.

Over the past two decades, countries like Canada, the United States, and the United Kingdom have pioneered pharmacist prescribing, transitioning from dependent models of prescribing in primary care to independent prescribing within primary health clinics and community pharmacy settings.[12,29,47,75] These jurisdictions now exemplify advanced pharmacist prescribing practices, including prescription initiation for conditions.[7,74,76,77] Additionally, over the past five years, multiple jurisdictions have granted community pharmacists different levels of PA, reflecting a growing acknowledgment of their contributions to healthcare systems.[7,40,43,78]

Australia represents a notable example of rapid progress in expanding pharmacists prescribing. Within the last year, the number of states allowing PIPs to prescribe for urinary tract infections has increased from one to seven, with several states now also permitting renewals for hormonal contraception.[58,60,69,79] The State of Queensland in Australia has been the leading state, including three trails on chronic diseases hypertension diabetes and asthma in future trials. Ireland has also taken steps toward expanding PA by publishing a roadmap to implement pharmacist prescribing for an expanded list of conditions, expected to begin by mid-2025.[61,62] According to stakeholders (researchers and policy regulators), the expansion of PA has been driven by the increasing demands of health care systems, the trust pharmacists earned during the COVID-19 pandemic, and the potential benefits of this expanded scope of practice.[8,9] In Canada, for example, several provinces are expanding the list of conditions eligible for pharmacist prescribing, such as urinary tract infections and pinworms in British Columbia after pandemic.[9,28,80] In Poland, community pharmacists were granted PA during the pandemic, and this reform has since been maintained.[81]

Despite this progress, opposition to expanded PA persists, particularly from medical boards. Key concerns raised by physicians include the lack of trust in PIPs preparedness for prescribing and diagnosing, emphasizing their more extensive medical training and experience in disease management.[82,83] Another significant concern is the potential fragmentation of care, suggesting that patients may require access to multiple settings for health care needs, leading to inefficiencies and potential disruptions without proper coordination.[75,76] However, PIPs can operate within a framework that ensures integration into patient-centered care. In some countries in the legislative changes to introduce pharmacist led prescribing there is a requirement to notify the patient's physician following a pharmacist consultation including notification of the issuing r issuing of prescriptions, updating patient's health record, and conducting follow-ups, facilitating coordination and attempting to reduce fragmentation of primary care.[16,18,84] These measures should address concerns about fragmented care and highlight the collaborative role of PIPs.[22,76,83] PIPs are held accountable for their prescribing decisions, which must adhere to clinical guidelines and approved conditions with prescribing decision outside these parameters subject to regulatory sanctions.[24,26,85–87]

The models suggest that PIPs receive education on prescribing either during their university curricula or through post-registration training,

whether prescribing is done through government protocols or the standard of care prescribing model. Training systems grant PIPs the ability to assess and make proper clinical decisions.[42,44,46,69] Integrating the prescribing training into the pharmacy university curricula is considered to be challenging but represents a paradigm shift in a career traditionally focused on basic sciences, better preparing future pharmacists for the demands of a workforce in a context of a growing complexity of healthcare.[29,47,88]

Currently most remuneration systems are out of pocket expenses for patients for both consultation and the medications. However, this raises questions of equity in which socially and economically disadvantaged groups may be disadvantaged and have restricted access to the extended services that pharmacist can provided through pharmacist prescribing. The solution would be to expand public funding services in national health systems or through third party health insurers to remunerate pharmacists or reimburse patients for these expenses maintaining universal access. Funding has been identified as a critical factor influencing the adoption, implementation and sustainability of community pharmacist services as a whole and for prescribing.[89,90]Among the countries, states and provinces identified, Scotland, Wales, Canada, Denmark, and France provide the most detailed reimbursement structures for PIPs, primarily using fee-for-service or pay-for-performance models.[7,43,53] Publicly funded pharmaceutical services were associated with higher uptake of prescribing services, as highlighted in several reports.[30,57,64,67,81] Conversely, in jurisdictions relying on out-of-pocket payments, there is a notable lack of transparency regarding current fees for non-funded prescribing services, with Switzerland being one of the few exceptions where estimated fees were documented.[91]

Further research into the implementation and follow-up of PIPs is required as there is limited data on the dissemination, adoption and implementation of pharmacist led prescribing by the profession on the short-, medium-, and longer-term impact on individual patients and the healthcare system. The critical question is the policy of adopting pharmacist prescribing meeting its objective of accessibility, lower costs. and meeting the needs of the population.

5.1. Strengths and weaknesses

A key strength of this scoping review is the inclusion of grey literature, such as reports from pharmaceutical boards and national health organizations, which provided the most current and detailed information on community pharmacists' PA.

However, there are limitations to consider related to the concept of pharmacists "prescribing", which is not uniformly defined across regions. While some jurisdictions interpret this term as issuing a prescription for specifically prescription-only drug, other territories use it to describe the prescribing act of any scheduled drug. Other terms to refer to prescribing include "supplying", "dispensing" or "providing" prescription-only drug, thus making it challenging retrieving papers and data.[11,21,23,39]

Secondly, the availability of published literature is variable, as the area evolves, and with certain jurisdictions providing more information than others. Although this review partially compensated with the grey literature search which provided more insight.

6. Conclusion

The current state of evolution for PIPs, specifically in the conditions that there is authority were identified as smoking cessation, urinary tract infections, hormonal contraception, chronic conditions, infections, conditions diagnosed through rapid tests in community pharmacy. Some jurisdictions limit PIPs prescribing to emergency prescribing, adaptation, or renewals only while others permit PIPs to initiate prescriptions.

There are a number of strategic and operational decisions that countries or jurisdictions need to consider when adopting pharmacist independent prescribing. The most critical would be the development of an infrastructure that allows communication between pharmacists and physicians, to avoid fragmentation of care, and be able to collect data for future analysis. Additionally, training should integrate education on clinical decision making and differential diagnosis. And lastly, reimbursement and payment fees should be evaluated and established for cost-effectiveness purposes and health equity.

CRediT authorship contribution statement

Zoubida Mesbahi: Conceptualization, Investigation, Methodology, Writing – original draft, Resources. **Celia Piquer-Martinez:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Resources. **Shalom I. Benrimoj:** Conceptualization, Investigation, Methodology, Supervision, Writing – original draft, Writing – review & editing. **Fernando Martinez-Martinez:** Conceptualization, Supervision, Writing – review & editing. **Noelia Amador-Fernandez:** Conceptualization, Resources, Writing – review & editing. **Maria Jose Zarzuelo:** Conceptualization, Writing – review & editing. **Sarah Dineen-Griffin:** Conceptualization, Resources, Writing – review & editing. **Victoria Garcia-Cardenas:** Conceptualization, Investigation, Methodology, Resources, Supervision, Writing – review & editing.

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Declaration of competing interest

The authors have nothing to declare.

Appendix A. Search formulas

Table A.1
Databases search

Database	Search Formula
Pubmed	((“Pharmacist independent prescri*" [Title/Abstract]) OR (“non medical prescri*" [Title/Abstract]) OR (“pharmacist prescri*" [Title/Abstract]) OR (“pharmacist dispens*" [Title/Abstract])) AND ((“community pharmac*" [Title/Abstract]) OR (pharmac*[Title/Abstract]) OR (“retail pharmac*" [Title/Abstract]))
Cinahl Complete	TI ((“pharmacist independent prescri*" OR “non medical prescri*" OR “pharmacist prescri*" OR “pharmacist dispens*") AND (“community pharmac*" OR “pharmac*" OR “retail pharmac*")) OR AB ((“pharmacist independent prescri*" OR “non medical prescri*" OR “pharmacist prescri*" OR “pharmacist dispens*") AND (“community pharmac*" OR “pharmac*" OR “retail pharmac*"))
Scopus	Article title, abstract, keywords: (“pharmacist independent prescri*" OR “non medical prescri*" OR “pharmacist prescri*" OR “pharmacist dispens*") AND (“community pharmac*" OR “pharmac*" OR “retail pharmac*")

(*continued on next page*)

Table A.1 (*continued*)

Database	Search Formula
Cochrane Library	"#1 - ((pharmacist NEXT independent NEXT prescri* OR non NEXT medical NEXT prescri* OR pharmacist NEXT prescri* OR pharmacist NEXT dispens*) AND (community NEXT pharmac* OR pharmac* OR retail NEXT pharmac*)):ti,ab,kw"
Web Of Science	(TI=(("pharmacist independent prescri*" OR "non medical prescri*" OR "pharmacist prescri*" OR "pharmacist dispens*") AND ("community pharmac*" OR "pharmac*" OR "retail pharmac*"))) OR AB=(("pharmacist independent prescri*" OR "non medical prescri*" OR "pharmacist prescri*" OR "pharmacist dispens*") AND ("community pharmac*" OR "pharmac*" OR "retail pharmac*"))

Table A.2
Google Search

	Search Formula
Search 1	("pharmacist prescription" OR "pharmacist prescriber") AND (Agency OR Policy OR Council OR Society OR Regulation OR Association OR protocol OR Authority) AND "community Pharmacy"
Search 2	"pharmacist prescribing" AND ("college of pharmacists OR "college of pharmacy")
Search 3	("pharmacist prescription" OR "pharmacist prescriber") AND (Agency OR Scope OR Policy OR Council OR Society OR Regulation OR Association OR Protocol OR Authority OR government)
Search 4	("pharmacist independent prescribing" OR "pharmacist independent prescriber" OR "pharmacist autonomous prescribing") AND "community pharmacy"
Search 5	("independent pharmacist prescribing") AND (Agency OR Scope OR Policy OR Council OR Society OR Regulation OR Association OR Protocol OR Authority OR government)
Search 6	("independent pharmacist prescribing" OR "independent pharmacist prescription" OR "autonomous pharmacist prescribing" OR "autonomous pharmacist prescription") AND Regulation AND "community pharmacy"
Search 7	("independent pharmacist prescribing" OR "Independent pharmacist prescriber") AND ("Scope of practice" OR "prescriptive authority")
Search 8	("Pharmacist prescription" OR "pharmacist prescriber") AND (Authority OR Autonomy OR autonomous OR Restriction OR restrictive OR recommendation OR policy OR regulation)
Search 9	("pharmacist prescription" OR "pharmacist prescriber") AND (Agency OR Scope OR Policy OR Council OR guideline OR Society OR Regulation OR Association OR (Protocol OR Authority OR government) AND "prescriptive authority"
Search 10	("pharmacist prescription" OR "pharmacist prescriber") AND ("Health economics" OR "economic evaluation" OR cost OR costs OR expense) AND "community Pharmacy"

APPENDIX B. List of eligible conditions independent pharmacists can prescribe for

Jurisdiction		Eligible Conditions
United States	California	Contraception (patch, vaginal ring, oral, progestin tablets, methoxy progesterone acetate), HIV pre-exposure and prophylaxis, naloxone, smoking cessation (only prescription nicotine replacement therapy)
	Colorado	Contraception (patch and oral), HIV pre-exposure and prophylaxis, naloxone, smoking cessation (all FDA-approved drugs), stating therapy
	Florida	40 products, including oral analgesics, antinausea preparations, antihistamines, and decongestants
	Iowa	Naloxone, smoking cessation (only prescription nicotine replacement therapy)
	Maine	HIV pre-exposure and prophylaxis, naloxone, smoking Cessation (only prescription nicotine replacement therapy)
	New Mexico	HIV pre-exposure and prophylaxis, hormonal contraception (patch, vaginal ring, oral, progestin tablets, methoxy progesterone acetate), immunizations, naloxone, smoking cessation (all FDA approved drugs), tuberculin skin tests
	North Dakota	Naloxone, smoking cessation (all FDA approved drugs)
	Oregon	Albuterol inhalers, condoms, cough and cold symptoms, COVID-19 antigen tests, diabetic testing supplies, emergency contraception, epinephrine autoinjectors, HIV pre-exposure and prophylaxis, hormonal contraception (patch, vaginal ring, oral, progestin tablets, methoxy progesterone acetate), intranasal corticosteroids, naloxone, preventive care, pseudoephedrine, short-acting beta agonists, smoking cessation (all FDA-approved drugs), travel medications, vulvovaginal candidiasis
	Utah	Contraception (oral, vaginal ring and patch), HIV pre-exposure and prophylaxis, smoking cessation (all approved drugs)
	Oregon	Albuterol inhalers, condoms, cough and cold symptoms, COVID-19 antigen tests, diabetic testing supplies, emergency contraception, epinephrine autoinjectors, HIV pre-exposure and prophylaxis, hormonal contraception (patch, vaginal ring, oral, progestin tablets, methoxy progesterone acetate), intranasal corticosteroids, naloxone, preventive care, pseudoephedrine, short-acting beta agonists, smoking cessation (all FDA-approved drugs), travel medications, vulvovaginal candidiasis
	Utah	Contraception (oral, vaginal ring and patch), HIV pre-exposure and prophylaxis, smoking cessation (all approved drugs)
	West Virginia	Contraception (patch, vaginal ring, oral)
	Indiana, Vermont	Smoking cessation (all FDA approved drugs)
	Nevada, Virginia	HIV pre-exposure and prophylaxis
	Arizona, Alaska, Minnesota, North Carolina	Smoking cessation (only prescription nicotine replacement therapy)
	Kansas, Massachusetts, New Jersey, Tennessee, Vermont, West Virginia	Naloxone
	Colorado, Montana	Controlled drugs for already diagnosed conditions (e.g. diabetes) or conditions diagnosed through a pharmacy test
	Idaho	Any drug for any condition if PIPs can justify their prescribing decision and their decision aligns with what another professional would prescribe
Canada	Alberta	Acne (mild), calluses and corns, dermatitis (atopic, contact, irritant), diaper dermatitis, candida, eczema (mild to moderate), folliculitis (infected hair follicles); Minor cuts, pediculosis (head lice), psoriasis, seborrheic dermatitis (dandruff), Tinea (fungal): tinea corporis (ringworm), tinea cruris (jock itch), tinea pedis (athlete's foot), impetigo, urticaria (mild), warts (excluding facial and genital), herpes zoster (shingles), onychomycosis (fungal nail infection); Diarrhea (non-infectious), dyspepsia (indigestion), gastroesophageal reflux disease (heartburn);

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Jurisdiction	Eligible Conditions
	hemorrhoids, threadworms and pinworms, vomiting/nausea; dysmenorrhea, emergency contraception, hormonal contraception, prenatal care (folic acid, vitamins); Uncomplicated acute cystitis (urinary tract infection), vaginal candidiasis (yeast infection); Chlamydia, gonorrhea, HIV (prophylaxis); Allergic rhinitis (seasonal allergies), asthma, cough, influenza (prophylaxis), nasal congestion, pharyngitis (sore throat); Aphthous ulcers (canker sores), herpes labialis (cold sores), stomatitis (oral thrush); Conjunctivitis (pink eye), xerophthalmia (dry eyes); Headache (mild), joint pain (minor), muscle pain, sleep disorders; Nicotine dependency (smoking cessation). Pharmacists in Alberta with APA are not limited to this list.
British Columbia	Acne (topical drugs), allergic rhinitis (intranasal drugs, antihistamine drugs, ophthalmic drugs), conjunctivitis (allergic, bacterial or viral), dermatitis (allergic, atopic, contact, diaper or seborrheic), dysmenorrhea, dyspepsia (gastric acid and reducing drugs), fungal infections (topical drugs), gastroesophageal reflux disease, hormonal contraception, headache, hemorrhoids (topical drugs), herpes labialis (topical drugs, antiviral drugs), impetigo (topicals), oral ulcers (topicals), oropharyngeal candidiasis (antifungal drugs), musculoskeletal pain, Herpes Zoster (shingles) (antiviral drugs), cessation drugs, threadworms or pinworms), uncomplicated urinary tract infections (antibiotics), urticaria including insect bites (topical drugs, antihistamine drugs), vaginal candidiasis (antifungal drugs).
New Brunswick	Allergic rhinitis, calluses and corns, dandruff, dysmenorrhea, dyspepsia, contraception, fungal infections of the skin, hay fever, hemorrhoids, mild headache, mild urticaria, minor joint pain, minor muscle pain, Herpes Zoster (shingles), nausea, non-infectious diarrhea, oral fungal infection, oral ulcers, preventive medicine for Lyme Disease, Meningococcal disease, pneumococcal disease, and COVID-19, severe acute respiratory syndrome, shingles smoking cessation, sleep disorders, threadworms and pinworms, upper respiratory tract conditions, vaginal candidiasis (yeast infection), warts (excluding facial and genital), and xeropthalmia.
Newfoundland and Labrador	Acne mild, allergic rhinitis, aphthous ulcers, atopic dermatitis (mild-moderate), callouses and corns, conjunctivitis, contact dermatitis, cough, dandruff and seborrhea, diarrhea (non-infectious), dry eyes, dysmenorrhea, dyspepsia, emergency contraception, fungal nail infections, fungal skin infections (including athlete's foot), gastroesophageal reflux disease, headache, mild, hemorrhoids, herpes simplex (cold sores), Herpes Zoster (shingles), impetigo, insomnia, mild, joint pain, mild, musculoskeletal pain, nasal congestion, nausea and vomiting, oral candidiasis, pinworms, smoking cessation, sore throat, upper respiratory conditions, urinary tract infections, uncomplicated, urticaria mild (including bites and stings), vaginal candidiasis, viral skin infections.
Nova Scotia	Allergic rhinitis, cough related to COVID-19, diarrhea (non-infectious), dry eyes dyspepsia, gastroesophageal reflux disease, hemorrhoids, nausea, mild headache, oral thrush and ulcers, sore throat, allergic or bacterial conjunctivitis; shingles, uncomplicated urinary tract infections, prevention of Lyme disease, hormonal contraception/birth control, dysmenorrhea (menstrual cramps), emergency contraception, vaginal candidiasis, mild acne, calluses and corns, cold sore, contact allergic dermatitis, dandruff, eczema (mild to moderate), fungal infections of the skin, impetigo, mild urticaria, warts (excluding facial and genital), Herpes simplex, minor joint pain, minor muscle pain, minor sleep disorders, smoking cessation, threadworms and pinworms, and xeropthalmia.
Ontario	Acne, allergic rhinitis, aphthous ulcers (canker sores), candidal stomatitis (oral thrush), conjunctivitis (bacterial, allergic and viral), dermatitis (atopic, eczema, allergic and contact), diaper dermatitis, dysmenorrhea, gastroesophageal reflux disease, hemorrhoids, herpes labialis (cold sores), impetigo, insect bites and urticaria (hives), smoking cessation, tick bites, post-exposure prophylaxis to prevent Lyme disease, musculoskeletal sprains and strains, nausea and vomiting of pregnancy, pinworms and threadworms, uncomplicated urinary tract infections, and vulvovaginal candidiasis (yeast infection).
Prince Edward	Acne (mild), allergic skin rash, calluses or corns, canker sores, cold sores (oral), cough, COVID-19 (Paxlovid), dandruff, diarrhea (non-infectious), dry eyes, eczema (mild to moderate), emergency contraception, fungal skin infections, indigestion, headache (mild), gastroesophageal reflux disease, hemorrhoids, hives, bug bites and stings (mild), hormonal contraception (birth control), impetigo, joint pain (minor), muscle pain (minor), nasal allergies (i.e. hay fever), nasal congestion, nausea, nicotine dependence (smoking cessation), pre-menstrual and menstrual pain, shingles, sleep disorders (minor), sore throat, threadworms or pinworms, thrush (oral fungal infection), urinary tract infection (uncomplicated), yeast infection (vaginal), and warts (excluding facial and genital warts)
Quebec	Allergic rhinitis, acne (mild), dermatitis (atopic, contact, irritant), diaper dermatitis, candidal, eczema, herpes zoster (shingles), pediculosis (head lice), tinea (fungal) skin infections, diarrhea (non-infectious), dyspepsia (indigestion), gastroesophageal reflux disease, hemorrhoids, vomiting/nausea, dysmenorrhea (pre-menstrual and menstrual pain), emergency contraception, hormonal contraception, prenatal care (folic acid, vitamins), urinary tract infection, vaginal candidiasis (yeast infection); chlamydia, gonorrhea, HIV prophylaxis, allergic rhinitis, asthma, COVID-19, influenza (prophylaxis), aphthous ulcers (canker, sores), candida stomatitis (oral thrush), herpes labialis (cold sores), conjunctivitis (pink eye), smoking cessation
Saskatchewan	Acne (mild), hay fever, seasonal allergies, cold sores, diaper rash, insect bites, canker sores, oral thrush, painful menstruation, gastric reflux, headache, hemorrhoids, muscle strains and sprains, bacterial skin infections, athlete's foot, ringworm, groin itch, emergency contraception, urinary tract infections, birth control, shingles, eye infection (conjunctivitis), influenza, and nail fungus (onychomycosis).
Prince Edward	Acne (mild), allergic skin rash, calluses or corns, canker sores, cold sores (oral), cough, COVID-19, dandruff, diarrhea (non-infectious), dry eyes, eczema (mild to moderate), emergency contraception, fungal skin infections, indigestion, headache (mild), gastroesophageal reflux disease, hemorrhoids, hives, bug bites and stings (mild), hormonal contraception (birth control), impetigo, minor joint pain and muscle pain, nasal allergies (i.e. hay fever), nasal congestion, nausea, nicotine dependence (smoking cessation), pre-menstrual and menstrual pain, shingles, sleep disorders (minor), sore throat, threadworms or pinworms, thrush (oral fungal infection), urinary tract infection (uncomplicated), vaginal fungal infection, and warts (excluding facial and genital)
Quebec	Acne (mild), allergic rhinitis, asthma, dermatitis (atopic, contact, irritant), diaper dermatitis, candidal, eczema, Herpes Zoster (shingles), pediculosis (head lice), tinea (fungal) skin infections, non-infectious diarrhea, dyspepsia (indigestion), gastroesophageal reflux disease, hemorrhoids, vomiting/nausea, pre-menstrual and menstrual pain), emergency contraception, hormonal contraception, prenatal care (folic acid, vitamins), uncomplicated acute cystitis (urinary tract infection), vaginal candidiasis (yeast infection), chlamydia, gonorrhea, HIV (prophylaxis), COVID-19, influenza (prophylaxis), aphthous ulcers (canker, sores), candida stomatitis (oral thrush), herpes labialis, conjunctivitis (pink eye), smoking cessation
Saskatchewan	Acne (mild), hay fever, seasonal allergies, cold sores, diaper rash, insect bites, canker sores, oral thrush, painful menstruation, gastric reflux, headache, hemorrhoids, muscle strains and sprains, bacterial skin infections, athlete's

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Jurisdiction	Eligible Conditions
	foot, ringworm, groin itch, emergency contraception, urinary tract infections, birth control, shingles, eye infection (conjunctivitis), influenza, and nail fungus (onychomycosis)
Switzerland	Allergic and bacterial conjunctivitis, allergic and seasonal rhinitis dry eyes, respiratory system acute diseases (rhinitis, bronchospasm, cough), diseases of the digestive trac (nausea and vomits, gastro-esophageal reflux, gastro-intestinal alterations, constipation, hemorrhoids, obesity), skin conditions (bacterial skin infections, viral infections, parasitosis, acne, rosacea acne, mycosis, dermatitis and eczemas non-infectious, itching, androgenic alopecia), urogenital tract diseases (bacterial and fungal vaginal infections, restauration of vaginal flora, erectile dysfunction, immunostimulant for infections), acute pain, migraine, vitamin and mineral deficiencies, caries prophylaxis, sleep concealing sleep, low blood pressure, travel sickness and dizziness, emergency contraception, emergency treatment of opioid overdose, smoking cessation.
Denmark	Allergy/hay fever (nasal glucocorticoids), asthma and chronic obstructive pulmonary disease (nasal sprays β-2 agonists or glucocorticoids), diabetes type 1 and type 2 (fast acting and intermediate acting insulins and analogs), diabetes type 1 and type 2 (fast acting and intermediate acting insulins and analogs), eczema (topical glucocorticoids), medication for gastrointestinal reflux (proton pump inhibitors), prophylaxis of ulcerative colitis (amino salicylic acids and analogs), essential hypertension (antihypertensives); hypercholesterolemia (statins), psoriasis (topical glucocorticoids), hormonal contraceptives, and post-menopausal osteoporosis (bisphosphonates)

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