

Educational Strategies to Support Optimal Prescribing Practices by Pharmacists

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Context

- In recent years, there have been efforts to expand pharmacists' scope of practice in Canada to improve patient access to timely care.
- Currently, all provinces and territories in Canada have adopted legislation allowing varying levels of prescribing authority.(1)
- For example, since 1 June 2023, pharmacists in British Columbia have been able to prescribe medications specified in their Schedule I of the Drug Schedules Regulations, which includes a list of minor ailments and contraception.(2)
- Similar programs have already been launched in other Canadian provinces as well as other jurisdictions such as the United Kingdom, that have been found to be suitable alternatives to family-physician consultations for minor ailments.(3)
- As part of ensuring effective care, many jurisdictions require pharmacists to complete educational modules or other educational strategies on prescribing.
- While there is evidence of educational strategies and continuous professional development for other types of prescribers (i.e., physicians and nurse practitioners),(3) there is a limited body of synthesized research evidence on the features, impacts, and implementation considerations of educational strategies specific to pharmacists.
- This rapid synthesis explores educational strategies that can be used to support optimal prescribing practices by pharmacists.

Question

What are the features and impacts of educational strategies to support optimal prescribing practices by pharmacists?

High-level summary of key findings

Research evidence

- We identified 10 evidence documents relevant to the question, which provide a limited body of evidence related to five types of educational strategies specific to pharmacist prescribing: 1) educational materials and meetings; 2) educational outreach visits; 3) interprofessional education; 4) peer-based learning; and 5) self-directed learning.
- Many evidence documents were excluded at the final stage of reviewing as they often focused on other prescribers (e.g., physicians, nurse practitioners).
- Some of the educational strategies were multifaceted and often included a mix of in-person and online resources.
- Reported impacts of multi-faceted educational strategies that incorporated educational materials with interprofessional simulation training and conferences, online learning activities and/or peer-based workshops included reductions in inappropriate prescribing patterns in hospital settings, and increased confidence levels, knowledge and self-efficacy of pharmacists who participated in such educational offerings.

- We did not identify any evidence documents that compared the effectiveness of different educational strategies.
- Most of the evidence documents described educational strategies for pharmacists and other types of prescribers in hospital settings, and therefore strategies will likely need to be adapted and tailored for different settings (e.g., pharmacists in primary care and community-based settings).
- Some authors indicated that pharmacists may require additional training beyond the provision of educational materials and tools, such as mentorship and personalized feedback from experienced prescribers.

Jurisdictional scan

- We found that educational strategies for pharmacists in most jurisdictions consisted of programs or workshops that combined educational materials and meetings with interprofessional education and self-directed learning, using both virtual and in-person modes of delivery.
- Pharmacists in most of the international and Canadian jurisdictions can obtain training to prescribe for a range of minor ailments as well as for contraception, and pharmacists in all provinces and territories except Northwest Territories and Nunavut have the authority to prescribe for smoking/tobacco cessation.
- Postgraduate certification programs to perform enhanced prescribing activities are typically offered by accredited tertiary institutions with continuous education and learning being required by regulatory bodies in all Canadian provinces.
- We also found that financial investments in educational opportunities for pharmacists have been made in some jurisdictions, including Australia, the United Kingdom (U.K.), and British Columbia (B.C.), and a few jurisdictions incentivize pharmacists to enhance their prescribing skills by covering the costs for certain prescribing services.
- Reported impacts of educational strategies included increased confidence and accuracy amongst prescribing pharmacists, improved access to care for patients, and improved self-efficacy and preparedness in practice.

Framework to organize what we looked for

Organizing framework

- Types of educational strategies or interventions
 - Educational materials and meetings (e.g., modules, worksheets, workshops)
 - Educational outreach visits (e.g., practice visits by educator)
 - Interprofessional education (e.g., audit and feedback, case-based scenarios, experiential learning, simulation, roleplay)
 - Peer-based learning (e.g., peer mentors, communities of practice)
 - Self-directed learning
 - Multi-faceted behaviour-change interventions that include education
- Mode of educational strategies or interventions
 - In person
 - Online/virtual
 - Mixed
- Types of prescribing
 - Minor ailments
 - Contraception
 - Smoking cessation
 - Adjustments to prescriptions made by other clinicians
 - Other
- Health system features that may influence the features and impacts of education

- Governance arrangements (e.g., training requirements for new pharmacists, required continuing professional education for licensed pharmacists, requirements for expansion of scope of practice)
- Financial arrangements (e.g., funding educational strategies or interventions)
- Delivery arrangements (e.g., setting of practice (community or hospital) and nature of practice (individual or part of an interdisciplinary team))
- Implementation considerations
 - Behaviour change support
 - Facilitators for implementation
 - Barriers to implementation
 - Where the educational strategies are provided
 - Frequency (e.g., how often education is provided)
- Impact of strategies
 - Patient experiences
 - Patient health- and population-health outcomes
 - Costs
 - Provider experiences

What we found

We identified 10 evidence documents relevant to the question. The evidence documents include:

- four systematic reviews
- six primary studies.

We outline in narrative form below our key findings related to the question from highly relevant evidence documents and based on experiences from the jurisdictional scan of four countries and all Canadian provinces and territories (see Box 1 for more details).

A summary of the evidence organized by type of educational strategies or interventions is provided in Appendix 3, while a summary of the experiences from other countries and from Canadian provinces and territories is provided in Appendix 4. Detailed data extractions from each of the included evidence documents is provided in Appendix 5 and hyperlinks for documents excluded at the final stage of reviewing in Appendix 6.

Box 1: Approach and supporting materials

We identified evidence addressing the question by searching [Health Systems Evidence](#) and [PubMed](#) to identify evidence syntheses, protocols for evidence syntheses, and primary studies. All searches were conducted on 10 July 2023. In PubMed, we conducted an updated search from an [existing rapid review about prescribing education interventions](#) and adapted some of the search terms to fit the focus of the rapid synthesis. The search strategies used are included in Appendix 1. We identified jurisdictional experiences by hand searching government and stakeholder websites for information relevant to the question from four countries (Australia, New Zealand, United Kingdom, and the United States – California, Oregon and Idaho) and all Canadian provinces and territories.

In contrast to our rapid evidence profiles, which provides an overview and insights from relevant documents, this rapid synthesis provides an in-depth understanding of the evidence.

We appraised the methodological quality of evidence syntheses that were deemed to be highly relevant using AMSTAR. Note that quality appraisal scores for evidence syntheses such as rapid syntheses/reviews are often lower because of the methodological shortcuts that need to be taken to accommodate compressed timeframes. AMSTAR rates overall quality on a scale of 0 to 11, where 11/11 represents an evidence synthesis of the highest quality. It is important to note that the AMSTAR tool was developed to assess evidence syntheses focused on clinical interventions, so not all criteria apply to evidence syntheses pertaining to delivery, financial or governance arrangements within health systems or to broader social systems.

This rapid synthesis was prepared in a 30-business day timeline.

A separate appendix document includes:

- 1) methodological details (Appendix 1)
- 2) a framework to organize what we looked for (Appendix 2)
- 3) a summary table of evidence organized by types of educational strategies or interventions (Appendix 3)
- 4) a summary table of experiences from other countries and all Canadian provinces and territories (Appendix 4)
- 5) findings from each evidence document, organized by document type, and sorted by relevance to the question (Appendix 5)
- 6) documents excluded at the final stages of reviewing (Appendix 6)

Key findings from highly relevant evidence sources

We found relevant findings for five types of educational strategies: 1) educational materials and meetings; 2) educational outreach visits; 3) interprofessional education; 4) peer-based learning; and 5) self-directed learning. A detailed summary of the evidence organized by type of educational strategies or interventions is provided in Appendix 3. Many evidence documents were excluded at the final stage of reviewing as they often focused on other prescribers or types of strategies that did not include an educational component (e.g., clinical medication reviews, pharmacist-led feedback or training to physicians and/or pharmacist-led interventions that targeted patients), or they did not provide a clear description of the prescriber (see Appendix 6 for a full list of excluded documents).

The literature described features of the identified educational strategies. Educational materials often included published guidelines and audiovisual materials on consultation skills, identification of drug-related problems, measurements of medication appropriateness, and guidance on how to create pharmaceutical care plans.(4; 5) Educational meetings included online learning activities (e.g., consultation scenarios consisting of adults presenting with common, acute, uncomplicated minor ailment) and workshops (e.g., in-person presentations delivered by peers or other types of prescribers).(5-7) Outreach visits involved trained individuals who met with pharmacists in practice settings to provide personalized training.(4; 8) Interprofessional prescribing training involved pharmacists and other professionals, where they worked together to implement evidence-based prescriptions based on case scenarios and simulations.(9) Self-directed learning often involved online training materials and the use of clinical tools.(10) Some of the educational strategies were multifaceted,(5; 11) and often a mix of in-person and online resources.

In terms of the impact of the identified strategies, a low-quality systematic review found that multifaceted educational strategies that include a combination of educational materials, conferences and trainings, audit and feedback, and outreach visits were found to improve appropriate drug use and prescribing overall among pharmacists and other types of prescribers in hospital settings.(12) Specifically, the pre-post studies included in the systematic review reported that educational materials in combination with attendance at conferences and training sessions had a positive effect on prescribing practices. Educational materials with reminders had no effect on prescribing changes, and educational materials with audit and feedback had mixed effects. Overall, the authors of the systematic review reported that no conclusions could be drawn about the most effective types of educational strategies.(12) Additionally, a primary study reported that a pharmacist-led education workshop to clinical pharmacists and other prescribers led to a reduction in inappropriate prescribing patterns in a hospital setting (i.e., inappropriate prescribing of NSAIDs reduced from 27.7% to 9.0%).(7) Other reported impacts included improved confidence levels, knowledge, and self-efficacy after pharmacists engaged in an educational strategy (i.e., interprofessional simulation, online learning activity, peer-based workshops).(6-10; 12; 13) We did not identify any evidence documents that compared the effectiveness of different educational strategies.

We found limited information on implementation considerations for educational strategies. Most of the evidence documents described educational strategies for pharmacists in hospital settings. However, such strategies will likely need to be adapted and tailored for different settings (e.g., pharmacists in community-based settings). Additionally, some authors indicated that pharmacists may require additional training beyond the provision of educational materials and tools.(5; 6; 8) For example, a primary study reported that mentorship and personalized feedback from experienced prescribers and an access to ongoing, continuing education courses (in-person and/or online) were facilitators to the success of a peer-based optimal prescribing workshop.(13) The frequency of an educational strategy (i.e., how often education is provided) was seldomly described.

Key findings from jurisdictional scans

We identified jurisdictional experiences of educational strategies for pharmacist prescribing practices from four countries (Australia, New Zealand, United Kingdom, and the United States – California, Oregon and Idaho) and all Canadian provinces and territories.

Educational strategies

Educational strategies for pharmacists in most jurisdictions consisted of programs or workshops that combined educational materials and meetings with interprofessional education and self-directed learning. For example, in Australia, a university [Safe Prescribing and Quality Use of Medicines](#) course and a [structured credentialing program](#) both use a combination of online workshops, competence assessments, self-directed learning and supervision of a designated practitioner to educate pharmacists on prescribing practices. Pharmacist prescriber trainees of two pharmacy schools in New Zealand take a [prescribing course](#) consisting of workshops and tutorials as well as a prescribing practicum, and [Pharmacist Independent Prescribers](#) (PIPs) in the U.K. often receive training under supervision to build competence in a particular area of interest before taking on a new role. In [Canada](#), types of continuing education programs for pharmacists can range from independent study, live learning and blended learning activities, as well as conferences and regularly scheduled live series. Educational programs and resources are often provided through universities (e.g., the University of British Columbia's [Canadian Pharmacy Practice Program \(CP3\)](#) and the University of Waterloo's [Professionalism in Clinical Learning](#) and [Antimicrobial Stewardship in Primary Care Continuing Education Program](#)) or regulatory bodies and associations (e.g., [Alberta College of Pharmacy](#) (ACP), [Saskatchewan College of Pharmacy Professionals](#) (SCPP), [Ontario Pharmacists Association](#) (OPA)). Most programs offer both virtual and in-person training options.

Postgraduate certification programs to perform enhanced prescribing activities are offered by accredited tertiary institutions in [Australia](#), [New Zealand](#), the [U.K.](#), [California](#), and [Oregon](#). The [Canadian Council on Continuing Education in Pharmacy](#) (CCCEP) accredits continuing education programs for pharmacy professionals in Canada and its accreditation is recognized in all Canadian provinces and territories by pharmacy regulatory authorities.

Types of prescribing

We also found that pharmacists in most of the jurisdictions can obtain training to prescribe for a range of minor ailments, including mild skin conditions, urinary tract infections, musculoskeletal pain, and cough and cold symptom management. Several pilot programs are underway in Australia ([Victoria](#), [North Queensland](#), [New South Wales](#)) to improve access to primary care by expanding the scope of practice of participating pharmacists to prescribe medications for these conditions. In [Canada](#), pharmacists in all provinces and territories except Northwest Territories and Nunavut have the authority to initiate prescribing for minor ailments/conditions. Pharmacist Prescribers in [New Zealand](#) and pharmacists in most provinces and territories [have the authority to adapt prescriptions](#) for drug dosage, formulation and regimen as well as renew/extend prescriptions for continuity of care.

In terms of contraception and smoking cessation, pharmacists in [Australia](#), [California](#) and [Oregon](#) are authorized to prescribe for hormonal and emergency contraception after receiving the required training. Pharmacists in British Columbia, Alberta, Saskatchewan, Québec, Nova Scotia, New Brunswick, P.E.I. and Newfoundland and Labrador can prescribe [prescription-only emergency contraception](#), and pharmacists in all provinces and territories except British Columbia, Northwest Territories and Nunavut have the authority to prescribe for [smoking/tobacco cessation](#). Other types of prescribing that trained pharmacists are authorized to conduct in these jurisdictions include drug-related tests, HIV PrEP/PEP, diabetes management and certain vaccinations.

Health system features

In Canada, continuous education and learning is required by regulatory bodies in all provinces ([B.C.](#), [Alberta](#), [Saskatchewan](#), [Manitoba](#), [Ontario](#), [Québec](#), [New Brunswick](#), [Nova Scotia](#), [P.E.I.](#), [Newfoundland and Labrador](#)) for pharmacists to maintain their licenses to practice. The number of educational training hours required by regulators range from 15 to 40 hours annually, and pharmacists are typically required to self-report their continuing education activities to the regulator.

Financial investments in educational opportunities for pharmacists have been made in some jurisdictions. [NHS England has invested £15.9 million](#) to support the expansion of front-line pharmacy professionals in primary care and to assist pharmacists in accessing further clinical training, while domestic students in Australia can obtain a postgraduate certification in clinical pharmacy in prescribing from the University of Auckland at a [subsidized cost](#). In B.C., a \$3 million funding allocation was made in July 2022 to support the educational training of pharmacists and other allied healthcare providers. In Manitoba, the [Uncomplicated Cystitis Independent Study Program for Manitoba Pharmacists](#) is free of charge to pharmacists.

A few jurisdictions incentivize pharmacists to enhance their prescribing skills by covering the costs for certain prescribing services. Participants in the [North Queensland Community Pharmacy Scope of Practice Pilot](#) prescribe under a fee-for-service model while those participating in the [Victorian Community Pharmacist Statewide Pilot](#) are reimbursed \$20AUD for each service and any Pharmaceutical Benefits Scheme (PBS) gaps. The Nova Scotia and British Columbia governments cover the costs of pharmacist assessments for contraception and certain minor ailments.

Implementation considerations and impact

Similar to our findings from the research evidence, information on implementation considerations from our jurisdictional scan was limited. A [report by the Australian Pharmacy Council](#) published in February 2023 highlighted that pharmacists in hospital settings in Australia demonstrated improved competence and accuracy in prescribing compared to medical staff. However, barriers to the implementation of educational strategies for pharmacists in Australia include the lack of a national standard for pharmacist training requirements to expand prescribing, the lack of consistency in prescribing terminology between jurisdictions, and [restrictive legislation](#) that impacts the design of research studies, which makes it challenging to ensure that study results can be applied across jurisdictions. In Canada, the Alberta College of Pharmacy [developed four tools](#) to help evidence assessors to evaluate potential candidates and to allow pharmacists to evaluate their own preparedness. In addition, Manitoba makes available a [public directory](#) of pharmacists who are trained and authorized to prescribe for each of the self-limiting conditions, smoking cessation and uncomplicated cystitis.

Lastly, we found that the impact of educational strategies was measured in a few jurisdictions. In Australia, it was reported that patients have increased accessibility to care in terms of [time and distance](#) with the expansion in scope of community pharmacy practice, and it is [the view of community pharmacists](#) that their skills and knowledge are more favourably leveraged with an expanded prescribing scope, even though there is a lack of support and scope conflicts with other professions. Australia's the [Urinary Tract Infection Pharmacy Pilot - Queensland \(UTIPP-Q\)](#), which is now a permanent service, reported that [87.6% of patients](#) resolved urinary tract infections under the UTIPP-Q. In the U.K., the [Care Homes Independent Pharmacist Prescriber Study](#) (CHIPPS) found that PIPs reported improved competence and application of their new learning throughout the delivery of the intervention, improving long-term care facility residents' quality of life and medication management. A [California-based survey](#) found that pharmacist prescribing of contraception in community pharmacies was found to be convenient and highly acceptable among patients. In addition, a [recent survey conducted in Oregon](#) found that pharmacists want more training on prescribing hormonal contraception and preferred less than four hours of live trainings, on-demand webinars, and online self-study programs.

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