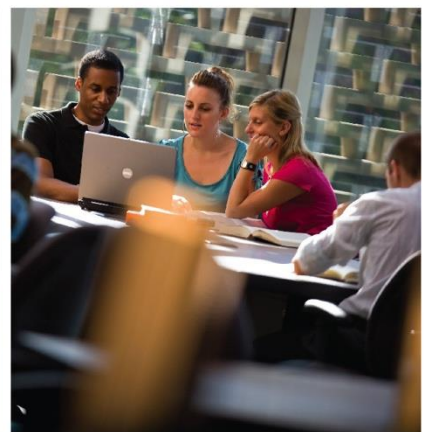
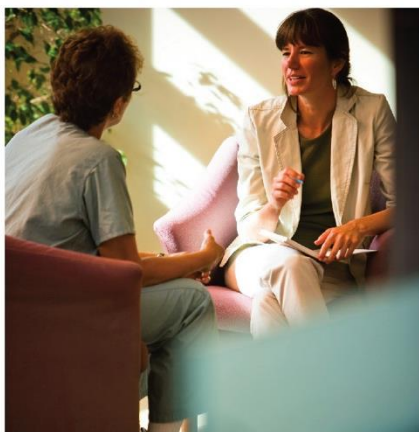


EVIDENCE  
BRIEF



EXPLORING MODELS FOR  
PHARMACIST PRESCRIBING  
IN PRIMARY AND COMMUNITY  
CARE SETTINGS IN ONTARIO



16 JUNE 2015

EVIDENCE >> INSIGHT >> ACTION



**Evidence Brief:**  
**Exploring Models for Pharmacist Prescribing in Primary and Community Care Settings in Ontario**

16 June 2015

## McMaster Health Forum

For concerned citizens and influential thinkers and doers, the McMaster Health Forum strives to be a leading hub for improving health outcomes through collective problem solving. Operating at regional/provincial levels and at national levels, the Forum harnesses information, convenes stakeholders, and prepares action-oriented leaders to meet pressing health issues creatively. The Forum acts as an agent of change by empowering stakeholders to set agendas, take well-considered actions, and communicate the rationale for actions effectively.

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The authors declare that they have no professional or commercial interests relevant to the evidence brief. The funders played no role in the identification, selection, assessment, synthesis or presentation of the research evidence profiled in the evidence brief.

## Merit review

The evidence brief was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

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## **KEY MESSAGES**

### **What's the problem?**

- Documents prepared by the Government of Ontario articulate a commitment to improving access to care, connecting services, supporting patients, and protecting our universal public-health system.
- Reconfiguring the scopes of practice of healthcare professionals (in this case, allowing pharmacists to prescribe) and developing new models of care (in this case, positioning pharmacists as members of primary and community care teams) have been suggested as possible ways to achieve these goals.
- The challenges in meeting these health-system goals can be understood by considering three aspects of, or contributors to, the problem:
  - primary-care providers are delivering care for patients with a wide range of conditions, many of whom live with multimorbidity, and this results in a significant burden on their shoulders and gaps in services (e.g., caring for minor ailments puts pressure on busy clinics and emergency departments, polypharmacy not being effectively managed, and high immunization rates not being achieved);
  - current health-system arrangements limit capacity to improve the situation (e.g., a lack of comprehensive information and communication technology infrastructure, a lack of interprofessional collaboration in terms of both what's happening on the ground and what's permitted by law); and
  - some courses of action have not been fully implemented (e.g., recommendation to allow pharmacists to prescribe drugs to treat minor ailments).

### **What do we know (from systematic reviews) about three viable options to address the problem?**

- Option 1 – Facilitate the system-wide adoption of collaborative prescribing agreements in primary and community care settings
  - We found no systematic review examining formal collaborative prescribing agreements, but a few examined pharmacist services delivered in primary-care clinics (with or without activities delivered collaboratively with family physicians). These reviews found several benefits for interprofessional collaboration (e.g., improved access to care, process of care, and patient outcomes in various areas of chronic disease management, and improved prescribing practices).
- Option 2 – Establish a pharmacist-prescribing program for minor ailments
  - There is evidence that pharmacy-based minor ailments programs are suitable alternatives to primary-care consultations (e.g., high symptom-resolution rates, low re-consultation rates, and a decline of the total number of consultations and prescribing for minor ailments in primary-care clinics).
- Option 3 – Establish an advanced practice pharmacist model
  - We found no systematic review examining advanced practice pharmacist models, however, there is a growing body of individual studies.
  - There is evidence to support continuous professional development initiatives, as well as specific prescribing training using the WHO Guide to Good Prescribing, but as yet little evidence that such initiatives improve clinical outcomes, or that educational interventions targeting non-medical prescribers can improve prescribing competency.

### **What implementation considerations need to be kept in mind?**

- Potential barriers to implementing new pharmacist-prescribing models can be identified at the level of the public/patients (e.g., a lack of awareness of pharmacists' roles beyond dispensing drugs, potential confusion about what is or isn't a 'minor ailment', or what an advanced practitioner can and can't do), healthcare professional (e.g., healthcare professionals may be reluctant to engage in a new model of care without tangible incentives), organizations (e.g., concerns that such reforms could slowly erode the role of some professional groups, concerns from employers offering supplemental drug coverage of the impact of such reforms on drug costs), and health system (e.g., some health-system leaders may be reluctant to reconfigure scopes of practice since this is very politically sensitive).
- On the other hand, a number of potential windows of opportunity could be capitalized upon, which include recent entry-to-practice pharmacy degree programs in Ontario that may prepare pharmacists to tackle an expanded scope of practice, the Government of Ontario's commitment to transform the delivery of local health care and to encourage collaboration among healthcare professions, and opportunities to learn from pharmacist-prescribing models that already exist in Canada and abroad.





## REPORT

The Government of Ontario has expressed its commitment to transform the health system into one that puts the needs of patients at its centre. To do so, the government's latest action plan focuses on four key goals: providing faster access to the right care; delivering better coordinated and integrated care in the community and closer to home (which it calls 'connecting services'); providing the education, information and transparency people and patients need to make the right decisions about their health ('supporting people and patients'); and making evidence-based decisions on value and quality to ensure the sustainability of the health system ('protecting our universal public-health system').(1)

One approach that may contribute to achieving these health-system goals is to reconfigure the scopes of practice of healthcare professionals and to develop new models of care that allow all healthcare professionals to contribute to patient care to the full extent of their training and abilities.(2)

In recent years, we have seen efforts to extend prescriptive authority to pharmacists and other healthcare professionals (e.g., nurse practitioners, registered nurses, midwives, optometrists and podiatrists). Historically, physicians, dentists and veterinarians have been the only regulated health professions with the legal authority to prescribe drugs in Canada. Now, most Canadian jurisdictions and many other countries have adopted legislation allowing pharmacists and other healthcare professionals to prescribe drugs in a variety of situations and for many medical conditions. However, there is significant diversity across jurisdictions in pharmacist-prescribing models and in the policies governing pharmacist prescribing.(3;4)

The province of Ontario took some initial steps in expanding the scope of practice of pharmacists in 2009. The Regulated Health Professions Statute Law Amendment Act (Bill 179), which came into effect in October 2012, expanded the scope of practice of pharmacists and granted prescriptive authority for certain drugs under select conditions. This authority includes adapting dose, regimen, route or formulation of prescriptions; renewing therapy for patients with chronic and stable conditions; initiating therapy for smoking cessation; and administering influenza

### Box 1: Background to the evidence brief

This evidence brief mobilizes both global and local research evidence about a problem, three options for addressing the problem, and key implementation considerations. Whenever possible, the evidence brief summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies and to synthesize data from the included studies. The evidence brief does not contain recommendations, which would have required the authors of the brief to make judgments based on their personal values and preferences, and which could pre-empt important deliberations about whose values and preferences matter in making such judgments.

The preparation of the evidence brief involved five steps:

- 1) convening a Steering Committee comprised of representatives from the partner organizations, key stakeholder groups and the McMaster Health Forum;
- 2) developing and refining the terms of reference for an evidence brief, particularly the framing of the problem and three viable options for addressing it, in consultation with the Steering Committee and a number of key informants, and with the aid of several conceptual frameworks that organize thinking about ways to approach the issue;
- 3) identifying, selecting, appraising and synthesizing relevant research evidence about the problem, options and implementation considerations;
- 4) drafting the evidence brief in such a way as to present concisely and in accessible language the global and local research evidence; and
- 5) finalizing the evidence brief based on the input of several merit reviewers.

The three options for addressing the problem were not designed to be mutually exclusive. They could be pursued simultaneously or in a sequenced way, and each option could be given greater or lesser attention relative to the others.

The evidence brief was prepared to inform a stakeholder dialogue at which research evidence is one of many considerations. Participants' views and experiences and the tacit knowledge they bring to the issues at hand are also important inputs to the dialogue. One goal of the stakeholder dialogue is to spark insights – insights that can only come about when all of those who will be involved in or affected by future decisions about the issue can work through it together. A second goal of the stakeholder dialogue is to generate action by those who participate in the dialogue and by those who review the dialogue summary and the video interviews with dialogue participants.

vaccination for those who are five years of age or older.<sup>(5)</sup> With a recently elected majority government that has already signaled its intent to introduce nurse prescribing,<sup>(6;7)</sup> it appears timely to explore whether the implementation of a new pharmacist-prescribing model could further contribute to achieving the province's key health-system goals.

This evidence brief and the stakeholder dialogue it was prepared to inform were designed to guide the actions of those involved in exploring models for pharmacist prescribing in primary and community care settings in Ontario. More specifically, the evidence brief will examine what is known from existing research evidence and from studies that are currently underway about pharmacist prescribing in primary and community care settings. In this section of the brief, we propose key definitions to ensure a common conceptual understanding. We also highlight the possible rationales for expanding pharmacist-prescribing authority, the key features of the context for pharmacist prescribing in Ontario, and current pharmacist-prescribing models in Ontario and other select jurisdictions. The second section focuses on some of the key challenges facing our health system that are germane to a discussion about pharmacist prescribing. In the third section we propose three options to address the problem. Lastly, we highlight key implementation considerations for moving forward.

Within this scope, the evidence brief is focused only on the best available research evidence and (as explained in Box 1) does not contain recommendations. Moving from evidence to recommendations would have required the authors to introduce their own values and preferences, and this role is better suited to participants in the stakeholder dialogue. In addition, the issue of pharmacist prescribing in hospital and other institutional care settings was deemed too broad to be addressed within the scope of this brief.

## Key definitions

This evidence brief uses several key terms that need to be defined at the outset, and in some cases that need to be situated within the context of Ontario's legal framework. These concepts are: primary and community care, drugs, select professional actions related to drugs (i.e., diagnosing, administering, prescribing and deprescribing), conditions for which drugs can be prescribed (e.g., minor and common ailments), scope of practice as it relates to prescribing, and self-regulation as it pertains to professions whose scope of practice includes prescribing.

In this evidence brief, **primary and community care** cover a broad range of services designed to help people to live as independently as possible in the community, including: health promotion and disease prevention; the diagnosis, treatment and management of chronic and episodic illness; rehabilitation support; and end-of-life care.<sup>(8)</sup> It involves the coordination and provision of integrated care: 1) provided by a range of healthcare providers such as family physicians, nurses, nurse practitioners, social workers, pharmacists, dietitians, public-health practitioners and others; 2) delivered in a range of primary and community care settings, including (but not limited to) people's homes, Community Health Centres, Family Health Teams, Family Health Networks, Family Health Groups, Family Health Organizations, family physician offices, Nurse Practitioner-Led Clinics, nursing stations, and community pharmacies; and 3) delivered in a way that is both person- and population-centred and responsive to economic, social, cultural, linguistic and gender differences.<sup>(8)</sup>

We refer to **drugs** as any substance intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease. Several synonyms are often used interchangeably to refer to drugs, including medication, medicine and pharmaceuticals.<sup>(9)</sup> This seemingly straightforward definition becomes complicated as soon as precise legislation or regulation is required. The Drug and Pharmacies Regulation Act defines drugs as "any substance or preparation containing any substance:

- (a) manufactured, sold or represented for use in,
  - (i) the diagnosis, treatment, mitigation or prevention of a disease, disorder, abnormal physical or mental state or the symptoms thereof, in humans, animals or fowl, or
  - (ii) restoring, correcting or modifying functions in humans, animals or fowl,

- (b) referred to in Schedule I, II or III,
  - (c) listed in a publication named by the regulations, or
  - (d) named in the regulations,
- but does not include,
- (e) any substance or preparation referred to in clause (a), (b), (c) or (d) manufactured, offered for sale or sold as, or as part of, a food, drink or cosmetic,
  - (f) any “natural health product” as defined from time to time by the Natural Health Products Regulations under the Food and Drugs Act (Canada), unless the product is a substance that is identified in the regulations as being a drug for the purposes of this Act despite this clause, either specifically or by its membership in a class or its listing or identification in a publication,
  - (g) a substance or preparation named in Schedule U,
  - (h) a substance or preparation listed in a publication named by the regulations, or
  - (i) a substance or preparation that the regulations provide is not a drug.”(10)

In this evidence brief, we will also refer to three select professional actions related to drugs, also known as “controlled acts,” that can only be performed by authorized healthcare professionals under the Regulated Health Professions Act.(11) The first select professional action is **diagnosing**, which refers to determining the cause and nature of a disease or health condition. It is important to note that the regulations specify that it is the act of communicating a diagnosis that is a controlled act: “Communicating to [an] individual or his or her personal representative a diagnosis identifying a disease or disorder as the cause of symptoms of the individual in circumstances in which it is reasonably foreseeable that the individual or his or her personal representative will rely on the diagnosis.”(11) The second select professional action is **administering** a drug, which means “to supply a dose of a drug to a person for the purpose of immediate ingestion, application, inhalation, insertion or injection.”(9) Administering drugs by injection or inhalation are controlled acts.(11) The third select professional action is **prescribing**, which refers to writing or giving a prescription.(11) The prescription provides “a direction from a prescriber directing the dispensing of any drug or mixture of drugs for a designated person.”(10) The prescriber is “a person who is authorized under the laws of a province or territory of Canada to give a prescription within the scope of his or her practice of a health discipline.”(10) Another concept is relevant when discussing select professional actions related to drugs: **deprescribing**. The concept of deprescribing goes beyond medication cessation and may include “gaining a complete medication history, identifying medications for withdrawal, medication tapering and monitoring following cessation.”(12) This concept has gained increased attention as a way to handle unnecessary medication use and polypharmacy.(13)

The evidence brief also defines certain conditions for which drugs can be prescribed, such as minor and common ailments. A **minor ailment** is considered to be an illness or symptom(s) that is self-limiting, where the patient can reasonably self-medicate for, and can reasonably be expected to self-diagnose.(14) Minor ailments may include: acne (mild or minor), insect bites, cold sores, allergic rhinitis, oral thrush, diaper rash, canker sores, headaches and migraine, atopic dermatitis, bacterial skin infections, tinea infections, dyspepsia or gastroesophageal reflux disease, hemorrhoids, dysmenorrhea, and muscular skeletal pain, stiffness and spasm.(15) The concept of minor ailment is used by some individuals interchangeably with **common ailment**. For the purpose of this brief, we will distinguish minor ailments from common ailments, since many ‘common’ health conditions can be very serious and do not meet the criteria listed above (e.g., asthma, cancer, depression, diabetes and hypertension). However, we must acknowledge that these concepts remain debated and further discussion may be necessary to find concepts that would more accurately represent the types of clinical services that pharmacists can provide for such health conditions.(16)

The **scope of practice** for regulated healthcare professionals can have multiple dimensions, including how professionals are defined (i.e., who can call themselves a member of a profession); what they are trained to do; what they are authorized to do by legislation; what they actually do and how they do it; and what others expect a profession can do.(2;17) Various healthcare professionals have scopes of practice allowing different degrees of prescriptive authority in primary and community care settings in Ontario: physicians, dentists and nurse practitioners have complete prescriptive authority, while chiropractors, midwives, optometrists,

podiatrists and pharmacists have partial prescriptive authority. The Government of Ontario is currently planning to expand the scope of practice of registered nurses as it relates to prescribing.(6)

Lastly, a key concept to define is professional **self-regulation**. “Self-regulation is based on the concept of an occupational group entering into an agreement with government to formally regulate the activities of its members. Professional self-regulation is a regulatory model which enables government to have some control over the practice of a profession and the services provided by its members but without having to maintain the special in-depth expertise required to regulate a profession that would be required under direct regulation.”(18) The self-regulation model is important to consider when exploring which professions’ scope of practice should include prescriptive authority.

### Possible rationales for pharmacist prescribing

Table 1 below summarizes some of the key goals and expected benefits that have been put forward for pharmacist prescribing and how these align with key health-system goals in Ontario.(1)

**Table 1: Potential goals and expected benefits for pharmacist prescribing**

Health-system goals in Ontario	Potential goals and expected benefits for pharmacist prescribing
<b>Improve access</b>	<ul style="list-style-type: none"> <li>Pharmacist prescribing could: <ul style="list-style-type: none"> <li>make it easier or more convenient for patients to obtain the care that they need in a more timely and responsive manner (e.g., care for minor ailments, immunization, acting on point-of-care testing results);(9)</li> <li>provide an alternative to walk-in clinics and emergency room visits for patients who don’t have a regular primary-care provider or who are unable to access their regular provider (e.g., out-of-hours services);(9)</li> <li>reduce redundancy and interruptions in existing drug treatments that currently occur;(19;20)</li> <li>improve the overall patient experience as they navigate the health system;(9) and</li> <li>reduce demands on primary-care providers (e.g., physicians and nurse practitioners) that are related to minor medical tasks (and thus ease wait times for those most in need of physician and nurse practitioner care).(21)</li> </ul> </li> </ul>
<b>Inform patients</b>	<ul style="list-style-type: none"> <li>Pharmacist prescribing could: <ul style="list-style-type: none"> <li>increase the range of healthcare professionals from whom patients could choose to receive care and the range of settings in which patients could choose to receive care;(9) and</li> <li>make better use of the full knowledge and skills of pharmacists (especially given the difficulty any one profession faces with keeping and maintaining expertise with the number, range, and complexity of prescription drugs).(9)</li> </ul> </li> </ul>
<b>Connect services</b>	<ul style="list-style-type: none"> <li>Pharmacist prescribing could increase opportunities for inter-professional collaboration among pharmacists, physicians and other primary-care providers to improve the delivery of care.(9;19;20)</li> </ul>
<b>Protect the system</b>	<ul style="list-style-type: none"> <li>Pharmacist prescribing could allow pharmacists to perform tasks safely and effectively (e.g., improve medication management, adherence and patients’ outcomes),(9;19;20) and possibly at lower cost.(22)</li> </ul>

## **Context for pharmacist prescribing in Ontario**

Several key contextual features have influenced debates about pharmacist prescribing.

- The delivery of healthcare is primarily the responsibility of provincial and territorial governments in Canada, and financing is shared between the federal and provincial/territorial governments (but federal contributions are primarily for hospital-based and physician-provided care, not care provided by pharmacists outside hospitals and not for prescription drugs dispensed outside hospitals).(21)
- Some Ontarians receive public coverage for prescription drugs through the Ontario Drug Benefit Program, selected drug and/or disease specific programs (e.g., exceptional access program, inherited metabolic diseases program, new drug funding program for cancer care, respiratory syncytial virus program, special drugs program, and Visudyne program), and the Trillium Drug Benefit program.
- The regulation of health professions falls under provincial jurisdiction and is based on professional self-regulation (e.g., the Ontario College of Pharmacists is the registering and regulatory body for pharmacy practice in the province).
- Several key acts must be considered when exploring pharmacist prescribing in Ontario, including:
  - the Regulated Health Professions Act (1991), which established:
    - 13 controlled acts (e.g., to communicate a diagnosis, to administer drugs by injection or inhalation, and to prescribe drugs) that may only be performed by certain types of regulated healthcare professionals, and that these authorized professionals can delegate to other healthcare professionals such as pharmacists (see sections 27 and 28 proclaimed in 1993);(11) and
    - the Health Professions Regulatory Advisory Council (HPRAC) to advise the minister on health profession regulatory matters in Ontario;(11)
  - the Pharmacy Act (1991), which established the regulatory framework for the profession;(23) and
  - the Regulated Health Professions Statute Law Amendment Act, 2009 (Bill 179) which expanded the scope of practice of pharmacists and grants them prescriptive authority for certain drugs under select conditions.(5)
- Several key programs also must be considered given how they have expanded pharmacists' medication management services in recent years. In 2007, the government introduced MedsCheck, a one-on-one, 30-minute annual appointment with a pharmacist to review medications and help a patient better understand their medication therapy, and ensure that medications are taken as prescribed (for Ontarians taking a minimum of three medications for a chronic condition). Similar services were later added in 2010 for specific populations, including for diabetes patients (MedsCheck for Diabetes); for those who cannot easily leave their home (MedsCheck at Home), and for patients living in a licensed long-term care home residence (MedsCheck LTC). In 2011, the government expanded pharmacist services again by introducing the Pharmaceutical Opinion Program only for Ontarians covered by the Ontario Drug Benefit Program. The program allows pharmacists to consult with prescribers when potential drug-therapy problems are identified at the time of dispensing, or when conducting a MedsCheck medication review.(24)
- Pharmacists represent the third most visible group of regulated healthcare professionals in Ontario after nurses and physicians.
  - In 2014, there were 13,574 pharmacists licensed to provide direct patient care in the province.(25)
  - Of those, 44% were educated within the province, 20% in other Canadian provinces and the United States, and 36% outside Canada and the United States.(25)
  - The average age of pharmacists in Ontario is 45 years with 14% nearing retirement (aged 60 years or more).(25)
  - The majority of Ontario pharmacists primarily work in community pharmacies (76%), while the second most common workplace is the hospital and other healthcare facilities (18%).(25)

Pharmacist prescribing has been the subject of many health-policy debates in the past two decades. Several sources of ideas may have fuelled this interest.

- Many jurisdictions in Canada and abroad have made significant changes to pharmacists' scope of practice, including implementing pharmacist-prescribing models.(3;4;26;27)
- In 2002, the Commission on the Future of Health Care in Canada highlighted the need to change traditional scopes of practice to reflect changes in the way healthcare services are delivered, and to support the growing need for collaborative teams and networks of healthcare professionals (including the need to introduce new and enhanced roles for pharmacists and potentially for non-community pharmacists to prescribe drugs under specific, limited conditions).(28)
- That same year, the Ontario Minister of Health and Long-Term Care submitted a request to the Health Professions Regulatory Advisory Council (HPRAC) to provide recommendations on mechanisms to facilitate and support interprofessional collaboration, as well as recommendations regarding a new framework for the prescribing and use of drugs by non-physician regulated health professions (including pharmacists). This request led to a two-year consultation process that culminated in the publication of a report in 2009. In this report, HPRAC recommended, among other things, "that Ontario consider developing a minor ailments program for Ontario, and that a collaborative process to develop details for such a program be initiated."(9)
- In December 2009, the Regulated Health Professions Statute Law Amendment Act (Bill 179) was adopted in Ontario.(5) Bill 179 aimed to strengthen government oversight of the health regulatory colleges, promote interprofessional collaboration, and expand the scopes of practice of several health professions (including granting prescriptive authority to pharmacists for certain drugs under select conditions) in an effort to make better use of their skills and training, and to improve health-system efficiency.(21) Bill 179 was supported by the Ontario Pharmacists Association, which argued that it could potentially save the Ontario government more than \$130 million per year.(21)
- The final report of the Commission on the Reform of Ontario's Public Services released in 2012 called for a reconfiguration and expansion of the scope of practice of pharmacists to allow them to prescribe for minor ailments (as suggested by the HPRAC report in 2009).(22) To date, no actions have been taken to implement such a minor ailments program in Ontario.
- In recent years, the government of Ontario has indicated its focus on supporting greater interprofessional collaboration, and its commitment to find ways to deliver the right care, at the right time, and at the right place.(1)

### Key features of current pharmacist-prescribing models in Ontario

Prescribers can have different levels of prescribing authority. In this evidence brief, we adapted the work of Emmerton and colleagues,(4) who proposed three models (or levels) of prescribing, which could inform discussion about pharmacist prescribing in Ontario.

- **Independent prescribing:** In this model, the prescriber is solely responsible for patient assessment, diagnosis (if applicable) and clinical management (e.g., renew existing prescriptions, adapt existing prescriptions, and initiate new prescriptions). It requires legally defined levels of knowledge and skill that are usually monitored through a licensing process. In some jurisdictions, pharmacists may independently prescribe 'preventative' drug therapies without a 'diagnosis' or 'self-diagnosis' being made (e.g., a vaccine, an anti-malarial for prophylaxis, an antibiotic in the event of traveller's diarrhea, and treatments for smoking cessation).
- **Collaborative prescribing:** In this model, there is a cooperative practice relationship between a pharmacist, a physician, a nurse practitioner, and/or a practice group with the legal authority to prescribe drugs. An explicit collaborative agreement is negotiated within each facility, outlining who is responsible for patient assessment, diagnosis and clinical management, including who is receiving prescriptive authority. The collaborative agreement aims to optimize the specific training and knowledge of all healthcare providers involved in the delivery of patient care.

- **Dependent prescribing:** In this model, an independent prescriber (e.g., a physician or a nurse practitioner) delegates prescriptive authority to a pharmacist. This model incorporates restrictions on the pharmacists' prescribing activities, usually via written guidelines/protocols and formularies.

The current pharmacist-prescribing model in Ontario is a mix of independent, collaborative, and dependent prescribing practices. Under Bill 179, Ontario pharmacists can engage in the following types of independent prescribing:

- adapt a patient's prescription (which includes the dose of the prescribed drug, the dosage form of the prescribed drug, the directions for use of the prescribed drug, or the route of administration for taking the prescribed drug, but does not include therapeutic substitution);
- renew a patient's prescription for the purpose of continuity of care; and
- initiate prescription drug therapy (i.e., bupropion or varenicline) for the sole purpose of smoking cessation (nicotine replacement therapy is unscheduled and does not require a prescription, but many private insurers require a prescription for coverage).(5)

While these regulations provide some independent prescriptive authority to pharmacists, Bill 179 also states that pharmacists must comply with select conditions when adapting and renewing an existing prescription. Pharmacists adapting or renewing a prescription:

- must notify the primary-care provider in a reasonable time after a prescription has been renewed or adapted;
- must be in possession of the prescription to be renewed or adapted, or have access to the prescription;
- cannot renew a prescription that exceeds the lesser of the quantity that was originally prescribed or a six-month supply;
- must tell the patient that they can take the prescription to their pharmacy of choice;
- must maintain appropriate records of the change and the rationale to act; and
- cannot renew or adapt prescriptions for narcotic, controlled, targeted or monitored substances.(5)

On the other hand, as mentioned above, the Regulated Health Professions Act (1991) has regulations allowing dependent prescribing practices.(11) Direct orders and medical directives can be used to delegate prescriptive authority to pharmacists in primary and community care settings. The Federation of Health Regulatory Colleges of Ontario developed a guide to address questions regarding the delegation of controlled acts.(29) Similarly, the College of Physicians and Surgeons of Ontario adopted a practice guide regarding the delegation of controlled acts.(30) Family Health Teams developed templates for commonly used medical directives.(31)

Other initiatives in the province can support collaborative prescribing practices. For instance, the Federation of Health Regulatory Colleges of Ontario designed an interprofessional collaboration eTool.(32) This eTool can assist interprofessional teams (such as Family Health Teams) to coordinate care within the expanded (and sometimes overlapping) scopes of practice established under Bill 179. It was designed to assist interprofessional teams to coordinate care and to optimize roles, responsibilities and services to meet patients' needs.(32) Other tools are also used to formalize such collaborative agreements in order to delegate prescriptive authority to pharmacists (e.g., direct orders and medical directives).(29)

## Key features of pharmacist-prescribing models in select jurisdictions in Canada and abroad

There is significant diversity in pharmacist-prescribing models across Canada and abroad (Table 2). Most Canadian jurisdictions have legislation allowing pharmacists to independently prescribe medications in a variety of situations for many medical conditions.

Alberta was the first province to introduce an independent-prescribing model for pharmacists in 2007. The Alberta model is the broadest in the scope of its regulations, which allow pharmacists to apply for ‘Additional Prescribing Authorization’ (APA).<sup>(33)</sup> All licensed pharmacists can conduct assessments (for which they are paid \$20 per assessment by the provincial government) that may lead to adapting (including therapeutic substitution), extending or refusing to fill prescriptions. Further, pharmacists with APA status can initiate or manage medication therapy through an assessment (for which they receive \$25). They have established explicit criteria that are required to apply for APA status: “Pharmacists in good standing on the clinical register may apply for additional prescribing authorization after meeting these criteria:

- have at least one year of full-time experience in direct patient care while on the clinical pharmacist register;
- have strong collaborative relationships with other regulated health professionals;
- have and maintain the necessary knowledge, skills and attitudes and clinical judgment to enhance patient care; and
- have the required supports in his/her practice (e.g., access to information, communication, documentation processes) to enable safe and effective management of drug therapy.”<sup>(34)</sup>

All applications are evaluated by two members of the Alberta College of Pharmacists based on a criterion-referenced assessment tool. Applicants who meet or exceed the minimum standards receive authorization from the registrar to prescribe drugs set out in Schedule I of the National Association of Pharmacy Regulatory Authorities Drug Schedules, as well as vaccines for diphtheria, tetanus, pertussis, polio, haemophilus B, measles, meningitis, mumps, rubella and pediatric hepatitis B. Renewal of additional prescribing authorizations are automatic when pharmacists renew their practice permit if they meet all other requirements.<sup>(34)</sup> The idea of an advanced practice model (such as the one in Alberta) is also gaining attention in British Columbia, where the

### Box 2: Equity considerations

A problem may disproportionately affect some groups in society. The benefits, harms and costs of options to address the problem may vary across groups. Implementation considerations may also vary across groups.

One way to identify groups warranting particular attention is to use “PROGRESS,” which is an acronym formed by the first letters of the following eight ways that can be used to describe groups<sup>†</sup>:

- place of residence (e.g., rural and remote populations);
- race/ethnicity/culture (e.g., First Nations and Inuit populations, immigrant populations and linguistic minority populations);
- occupation or labour-market experiences more generally (e.g., those in “precarious work” arrangements);
- gender;
- religion;
- educational level (e.g., health literacy);
- socio-economic status (e.g., economically disadvantaged populations); and
- social capital/social exclusion.

The evidence brief strives to address all Ontarians, but (where possible) it also gives particular attention to two groups:

- older adults; and
- citizens/patients in rural areas.

Many other groups warrant serious consideration as well, and a similar approach could be adopted for any of them.

<sup>†</sup> The PROGRESS framework was developed by Tim Evans and Hilary Brown (Evans T, Brown H. Road traffic crashes: operationalizing equity in the context of health sector reform. *Injury Control and Safety Promotion* 2003;10(1-2): 11–12). It is being tested by the Cochrane Collaboration Health Equity Field as a means of evaluating the impact of interventions on health equity.



College of Pharmacists of British Columbia established an Advanced Practice Pharmacist Task Group in 2013.(35)

Alberta was also the first Canadian province to lay the legislative groundwork, through the APA, for a pharmacist-led minor ailment program. In 2011, Nova Scotia and Saskatchewan also introduced minor ailments programs. In 2014, Manitoba, New Brunswick and Prince Edward Island followed suit. Saskatchewan is currently the only jurisdiction where pharmacists are paid by the government to provide a minor ailments prescribing service. Nova Scotia will soon be launching a government-funded demonstration project for three minor ailments as a follow-up to its earlier pilot work. Since then, British Columbia and Newfoundland have submitted proposals for minor ailments programs.

Quebec has recently adopted a model allowing for more collaborative prescribing practices. In 2013, three health colleges (nurses, physicians and pharmacists) along with the province's National Institute of Excellence in Health and Social Services, and the Ministry of Health and Social Services announced the achievement of an agreement enabling the dissemination of national 'collective prescriptions' to address four clinical contexts: anticoagulation, diabetes, dyslipidemia and hypertension.(36) A 'collective prescription' is a prescription given by a physician or physicians to a professional or a group of qualified professionals for a determined clinical situation, such as a chronic condition. This prescription allows the authorized professional to undertake diagnostic or therapeutic measures, conduct exams or tests, or initiate or adjust drug treatment for a patient without the need to see a physician first.(36) These first collective prescriptions were developed by expert panels under the guidance of Quebec's Ministry of Health and Social Services in collaboration with the three colleges (nurses, physicians and pharmacists) and other relevant professional groups.(37) In addition, the long-awaited Bill 41 will soon expand the scope of practice of pharmacists, allowing them to: adapt/prolong a prescription; substitute a drug in case of stock shortage; prescribe for certain minor conditions already diagnosed by a physician or those not requiring a diagnosis; administer a medication for educational purpose; and prescribe and interpret lab tests.(38)

Other examples of collaborative prescribing agreements can be seen in the United States. Known as 'collaborative drug therapy management', these collaborative agreements can be filed with a State Pharmacy or Medical Board.(4) Under such collaborative agreements, qualified pharmacists can work within a defined protocol to assume responsibility for performing patient assessments, ordering laboratory tests, and selecting, initiating, monitoring and adjusting drug regimens. These collaborative agreements have been officially implemented in more than 75% of the states and by the federal government (armed forces and Veterans Affairs).(39)

In the United Kingdom, two key pharmacist-prescribing models have been implemented: supplementary prescribing in 2003 (a type of dependent prescribing where there is a voluntary partnership between the independent prescriber and a supplementary prescriber, to implement an agreed patient-specific clinical management plan with the patient's agreement) and independent prescribing in 2006 (a model allowing pharmacists to assess patients' health and make clinical decisions about how to manage their conditions, as illustrated by the pharmacy-based minor ailments programs).(4;27;40-42)

**Table 2:** Comparison of pharmacist-prescribing models in select jurisdictions in Canada and abroad

Jurisdiction		Year of introduction	Highest level of prescriptive authority <sup>a</sup>	Scope of practice			Government-sponsored pharmacist services
				Initiate	Adapt	Renew	
Canada	British Columbia	2009	Dependent	X	✓	✓	Medication reviews, immunization (influenza, pneumococcal, pertussis), adaptation, renewals, refusals to fill, and therapeutic substitutions
	Alberta	2007	Independent	✓ <sup>b</sup>	✓	✓	Patient care plans (including medication reviews [standard medication management assessments SSMA and comprehensive annual care plans CACP, minor ailments <sup>b</sup> and smoking cessation), immunization (influenza), administration of drugs by injection, initiation <sup>b</sup> (including minor ailments <sup>b</sup> ), adaptation, renewals, refusals to fill, therapeutic substitutions, trial prescriptions (including pharmaceutical opinions), and emergency prescription refills
	Saskatchewan	2011	Independent	✓ <sup>c</sup>	✓	✓	Medication reviews, initiation <sup>c</sup> , adaptation, renewals, refusals to fill, minor ailments, emergency prescription refills, smoking cessation, and trial prescriptions
	Manitoba	2014	Independent	✓	✓	✓ <sup>d</sup>	Immunization (HPV, Tdap, influenza, pneumococcal)
	Ontario	2012	Independent	✓ <sup>e</sup>	✓	✓	Medication reviews, immunization (influenza), initiation <sup>c</sup> , refusals to fill, pharmaceutical opinions, and smoking cessation
	Québec	2011	Collaborative	Pending	Pending	Pending	Refusals to fill and pharmaceutical opinions
	New Brunswick	2008	Collaborative	✓ <sup>f</sup>	✓	✓	Medication reviews and immunization (influenza)
	Nova Scotia	2011	Independent	✓	✓	✓	Medication reviews, immunization (influenza), adaptation, refusals to fill, and therapeutic substitutions
International	United States	1990s-2000s <sup>g</sup>	Collaborative	✓	X	X	All states: immunization (influenza, pneumococcal, pertussis, hepatitis A, hepatitis B, herpes zoster, polio, Lyme disease, measles, meningococcal, mumps, rabies, rotavirus, rubella, tetanus, typhoid, varicella, and yellow fever) Varies across states: medication reviews, smoking cessation, patient education and monitoring, prescriber consultation, and diabetes self-management training
	United Kingdom	2006	Independent	✓	X	X	U.K.: immunization (flu) England: medication reviews, minor ailments consultation, appliance use review, and new medication service consultation Scotland: medication reviews, minor ailment service, smoking cessation (may include prescribing), and heart failure service Wales: medication reviews and discharge medicines review Northern Ireland: minor ailments consultation
	Australia	n/a	None	X	X	✓	Medication reviews

<sup>a</sup> Levels of prescriptive authority are hierarchical as follows from the top: independent, collaborative, dependent. If a region demonstrates multiple levels of prescriptive authority the highest on the hierarchy was listed.

<sup>b</sup> Pharmacist must have additional prescribing authorization (APA).

<sup>c</sup> Only for minor ailments.

<sup>d</sup> As continued care prescriptions.

<sup>e</sup> Only specified drugs for smoking cessation (bupropion and varenicline).

<sup>f</sup> Prescribing constitutes adapting, emergency prescribing or within a collaborative practice; independent prescribing or as part of minor ailments prescribing is pending.

<sup>g</sup> Year varies by state.

## **THE PROBLEM**

The challenges of meeting Ontario's health-system goals – to improving access to care, connecting services, supporting people and patients, and protecting our universal public-health system – can be understood by considering three aspects of, or contributors to, the problem: 1) primary-care providers are delivering care for a wide range of conditions, which results in a significant burden on their shoulders and gaps in services; 2) current health-system arrangements limit capacity to improve the situation; and 3) some courses of action have not been fully implemented. We address each of these in turn.

### **Primary-care providers are delivering care for a wide range of conditions, which results in a significant burden on their shoulders and gaps in services**

The first set of challenges is that primary-care providers are delivering care for a wide range of conditions (e.g., minor ailments, chronic health conditions, and conditions that can be prevented by immunization), which results in a significant burden on their shoulders and gaps in services.

#### *Minor ailments*

Minor ailments have a significant impact on busy clinics and emergency departments.(43;44) In 2009, it was estimated that 24% of Canadians aged 15 years and older who required health services for themselves or a family member reported difficulty obtaining immediate care for a minor ailment (e.g., fever, vomiting, major headaches, sprained ankle, minor burns, cuts, skin irritation, unexplained rash, and other non-life threatening health problems or injuries due to a minor accident).(45) In 2013, it was estimated that most patients in Ontario (nine out of 10) spent about four hours in emergency if they required care for a minor ailment.(46) Visits to emergency departments for minor ailments are not only more expensive than care provided in other settings (e.g., family physician offices, walk-in clinics), but it is also associated with higher re-utilization rates in Ontario.(47)

This situation resonates with the experience in other jurisdictions where consultations for minor ailments represent a major burden on high-cost settings (e.g., primary-care clinics and emergency departments).(48) It has been estimated that consultations and treatments for minor ailments in primary-care settings represented 20% of the total workload of family physicians in the United Kingdom.(49) A study conducted in the United States estimated that 14% to 27% of all emergency department visits could have been re-directed to alternative care settings (e.g., urgent care centres or 'retail' healthcare clinics operating out of pharmacies, grocery stores, and 'big box' stores).(50)

Primary-care providers, the public and patients may be frustrated by this situation,(43;51) particularly given the public's desire to access effective self-care options.(52) Indeed, minor ailments can typically be reliably self-diagnosed by patients, and some prescription drugs may be safe and effective in treating such conditions, such as antivirals (topical, oral) for cold sores; antifungals (oral) for oral thrush; antibiotics (topical) for acne and skin infections; and corticosteroids for atopic dermatitis and mild mouth ulceration. Moreover, some of the relevant drugs to treat such minor ailments are over-the-counter drugs in other jurisdictions (e.g., fluticasone).

#### *Chronic health conditions*

### **Box 3: Mobilizing research evidence about the problem**

The available research evidence about the problem was sought from a range of published and "grey" research literature sources. Published literature that provided a comparative dimension to an understanding of the problem was sought using three health services research "hedges" in MedLine, namely those for appropriateness, processes and outcomes of care (which increase the chances of us identifying administrative database studies and community surveys). Published literature that provided insights into alternative ways of framing the problem was sought using a fourth hedge in MedLine, namely the one for qualitative research. Grey literature was sought by reviewing the websites of a number of Canadian organizations, such as the Health Professions Regulatory Advisory Council, Ontario Pharmacists Association, Canadian Pharmacists Association, and Blueprint for Pharmacy.

Priority was given to research evidence that was published more recently, that was locally applicable (in the sense of having been conducted in Canada), and that took equity considerations into account.

Chronic health conditions are a significant and growing challenge in Canada. Experts concluded that “patients with multiple [chronic] conditions are the rule rather than the exception in primary care.”(53) Moreover, a recent study revealed that the prevalence of multimorbidity (i.e., the co-existence of two or more chronic health conditions) among Ontarians increased from 17% in 2003 to 24% in 2009, which represents a 40% increase. An increase in the prevalence of multimorbidity can be observed across all age groups.(54)

The most prevalent conditions in Ontario as of 2009 were, in order of prevalence, osteoarthritis and other arthritis, hypertension, asthma, depression, diabetes and cancer.(54) These chronic conditions not only share common risk factors and conditions, but they also commonly occur together. For instance, 75% of Canadians with diabetes, heart disease, cancer or chronic obstructive pulmonary disease also have one or more other chronic conditions. Furthermore, more than 50% of people with high blood pressure or arthritis have at least one additional chronic condition, and 25% of people with mood disorders have other chronic conditions.(55)

With the growing prevalence of multimorbidity also comes a growing prevalence of polypharmacy, which can be defined as “the concomitant ingestion of four or more medications.”(56) Polypharmacy is associated with negative health outcomes, including adverse drug events, poor adherence, and various syndromes among older adults, such as urinary incontinence, cognitive impairment, and impaired balance leading to falls. The risk of an adverse drug event is 13% with the use of two medications, but increases to 58% when five medications are used and to 82% when seven medications are used.(56)

The risk associated with polypharmacy illustrates the need to support the uptake of optimal prescribing practices. In some circumstances, deprescribing for patients with multimorbidity may constitute an essential step in minimizing adverse drug events.(57) Yet, caring for people with multimorbidity and polypharmacy raises a number of challenges and uncertainties. Optimal prescribing for patients with multimorbidity requires intricate knowledge of doses and dosing regimens, pharmacology, pharmacokinetics and pharmacodynamics, drug–drug interactions and drug monitoring.(57) Decisions are often made “in the context of multiple, often ill-defined, problems and fragmentary evidence.”(53) For instance, there may be uncertainty about the benefits and harms of simultaneous drug treatments. There is also the potential risk of worsening one condition by treating a coexisting one. There is a paucity of guidelines that outline approaches for treating people with multimorbidity, or that more generally take a patient-centred approach that allows for flexibility and takes into account patient preferences. Despite the growing number of people with multiple chronic conditions, the majority of treatment guidelines focus on single diseases and rarely address how to optimally integrate care for people with multimorbidity.(58-60) As a result, there are recurring concerns about the treatment burden arising from this type of approach.(61) More generally, following guideline recommendations for any single disease would consume significant amounts of time for primary care physicians (54) and may become, in the context of multimorbidity, “impractical, irrelevant or even harmful.”(62) Lastly, some primary-care providers may not feel comfortable in engaging in discussion regarding polypharmacy and deprescribing. A qualitative study examining the views of Dutch family physicians revealed that they experienced discomfort in ceasing or reducing medications in patients with complex drug regimens. They were reluctant to discuss the issue of deprescribing because patients could interpret this as a sign of giving up on them.(63)

The growing prevalence of multimorbidity and polypharmacy, coupled with the fact that prevalence grows steadily with age, reveals the importance of designing new integrated approaches to care in the province, but also suggests the need to explore optimizing the scopes of practice of those with the knowledge, skills and abilities to maximize the effectiveness of drug treatments.

*Conditions that can be prevented with immunization*

Immunization is a cornerstone of public health. Yet, recent outbreaks in the province (e.g., measles, mumps) have drawn attention to gaps in immunization coverage. A recent report by the C.D. Howe Institute revealed that Ontario is failing to meet national vaccination coverage targets for most routine childhood vaccinations.(64) But immunization coverage for adults is also falling short. A 2006 Canadian Adult National Immunization Survey revealed that 49% of adult Ontarians have not received a tetanus booster in the last 10 years, and only 41% who indicated they have work-related exposure risk to hepatitis B say they have been immunized against it.(65) If immunization coverage for children and adults continues to fall, more vulnerable populations will be put at risk of contracting infectious diseases.

An old and medium-quality review identified several factors associated with the lack of adherence to vaccination schedules in children in developed countries, including (but not limited to): ethnocultural background, low socioeconomic status, low parental education, older age of the child, younger maternal age, large family size, late birth order, lack of knowledge about disease and vaccination, negative beliefs/attitudes towards immunization, fear of side-effects/risks/contraindications, not remembering vaccination schedules and appointments, sick child delays and delayed well child visits, skepticism/doubts regarding provided medical information, inadequate support from healthcare providers, lack of available health structures, and problems concerning transportation and accessibility to immunization clinics (as well as paying for immunization and lack of health insurance, neither of which is currently important in Ontario).(66) The lack of accessibility to immunization services has also been identified as a key issue in Canada according to the C.D. Howe Institute report, with concerns about the lack of access to healthcare professionals with prescriptive authority, the lack of convenience of operating hours of clinics and doctors' offices, language difficulties, and transportation costs for those in rural and remote areas.(64) This report also suggested that the limited scopes of practice of some primary-care providers (including pharmacists) constituted a barrier to improving immunization coverage, particularly in areas lacking convenient access to care.(64)

**Current health-system arrangements may limit capacity to improve the situation**

A variety of features about the delivery, financial and governance arrangements within Ontario's health system may also limit capacity to improve the situation.

*Delivery arrangements*

Delivery arrangements in Ontario's health system contribute to four sets of challenges:

- **A lack of access to primary-care providers:** It is estimated that 9.2% of Ontarians do not have access to a regular physician (67) and 3.2% of sicker adults in the province do not have a regular physician or place to go for medical care.(68) Among those sicker adults who do have a place to go for care, only half of them could see a doctor or nurse on the same or next day the last time they were sick.(68)
- **A lack of interprofessional collaboration limiting the health system's capacity to deliver better coordinated and integrated care:** Interprofessional collaboration has been argued to be key to delivering better coordinated and integrated care, and may improve patients' outcomes.(69-73) However, such collaboration occurs relatively infrequently in primary and community care settings.(74) Several professional, cultural and operational barriers to interprofessional collaboration can be identified at the practice level, which include (but are not limited to):
  - healthcare professionals are often unaware of each other's roles, do not understand each other's roles, or are reluctant to acknowledge each other's competencies and scopes of practice;(75)
  - ambiguity regarding what constitutes interprofessional collaboration and what makes such collaboration successful;(75)

- different standards for shared or similar controlled acts, which may create competition and compel some professions to try to preserve their exclusive authority with respect to scope of practice activities that are unique (i.e., “turf protection”);(75)
- a lack of time, resources, guidance and support to move forward with interprofessional collaboration;(75) and
- there may be insufficient physical space to accommodate different professionals in many existing primary and community care settings.(74)
- **A lack of comprehensive information and communications technology infrastructure limiting the health system’s capacity to deliver better coordinated and integrated care:** There is currently a lack of comprehensive, reliable and secure information and communication technology infrastructure, such as electronic health records (a system enabling prescribers and other healthcare professionals to access health information about individual patients) and drug-information system (a system enabling prescribers and other healthcare professionals to access, manage, share and safeguard patients’ medication histories). The lack of such infrastructure may exacerbate the fragmentation of care, limit capacity to monitor patients along the continuum of care, and increase the risk of adverse drug events. The latter is particularly important if prescriptive authority is extended to several healthcare professionals and these professionals are unable to communicate changes in a patient’s medication in an effective and timely manner.(9;19;20;57)
- **A lack of efforts to produce common prescribing guidelines limiting the health system’s capacity to ensure patient safety:** The 2009 report from the Health Professions Regulatory Advisory Council revealed the need to develop “explicit and comprehensive approaches to safe prescribing and medication administration.”(9) This was seen as particularly important in a context where multiple healthcare professionals with prescriptive authority work in different settings, but provide care for the same health conditions or patient populations. Some initiatives in the United Kingdom are underway to develop common prescribing guidelines, and some hospitals have also developed interprofessional medication management protocols, but no comprehensive efforts have been made in Ontario to address this issue.(9)

#### *Financial arrangements*

An important gap in financial arrangements also contributes to the limited capacity for improving the situation:

- **Current funding arrangements limiting the health system’s capacity to deliver better coordinated and integrated care:** Ontario’s publicly funded health system is distinguished by a long-standing private delivery/public payment agreement between the government on the one hand, and physicians on the other; and the private practice element of the agreement has typically meant that physicians have been wary of potential infringements on their professional and commercial autonomy (e.g., directives about the nature of the care they deliver or the way in which they organize and deliver that care). Other primary-care providers such as nurses, physiotherapists, dietitians and pharmacists, as well as teams led by these providers, are typically not eligible for public fee-for-service payment (or at least not on terms that make independent healthcare practices viable on a large scale). The Health Professions Regulatory Advisory Council observed in 2008 that “different remuneration methods and incentives lead to turf protection and power imbalances at the clinical level.”(75) Remuneration systems currently in place are a potential barrier to the optimization of scopes of practice and may limit the provision of clinical care services by alternative primary-care providers.(2)

### *Governance arrangements*

Lastly, three key gaps in current governance arrangements also limit the capacity for improving the current situation:

- **A complex regulatory framework limiting the health system's capacity to deliver better coordinated and integrated care:** Current governance arrangements related to the regulation of scopes of practice may impede innovation and reinforce silos.(2) For instance, overlapping scopes of practice can create barriers to collaboration (e.g., different interpretations of the same or similar controlled acts, and different standards and guidelines adopted by professions that perform them).(9)
- **The current approval process to include 'new' drugs that can be prescribed by non-physician prescribers may not be efficient:** In 2007, Ontario's minister of health's request to the Health Professions Regulatory Advisory Council (HPRAC) suggested that there are inefficiencies in the current approval process to include 'new' drugs that can be prescribed by non-physician prescribers. HPRAC indicated that it often takes years for a single drug to be added to regulations under a health profession Act.(9) Using an approved drug list may also create challenges since it can be hard to keep such a list up to date with therapeutic advances.
- **A lack of interprofessional collaboration at the regulatory level limiting the health system's capacity to deliver better coordinated and integrated care:** In 2009, the HPRAC observed a lack of collaboration among health colleges, which impeded capacity to respond to change and meet key health-system goals. Therefore, HPRAC called for a more collaborative approach to self-regulation by health colleges.(9) HPRAC's observation was made in light of recent changes to the Regulated Health Professions Act's Procedural Code. The legislative framework now requires each health regulatory college to support interprofessional collaboration by: 1) promoting and enhancing relations between the colleges and their members, other health profession colleges, key stakeholders, and the public; 2) promoting interprofessional collaboration with other health profession colleges; and 3) developing, establishing and maintaining standards and programs to promote the ability of members to respond to changes in practice environments, advances in technology and other emerging issues.(10) Regulatory colleges have indicated their desire to fulfil these new objectives, and recent initiatives illustrate such efforts (e.g., the development and promotion of the interprofessional collaboration eTool).(32)

### **Some courses of action have not yet been fully implemented**

The province of Ontario took some initial steps in supporting greater interprofessional collaboration and expanding the scope of practice of some healthcare professionals (including granting prescriptive authority to pharmacists for certain drugs and select conditions) with the adoption of Bill 179 in 2009. However, there were significant delays in the implementation of the reform (e.g., the regulations under Bill 179 were only passed in October 2012) and in the promotion of the new and expanded roles for these healthcare professionals (e.g., the Ontario Pharmacists Association only launched a public awareness campaign about the new services provided by pharmacists two years later, in March 2014). Thus, it may still be too early to determine the overall impact of Bill 179 in meeting health-system goals.(21)

A number of examples suggest that health-system stakeholders in Ontario (and across Canada) are also not moving on other agreed courses of action. For instance, the implementation of a minor ailments program has been recommended by both the Health Professions Regulatory Advisory Council (9) and the Commission on the Reform of Ontario's Public Services,(22) but no actions have been taken by the provincial government in this direction. Nevertheless, various efforts are in place or are in development to prepare pharmacists with the supports associated with minor ailment assessments and prescribing. The University of Toronto recently launched its new Minor Ailments program at the Leslie Dan Faculty of Pharmacy to equip pharmacists with "the skills, confidence, and tools needed to successfully advance the treatment of minor ailments in their practice"(76), while the Ontario Pharmacists Association is reconfiguring its existing program into a more comprehensive, modular format that will focus on providing pharmacists with clinical, operational and logistical

supports and tools that cover pathophysiology, best practices for patient assessments, comprehensive treatment options and algorithms, red flags and referral protocols, documentation, monitoring, and follow-up.

At a pan-Canadian level, the Blueprint for Pharmacy is an advocacy coalition, led by the Canadian Pharmacists Association and working with other provincial and national pharmacy stakeholders, aiming to take the profession to the next level of patient care. Their vision of pharmacy includes, among other things, that a pharmacist should be able to “initiate, modify and continue drug therapy (e.g., through collaborative agreements, delegated or prescriptive authority), and order tests.”(77) The Blueprint for Pharmacy launched a national public relations campaign to communicate how the profession aligns with the Canadian public’s healthcare needs.

### **Additional equity-related observations about the problem**

An important element of the problem that requires further discussion is how the problem may disproportionately affect certain groups or communities. With respect to the challenges of reconfiguring scopes of practice and developing new models of care in Ontario, many groups warrant particular attention within this broad topic area. However, this evidence brief focuses on two groups for illustrative purposes: older adults, and citizens or patients living in rural areas.

In the next two decades, the number of Ontarians aged 65 or older is expected to double, those 85 and older to quadruple, and those 100 and older to triple.(78) Although the percentage of older adults with a family physician is high in Ontario (approximately 97%), providing timely access to primary and community care for older adults remains challenging, particularly given the growing prevalence of multimorbidity and polypharmacy.(79) It is estimated that 66% of Ontarians aged 65 to 74 are living with two or more chronic health conditions, and the risks grow with age.(54) Nearly two-thirds of older adults are on five or more drugs (and 21% took at least 10) according to the Canadian Institute for Health Information (CIHI).(79) As indicated earlier, the risks associated with polypharmacy are serious. CIHI estimated that 13% of older adults taking five or more prescription medications experienced adverse drug events that required medical attention.(80)

Those living in rural areas are another group that warrant particular attention. It is estimated that 15% of Ontario’s population lives in a rural community.(81) In 2010, the Rural and Northern Health Care Panel highlighted several challenges resulting in limited and inconsistent services across rural, remote and northern communities, including but not limited to:

- limited access across the continuum of care (e.g., hospitals being the default primary-care providers);
- scarcity of healthcare resources and infrastructures (e.g. community services, primary care/family health teams, emergency medical services and public health);
- limited availability of culturally and linguistically appropriate services;
- varied enablement of healthcare professionals to work at their full scope of practice;
- inconsistent implementation of potential interprofessional models across local communities;
- limited availability of transportation (emergent, inter-facility and non-urgent) coupled with long travel distances; and
- the lack of flexibility at the local level to drive innovations related to scope of practice, funding and system integration.

A recent systematic review and qualitative meta-synthesis revealed that “rurality can contribute to the vulnerability of people with chronic diseases.” Three key themes emerged from the analysis: 1) geographic distance from services poses access barriers, worsened by transportation problems or weather conditions; 2) the limited availability of healthcare professionals (coupled with low education of patients and lack of peer support) increases the feeling of vulnerability; and 3) patients may feel culturally marginalized in the urban health care context, especially if health literacy is low. These factors may affect healthcare-seeking behaviours and consequently exacerbate patients’ vulnerability.(82) To address the access challenges faced by citizens and patients in rural communities, many have called for a reconfiguration of scopes of practice and new models of



care. For instance, the Rural and Northern Health Care Panel recommended to “further support enhanced scopes of practice for health providers working in these communities to improve access (e.g. midwives, nurse practitioners, pharmacists, paramedics, midwives and unregulated workers), and eliminate policy, regulation or practice barriers that inhibit healthcare providers from working to their full scope of practice.” Such recommendations resonated with the work of the expert panel appointed by the Canadian Academy of Health Sciences, which pointed out that shortages of health workers are endemic in rural and remote areas in Canada, and that “scopes of practice must accommodate accordingly.”(83)

### **THREE OPTIONS FOR ADDRESSING THE PROBLEM**

Many elements could be selected as a starting point for deliberations. To promote discussion about the pros and cons of potentially viable ways forward, we have selected three options through which to explore models for pharmacist prescribing in Ontario.

These options are: 1) facilitate the system-wide adoption of prescribing agreements in primary and community care settings; 2) establish a pharmacist-prescribing program for minor ailments; and 3) establish an advanced practice pharmacist model. The default option is the status quo (i.e., the current pharmacist-prescribing model in Ontario).

The three options were identified and selected through a process of consultation with the Steering Committee and interviews with key informants. The options were selected based on the following principles: 1) they reflect a diversity of prescribing levels (independent, collaborative and dependent prescribing); and 2) they reflect models currently in place in other jurisdictions or build on existing initiatives in the province. The three options were not designed to be mutually exclusive. They could be pursued simultaneously or sequentially, or elements could be drawn from each element to create a new (fourth) option. They are presented separately to foster deliberations about their respective components, the relative importance or priority of each, their interconnectedness, the potential of (or need for) sequencing, and their feasibility.

In the following section of the evidence brief, we review available systematic reviews about each option in turn. While some of the research evidence may not deal specifically with pharmacist prescribing, it was included since it can provide relevant insights and spur reflection about each option. The principal focus is on what is known about these options based on findings from systematic reviews as well as economic evaluations or costing studies. We present the findings from systematic reviews along with an appraisal of whether their methodological quality (using the AMSTAR tool) is high (scores of 8 or higher out of a possible 11), medium (scores of 4-7) or low (scores less than 4) (see the appendix for more information about the quality-appraisal process).<sup>(84)</sup> We consider a review ‘recent’ if the year of last search is within the past five years and ‘older’ if the year of last search is more than five years ago.

#### **Box 4: Mobilizing research evidence about options for addressing the problem**

The available research evidence about options for addressing the problem was sought primarily from Health Systems Evidence ([www.healthsystemevidence.org](http://www.healthsystemevidence.org)), which is a continuously updated database containing more than 4,400 systematic reviews and more than 2,200 economic evaluations of delivery, financial and governance arrangements within health systems. The reviews and economic evaluations were identified by searching the database for reviews addressing features of each of the approach options and sub-elements.

The authors’ conclusions were extracted from the reviews whenever possible. Some reviews contained no studies despite an exhaustive search (i.e., they were “empty” reviews), while others concluded that there was substantial uncertainty about the option based on the identified studies. Where relevant, caveats were introduced about these authors’ conclusions based on assessments of the reviews’ quality, the local applicability of the reviews’ findings, equity considerations, and relevance to the issue. (See the appendices for a complete description of these assessments.)

Being aware of what is not known can be as important as being aware of what is known. When faced with an empty review, substantial uncertainty, or concerns about quality and local applicability or lack of attention to equity considerations, primary research could be commissioned, or an option could be pursued and a monitoring and evaluation plan designed as part of its implementation. When faced with a review that was published many years ago, an updating of the review could be commissioned if time allows.

**No additional research evidence was sought beyond what was included in the systematic review.** Those interested in pursuing a particular option may want to search for a more detailed description of the option or for additional research evidence about the option.

## **Option 1 – Facilitate the system-wide adoption of collaborative prescribing agreements in primary and community care settings**

This option aims to facilitate the system-wide adoption of explicit collaborative prescribing agreements negotiated in primary and community care settings. For instance, under such collaborative prescribing agreements, a physician or nurse practitioner could diagnose and make initial treatment decisions for a patient, but delegate prescriptive authority to a pharmacist who would then have the flexibility to select, initiate, monitor, adapt and decide whether to continue or deprescribe a drug (as appropriate) to achieve the agreed patient outcomes. Such collaborative agreements may identify the patient population for which the pharmacist has responsibility. All primary-care providers taking part in collaborative prescribing agreements would share the risk and responsibility for the patient outcomes.(4;85)

This option includes a process to develop details for such a model, as well as an implementation and communications plan. More specifically, elements of this option might include:

1. establishing collaborative prescribing agreements based on parameters defined through input from a multi-stakeholder working group, including but not limited to:
  - specific types of teams and how patient care should be organized;
  - written declarations for team members with explicit responsibilities, duties and liabilities, and required credentials;
  - common goals for patient care;
  - clear responsibility for the coordination of care and team leadership;
  - documentation and communication of protocols and procedures;
  - any additional provisions for the terms of the agreement, including evaluation and continuity provisions;
2. educating and training providers in interprofessional care approaches that could support functional and safe collaborative prescribing agreements;
3. implementing quality and safety monitoring systems;
4. launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model; and
5. identifying strategies to support evaluation and evidence-informed approaches to collaborative prescribing agreements.

This option could build on certain initiatives currently in place in Ontario that support interprofessional collaboration, such as the interprofessional collaboration eTool (32) and the use of medical directives to formalize such collaborative agreements.(29) This option also resonates with the development of ‘national collective prescriptions’ made by the ministry of health, the regulatory health colleges and other health-system stakeholders in Quebec,(37) as well as ‘collaborative drug therapy management’ agreements used in the United States.(4;39)

We found a limited body of synthesized research evidence that has direct relevance to option 1.

- We found no systematic review examining formal collaborative prescribing agreements (sub-element 1).
- We found seven systematic reviews examining pharmacist services delivered in primary-care clinics, with or without activities delivered collaboratively with family physicians (sub-element 1).(56;69-73;86) These reviews identified potential benefits for interprofessional collaboration between pharmacists and other primary-care providers, including improved access to care, process of care, patient outcomes in various areas of chronic disease management (e.g., medication adherence, patient knowledge, and quality of life), capacity to detect underlying diseases, and prescribing practices.
- We found one systematic review about educating and training providers in interprofessional care, showing that it may improve knowledge and skills necessary for collaborative working (sub-element 2).(87)
- We found several systematic reviews about implementing quality and safety monitoring systems (sub-element 3), revealing benefits for: audit and feedback;(88;89) pay-for-performance; (90) safety checklists; (90)

practice guidelines (90) and decision support systems;(88) quality-improvement collaboratives;(91;92) accreditation;(93) and small-group discussions in continuing professional education.(88)

- We found one systematic review about the use of mass media campaigns, in terms of their influence on public awareness and the utilization of health services (sub-element 4).(94)
- We found no systematic review relevant to identifying strategies to support evaluation and evidence-informed approaches to collaborative prescribing agreements (sub-element 5).

A summary of the key findings from the synthesized research evidence is provided in Table 3. For those who want to know more about the systematic reviews contained in Table 3 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 1.

**Table 3: Summary of key findings from systematic reviews relevant to sub-elements in Option 1 – Facilitate the system-wide adoption of collaborative prescribing agreements in primary and community care settings**

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> <li>• <b>Establishing collaborative prescribing agreements based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>○ A recent and medium-quality review revealed that interprofessional collaboration in Family Health Teams in Ontario have generated improvements in healthcare access and outcomes.(73)</li> <li>○ A recent and medium-quality review examining the effectiveness of clinical pharmacist services delivered in primary-care clinics (with or without activities delivered collaboratively with family physicians) found benefits for interventions delivered by pharmacists, which include: <ul style="list-style-type: none"> <li>▪ assessment, health and lifestyle advice;</li> <li>▪ medication initiation or adjustment; and</li> <li>▪ monitoring in conjunction with verbal communication (i.e. telephone or face-to-face).(69)</li> </ul> </li> <li>○ The same review revealed that pharmacist interventions improved prescribing practices and various areas of chronic disease management, such as: <ul style="list-style-type: none"> <li>▪ blood pressure;</li> <li>▪ glycosylated hemoglobin;</li> <li>▪ cholesterol; and</li> <li>▪ Framingham Coronary Heart Disease Risk Score.(69)</li> </ul> </li> <li>○ A recent and medium-quality review showed a significant association between the number of key elements of collaborative interventions between family physicians and pharmacists during medication review and the implementation rate of recommendations.(72)</li> <li>○ A recent and low-quality review exploring pharmacist-prescribing practices in Canada suggests that pharmacist prescribing in collaboration with other healthcare professionals can facilitate the detection of underlying diseases.(86)</li> <li>○ An old and medium-quality review examining the effectiveness of U.S. pharmacists as team members providing direct patient care (e.g., making or recommending medication adjustments via medication understanding education, disease understanding education, medication or intervention adherence education, prospective or retrospective drug utilization review, and chronic disease management) found benefits across various patient outcomes, healthcare settings, and disease states (e.g., medication adherence, patient knowledge, and quality of life/general health).(71)</li> <li>○ An old and low-quality review examining the effectiveness of task substitution between family physicians and pharmacists (as well as between family physicians and nurses) resulted in improved process of care and patient outcomes, such as improved disease control, among older adults with chronic disease. Identified pharmacist interventions that led to positive outcomes included: <ul style="list-style-type: none"> <li>▪ medication review; and</li> <li>▪ patient management using algorithms (e.g., change of medication or dose adjustment, risk factor screening, counselling).(70)</li> </ul> </li> </ul> </li> <li>• <b>Educating and training providers in interprofessional care approaches that could support functional and safe collaborative prescribing agreements</b> <ul style="list-style-type: none"> <li>○ An older and medium-quality review on interprofessional education found that it enables knowledge and skills necessary for collaborative working.(87)</li> </ul> </li> <li>• <b>Implementing quality and safety monitoring systems</b> <ul style="list-style-type: none"> <li>○ Three reviews, including two medium- and high-quality reviews, found the following benefits for public reporting: <ul style="list-style-type: none"> <li>▪ quality measures are likely to improve over time;(95)</li> <li>▪ knowledge about and attitude towards the use of quality information improved;(96) and</li> </ul> </li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>▪ small but increasing impact on consumers' decision-making.(97)</li> <li>○ Several reviews found benefits of various quality-improvement strategies, including: <ul style="list-style-type: none"> <li>▪ audit and feedback;(88;89)</li> <li>▪ pay-for-performance; (90)</li> <li>▪ safety checklists; (90)</li> <li>▪ practice guidelines (90) and decision support systems;(88)</li> <li>▪ quality-improvement collaboratives;(91;92)</li> <li>▪ accreditation;(93) and</li> <li>▪ small-group discussions in continuing professional education.(88)</li> </ul> </li> <li>• <b>Launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model</b> <ul style="list-style-type: none"> <li>○ An old but high-quality review found benefits for planned mass media campaigns and unplanned mass media coverage on the utilization of health services.(94)</li> </ul> </li> </ul>
Potential harms	<ul style="list-style-type: none"> <li>• <b>Implementing quality and safety monitoring systems</b> <ul style="list-style-type: none"> <li>○ One recent and medium-quality review found that public reporting may have a widening effect on racial disparities in healthcare,(98) but two recent and high-quality reviews found inconsistent evidence about the effects of public reporting on access to care and disparities.(95;99)</li> </ul> </li> </ul>
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> <li>• No systematic review addressed costs and/or cost-effectiveness</li> </ul>
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	<ul style="list-style-type: none"> <li>• Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> <li>○ <b>Identifying strategies to support evaluation and evidence-informed approaches to collaborative prescribing agreements</b></li> </ul> </li> <li>• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> <li>○ Not applicable</li> </ul> </li> <li>• No clear message from studies included in a systematic review <ul style="list-style-type: none"> <li>○ <b>Establishing collaborative prescribing agreements based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>▪ A recent and high-quality Cochrane review examining the effectiveness of interventions to improve the appropriate use of polypharmacy and reduce medication-related problems in older people (including skill-mix changes, pharmacist-led medication review services, and regulatory interventions such as changes in government policy or legislation affecting prescribing) found as yet little evidence that such interventions may be successful in ensuring that older people are receiving the right medicines, and it remains unclear whether they result in clinical improvements.(56)</li> <li>▪ An older and low-quality review examining the effectiveness of task substitution between family physicians and pharmacists (as well as between family physicians and nurses) found no evidence to suggest that it reduced health service usage.(70)</li> </ul> </li> <li>○ <b>Educating and training providers in interprofessional care approaches that could support functional and safe collaborative prescribing agreements</b> <ul style="list-style-type: none"> <li>▪ There is inconsistent or limited evidence from medium and high-quality reviews regarding the effectiveness of interprofessional education on: <ul style="list-style-type: none"> <li>• communication skills and clinical skills;(100)</li> <li>• attitudes and perceptions;(87;100) and</li> <li>• professional practice and healthcare outcomes.(101)</li> </ul> </li> </ul> </li> <li>○ <b>Implementing quality and safety monitoring systems</b> <ul style="list-style-type: none"> <li>▪ There is inconsistent or limited evidence about the effects of public reporting on: <ul style="list-style-type: none"> <li>• consumer, professional and organizational behaviours;(95;102)</li> <li>• safety;(103)</li> <li>• patient-centredness;(97;103)</li> <li>• access to care/disparities;(95;99)</li> <li>• patient-relevant outcomes;(99) and</li> <li>• mortality rates.(95)</li> </ul> </li> <li>▪ There is inconsistent or limited evidence about the effects of quality-improvement and accreditation mechanisms on: <ul style="list-style-type: none"> <li>• patients' perceptions of care;</li> <li>• healthcare utilization and costs; and</li> <li>• perceptions of primary healthcare providers.(93)</li> </ul> </li> </ul> </li> <li>○ <b>Launching a campaign to raise public awareness about the new, evolving roles and</b></li> </ul> </li> </ul>

	<p><b>responsibilities of pharmacists with the introduction of this model</b></p> <ul style="list-style-type: none"> <li>▪ An old but high-quality review found limited evidence about the characteristics of successful mass media campaigns, and notably about how messages should be framed.(94)</li> </ul>
Key elements of the policy option if it was already tried	<ul style="list-style-type: none"> <li>• <b>Establishing collaborative prescribing agreements based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>○ A recent and medium-quality review examining interprofessional collaboration in Family Health Teams in Ontario identified important determinants for collaborative team practice in a Family Health Team setting: <ul style="list-style-type: none"> <li>▪ clear vision;</li> <li>▪ flattened hierarchy/structures;</li> <li>▪ physician leadership and administrative leadership;</li> <li>▪ effective communication and electronic medical record integration;</li> <li>▪ shared time and shared space among provider groups;</li> <li>▪ education/training to prepare providers and education to prepare patients;</li> <li>▪ clearly defined and understood roles and scopes of practice for each professional;</li> <li>▪ group culture/roles based on provider strengths;</li> <li>▪ establishment of a system/process to ensure patients see the right professional;</li> <li>▪ patient-centered care focus;</li> <li>▪ external partnership/partners; and</li> <li>▪ adequate funding, human resources and remuneration.(73)</li> </ul> </li> <li>○ A recent and medium-quality review identified eight key elements reflecting collaboration between family physicians and pharmacists during medication review (but further research is required to determine which elements are most important): <ul style="list-style-type: none"> <li>▪ pharmacists with clinical experience;</li> <li>▪ patient's regular pharmacist is involved (i.e., a pharmacist who has an existing therapeutic relationship with his or her patient);</li> <li>▪ sharing of medical records;</li> <li>▪ patient interview by pharmacist;</li> <li>▪ invitation of patients by family physicians;</li> <li>▪ case conference between family physicians and pharmacists;</li> <li>▪ action plan; and</li> <li>▪ follow-up.(72)</li> </ul> </li> <li>○ An older and low-quality review concluded that when implementing skill-mix changes (e.g., task substitution), it is important that the health professionals' roles are complementary to avoid duplication.(70)</li> </ul> </li> <li>• <b>Implementing quality and safety monitoring systems</b> <ul style="list-style-type: none"> <li>○ An older and low-quality review examining the effectiveness of public reporting practices indicated that they must be embedded in ongoing efforts of relationship building with diverse audiences, trying to clearly understand their information needs and how they use such information, and educating them about the value and meaning of the information.(104)</li> </ul> </li> </ul>
Stakeholders' views and experience	<ul style="list-style-type: none"> <li>• <b>Establishing collaborative prescribing agreements based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>○ A recent and medium-quality review examining interprofessional collaboration in Family Health Teams in Ontario revealed that healthcare professionals working in FHTs can become frustrated when there is uncertainty in their roles and responsibilities.(73)</li> </ul> </li> <li>• <b>Implementing quality and safety monitoring systems</b> <ul style="list-style-type: none"> <li>○ An older and medium-quality review examining the effects of pay-for-performance and public reporting on racial disparities in healthcare revealed that the leaders of major performance incentive programs in the United States believed that current programs were not designed to reduce disparities, and often lack characteristics that may be important in reducing disparities (e.g., collecting race and ethnicity data, emphasizing conditions of higher prevalence in minorities, rewarding improvement, and encouraging nationally prominent organizations to establish disparity guidelines and/or measures).(98)</li> <li>○ An older and low-quality review exploring the evidence about the public release of performance data revealed that consumers and providers rarely search out this type of information and do not understand or trust it.(97)</li> </ul> </li> </ul>

## **Option 2 – Establish a pharmacist-prescribing program for minor ailments**

This option involves expanding the scope of practice of pharmacists by establishing a minor ailments program. Under a minor ailments program, a pharmacist could become a first point of contact for a patient requesting advice about treating minor, self-limiting, and self-diagnosed conditions, as well as prescribing treatment in situations where no diagnosis is required (e.g., a vaccine, oral contraceptives, and preventive therapy for travel such as an anti-malarial for prophylaxis or an antibiotic for traveller's diarrhea). If the self-diagnosis is reasonable based on the pharmacist's assessment, and if the best treatment option in the pharmacist's judgment is a prescription drug listed on an agreed formulary (e.g., a minor ailments guideline), the pharmacist would have prescriptive authority to initiate a drug treatment. If the pharmacist is unable to confirm the patient's self-diagnosis and/or the patient's symptoms are severe, the pharmacist would refer the patient to a physician or another appropriate primary-care provider.

This option includes a process to develop details for such a model, as well as an implementation and communications plan. More specifically, elements of this option might include:

1. establishing the details of a minor ailments program that would be suitable in Ontario based on parameters defined through input from a multi-stakeholder working group, including but not limited to:
  - criteria for minor ailments and for prescription drugs suitable for pharmacist prescribing for minor ailments;
  - the list of minor ailments that pharmacists could treat;
  - an agreed formulary including Schedule I, II and III drugs;
  - protocols for referral to and communication with other primary-care providers;
  - obtaining patient consent, and record-keeping;
  - options for reimbursement for professional services;
  - educational and competency requirements;
  - quality and safety requirements; and
  - process for continual review of formulary options;
2. establishing a multi-stakeholder- and/or research-driven process for developing practice standards for a minor ailments program;
3. implementing quality and safety monitoring systems;
4. launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model, and to educate the public about caring for minor ailments; and
5. identifying strategies to support evaluation and evidence-informed approaches to pharmacist prescribing for minor ailments.

This option aligns with minor ailments programs launched in Canadian provinces: Alberta through its additional prescribing authorization model,(34) Saskatchewan,(105) Manitoba,(106) New Brunswick,(15) Nova Scotia,(107) and Prince Edward Island.(26) Legislation on this issue is pending in Quebec and Newfoundland.(26) Similar minor ailments programs have been implemented in the United Kingdom for more than a decade.(108)

We found a limited body of synthesized research evidence that has direct relevance to option 2.

- There is evidence suggesting that pharmacy-based minor ailments programs are suitable alternatives to family-physician consultations (sub-element 1). These benefits include: high symptom-resolution rates, low re-consultation rates, and a decline of the total number of consultations and prescribing for minor ailments in primary-care clinics after the introduction of the pharmacy-based minor ailments programs.(41;86)
- We found one systematic review that has relevance to educating the public about caring for minor ailments (sub-element 4): a recent Cochrane overview of systematic reviews found that interventions to educate the public, provide information or to promote health/treatment may improve knowledge and immunization rates, but these interventions alone may be ineffective in improving adherence or clinical outcomes.(109)

- We found no new systematic reviews that could inform how to implement quality and safety monitoring systems (sub-element 3) besides those previously identified for option 1.
- We found no systematic reviews that could inform how to establish a multi-stakeholder- and/or research-driven process for developing practice standards for a minor ailments program (sub-element 2), and to identify strategies to support evaluation and evidence-informed approaches to pharmacist prescribing for minor ailments (sub-element 5).

A summary of the key findings from the synthesized research evidence is provided in Table 4. For those who want to know more about the systematic reviews contained in Table 4 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 2.

**Table 4: Summary of key findings from systematic reviews relevant to sub-elements in Option 2 – Establish a pharmacist-prescribing program for minor ailments**

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> <li>• <b>Establishing the details of a minor ailments program that would be suitable in Ontario based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>○ A recent and low-quality review exploring pharmacist-prescribing practices in Canada suggests that significant symptomatic improvements were reported by 81% of patients who received services from a pharmacy-based minor ailments program in Saskatchewan.(86)</li> <li>○ A recent and medium-quality review found the following benefits for pharmacy-based minor ailments programs in the United Kingdom: <ul style="list-style-type: none"> <li>▪ high symptom-resolution rates (proportion of patients reporting complete resolution of symptoms ranged from 68% to 94%);</li> <li>▪ low re-consultation rates in primary-care clinics (ranged from 2% to 23%); and</li> <li>▪ decline of the total number of consultations and prescribing for minor ailments in primary-care clinics following the introduction of pharmacy-based minor ailments services.(41)</li> </ul> </li> <li>○ One systematic review in progress is examining the impact of pharmacists as immunizers on vaccination rates, vaccine-preventable morbidity and mortality, safety, and cost-effectiveness.(110)</li> </ul> </li> <li>• <b>Launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model, and to educate the public about caring for minor ailments</b> <ul style="list-style-type: none"> <li>○ A recent Cochrane overview of systematic reviews found evidence that interventions to educate the public, provide information or to promote health/treatment may improve knowledge and immunization rates, but these interventions alone may be ineffective in improving adherence or clinical outcomes.(109)</li> </ul> </li> </ul>
Potential harms	<ul style="list-style-type: none"> <li>• No systematic review addressed potential harms</li> </ul>
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> <li>• <b>Establishing the details of a minor ailments program that would be suitable in Ontario based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>○ A recent and medium-quality review found that the mean consultation costs for users of pharmacy-based minor ailments programs in the United Kingdom were markedly lower than the mean cost of primary-care and emergency-department consultations, but no study included a full economic evaluation.(41)</li> </ul> </li> </ul>
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	<ul style="list-style-type: none"> <li>• Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> <li>○ <b>Establishing a multi-stakeholder- and/or research-driven process for developing practice standards for a minor ailments program</b></li> <li>○ <b>Implementing quality and safety monitoring systems</b> (no other reviews identified besides those previously identified for option 1)</li> <li>○ <b>Identifying strategies to support evaluation and evidence-informed approaches to pharmacist prescribing for minor ailments</b></li> </ul> </li> <li>• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> <li>○ Not applicable</li> </ul> </li> <li>• No clear message from studies included in a systematic review <ul style="list-style-type: none"> <li>○ <b>Establishing the details of a minor ailments program that would be suitable in Ontario based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>▪ A recent and medium-quality review examining the effectiveness of pharmacy-based minor ailments programs in the United Kingdom found limited evidence about: <ul style="list-style-type: none"> <li>• the extent to which these programs shift demand for management of minor ailments away from high-cost settings (e.g., impact of these programs on overall family physicians' workload);</li> </ul> </li> </ul> </li> </ul> </li> </ul>



	<p>and</p> <ul style="list-style-type: none"> <li>the decline of prescribing for minor ailments in primary-care clinics resulted in a similar increase in the supply of those prescribing drugs for minor ailments by pharmacists.(41)</li> <li>A recent and medium-quality review found limited data and evidence regarding the uptake, time required, clinical effectiveness and economic outcomes of remunerated clinical services provided by pharmacists, but the evidence suggests that the mere presence of a remuneration scheme is insufficient to ensure uptake.(111)</li> <li><b>Launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model, and to educate the public about caring for minor ailments</b> <ul style="list-style-type: none"> <li>A recent Cochrane overview of systematic reviews found insufficient evidence to determine whether interventions to educate the public, provide information or to promote health/treatment, when delivered alone, reduce adverse effects. (109)</li> <li>That same overview of systematic reviews found mixed results about how such interventions, in combination with others (e.g., self-management skills training, counselling, or as part of pharmacist-delivered packages of care) may improve adherence and other outcomes such as clinical outcomes and knowledge.(109)</li> </ul> </li> </ul>
Key elements of the policy option if it was already tried	<ul style="list-style-type: none"> <li><b>Establishing the details of a minor ailments program that would be suitable in Ontario based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>A recent and medium-quality review examining 60 remunerated clinical services provided by pharmacists (including minor ailments programs) found that these programs were highly variable across jurisdictions in terms of eligibility criteria, program requirements and fees offered (e.g., Saskatchewan had a \$18 fee; England had fees varying by primary care trust, ranging from \$4.68-10.93; and Northern Ireland offered \$15.68 for the first 500 consultations per pharmacy, \$12.55 for next 1,000 and \$10.21 per consultation thereafter).(111)</li> </ul> </li> </ul>
Stakeholders' views and experience	<ul style="list-style-type: none"> <li><b>Establishing the details of a minor ailments program that would be suitable in Ontario based on parameters defined through input from a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>A recent and medium-quality review examining the effectiveness of pharmacy-based minor ailments programs in the United Kingdom found: <ul style="list-style-type: none"> <li>general satisfaction among users (≥90% or more responders were willing to reuse the programs and expressed general satisfaction with their consultations, pharmacy staff attitude, and expertise of pharmacy staff in minor ailments management and advice provision), which appears comparable with non-users' satisfaction with primary-care consultations;</li> <li>positives attitudes of family physicians towards greater pharmacist participation in the management of minor ailments and the extension of minor ailments included in the programs, but doubts over whether there was a decline in their overall workload; and</li> <li>positives attitudes from community pharmacists towards the minor ailments programs and the extension of their professional role, their new workload being accommodated within their routine work, but concerns about patients' misuse of the programs which could become a barrier to efficient service provision.(41)</li> </ul> </li> <li>A recent and medium-quality review revealed a series of barriers identified by pharmacists that may impede the uptake and success of remunerated clinical care services: <ul style="list-style-type: none"> <li>low reimbursement rates;</li> <li>cumbersome billing processes;</li> <li>time constraints;</li> <li>lack of privacy in the pharmacy (which was also identified by patients as a barrier to seek minor ailments advice from pharmacists);</li> <li>insufficient publicity regarding the availability of services; and</li> <li>lack of interest among physicians and patients towards such services.(111)</li> </ul> </li> </ul> </li> </ul>

### Option 3 – Establish an advanced practice pharmacist model

This option involves expanding the scope of practice of pharmacists by establishing an advanced practice model. Under such a model, the Ontario College of Pharmacists would issue licenses to pharmacists meeting registration requirements for an advanced practice. Advanced practice pharmacists would have the authority to independently prescribe drug treatments and vaccines with or without protocols/formularies.

This option includes a process to develop details for such a model, as well as an implementation and communications plan. More specifically, elements of this option might include:

1. defining licence categories for advanced practice pharmacists with clear expectations and accountability for qualifications, competencies and patient-care activities, based on the input of a multi-stakeholder working group;
2. establishing a process whereby experienced pharmacists who meet all the criteria for advanced practice (beyond the formal training required as part of their undergraduate degree) can undertake a competency assessment for the credential;
3. implementing continuous professional development initiatives to support advanced practice pharmacists' roles (e.g., post-licensure credentialing, training and education);
4. establishing a process to ensure ongoing assessment of advanced practice competencies;
5. implementing quality and safety monitoring systems;
6. launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model; and
7. identifying strategies to support evaluation and evidence-informed approaches for an advanced practice pharmacist model.

This option is aligned with the 'additional prescribing authorization' model established in Alberta in 2007,(33) a model which is also generating interest in British Columbia.(35) A recent and low-quality review identified a growing body of studies in Alberta that can provide insights about the potential benefits of an advanced practice model:(86)

- improved hypertension management with statistically significant reduction in blood pressure;
- improved blood pressure and lipid level control in patients who suffered a minor stroke;
- improved dyslipidemia control; and
- improved glycemic control for diabetes patients.

We also found a limited body of synthesized research evidence that has direct relevance to option 3.

- There is evidence to support continuous professional development initiatives,(112;113) as well as specific prescribing training using the WHO Guide to Good Prescribing.(113)
- There is limited evidence that continuous professional development initiatives can improve clinical outcomes,(112) or that educational interventions targeting non-medical prescribers can improve prescribing competency.(113)
- Two other relevant systematic reviews are currently in progress and could inform components of option 3: the first review examines the impact of pharmacists as immunizers on vaccination rates, vaccine-preventable morbidity and mortality, safety, and cost-effectiveness,(110) and the second examines the risks and supports to clinical competence of healthcare practitioners and trainees engaged in field-based education.(114)

A summary of the key findings from the synthesized research evidence is provided in Table 5. For those who want to know more about the systematic reviews contained in Table 5 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 3.

**Table 5: Summary of key findings from systematic reviews relevant to sub-elements in Option 3 – Establish an advanced practice pharmacist model**

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> <li>• <b>Implementing an advanced practice pharmacist model</b> <ul style="list-style-type: none"> <li>○ A recent and low-quality review exploring pharmacist-prescribing practices in Canada revealed potential benefits of an advanced practice model:(86) <ul style="list-style-type: none"> <li>▪ improved hypertension management with statistically significant reduction in blood pressure (reduction in systolic blood pressure of 18 mmHg compared with 11 mm Hg in the control group);</li> <li>▪ improved blood pressure and lipid level control in patients who suffered a minor stroke (in comparison to nurse-led case management);</li> <li>▪ improved dyslipidemia control (pharmacist prescribing and follow-up resulted in more than a two-fold reduction in LDL); and</li> <li>▪ improved glycemic control for diabetes patients (similar to physician-led studies).</li> </ul> </li> </ul> </li> <li>• <b>Implementing continuous professional development initiatives to support advanced practice pharmacists' roles (e.g., post-licensure credentialing, training and education)</b> <ul style="list-style-type: none"> <li>○ A recent overview of systematic reviews found that continuing medical education interventions led to improved: <ul style="list-style-type: none"> <li>▪ physician performance;</li> <li>▪ knowledge acquisition and retention; and</li> <li>▪ attitudes, skills, and behaviours. (112)</li> </ul> </li> <li>○ A recent and medium-quality review found benefits for several educational interventions in improving prescribing competency:(113) <ul style="list-style-type: none"> <li>▪ specific prescribing training using the WHO Guide to Good Prescribing increased prescribing competency in a wide variety of settings; and</li> <li>▪ continuing medical education (e.g., academic detailing, educational outreach visits, personalized prescriber feedback, multidisciplinary interventions using interrelated educational and behavioural modification strategies, educational outreach visits, in-service training, multi-pronged approach training sessions, and management system reorganization).(113)</li> </ul> </li> </ul> </li> </ul>
Potential harms	<ul style="list-style-type: none"> <li>• No systematic review addressed potential harms</li> </ul>
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> <li>• No systematic review addressed costs and/or cost-effectiveness</li> </ul>
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	<ul style="list-style-type: none"> <li>• Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> <li>○ <b>Defining licence categories for advanced practice pharmacists with clear expectations and accountability for qualifications, competencies and patient-care activities, based on the input of a multi-stakeholder working group</b> <ul style="list-style-type: none"> <li>▪ While no reviews were identified, two reviews are in progress and may have relevance to this sub-element: the first examining the impact of pharmacists as immunizers on vaccination rates, vaccine-preventable morbidity and mortality, safety, and cost-effectiveness, (110) and the second examining the risks and supports to clinical competence of healthcare practitioners and trainees engaged in field-based education.(114)</li> </ul> </li> <li>○ <b>Establishing a process whereby experienced pharmacists who meet all the criteria for advanced practice (except formal training beyond their undergraduate degree) can undertake a competency assessment for the credential</b></li> <li>○ <b>Establishing a process to ensure ongoing assessment of 'advance practice' competencies</b></li> <li>○ <b>Implementing quality and safety monitoring systems</b> (no other reviews identified besides those previously identified for option 1)</li> <li>○ <b>Launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model</b> (no other reviews identified besides those previously identified for option 1)</li> <li>○ <b>Identifying strategies to support evaluation and evidence-informed approaches for an advanced practice pharmacist model</b></li> </ul> </li> <li>• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> <li>○ Not applicable</li> </ul> </li> <li>• No clear message from studies included in a systematic review <ul style="list-style-type: none"> <li>○ <b>Implementing continuous professional development initiatives to support advanced practice pharmacists' roles (e.g., post-licensure credentialing, training and education)</b> <ul style="list-style-type: none"> <li>▪ A recent overview of systematic reviews found limited evidence that continuing medical education interventions led to improved clinical outcomes.(112)</li> <li>▪ A recent and medium-quality review found limited evidence about the effectiveness of educational</li> </ul> </li> </ul> </li> </ul>

	interventions targeting non-medical prescribers.(113)
Key elements of the policy option if it was already tried	<ul style="list-style-type: none"> <li>• <b>Implementing continuous professional development initiatives to support advanced practice pharmacists' roles (e.g., post-licensure credentialing, training and education)</b> <ul style="list-style-type: none"> <li>○ A recent overview of systematic reviews found that continuing medical education interventions led to greater improvement when they involved more interactivity (e.g., audit/feedback, academic detailing, interactive education, reminders), more methods, multiple exposures, longer durations, and more physician-important outcomes.(112)</li> </ul> </li> </ul>
Stakeholders' views and experience	<ul style="list-style-type: none"> <li>• No systematic review addressed stakeholders' views and experience</li> </ul>

### Additional equity-related observations about the three options

In our review of the synthesized research evidence, we found no systematic reviews dealing explicitly with one of the two groups prioritized in this evidence brief: citizens/patients living in rural areas. However, we found several reviews that may have relevance to older adults. Two reviews relevant to implementing quality and safety monitoring systems (a sub-element relevant to all three options) examined the effects of public-reporting interventions. While these reviews do not deal explicitly with older adults, they could spur reflections on the adverse consequences of public reporting of performance data on vulnerable populations like older adults. For instance, a recent and medium-quality review found that public reporting may have a widening effect on disparities in healthcare (through 'cherry-picking patients' who may help physicians and healthcare organizations score well, or avoiding those who may cause them to score poorly),(98) while another recent and high-quality review found inconsistent evidence about the effects of public reporting on access to care.(95) Findings from these reviews suggest that we should be mindful about the potential implications of public-reporting programs, and the possible risk of widening disparities for older adults with complex healthcare needs (e.g., multimorbidity and polypharmacy). This may be particularly relevant in light of recent stories in the media suggesting that some pharmacies employ unrealistic quotas and business targets, capitalizing on the visits of low-risk patients to bill for medication-review services.(115)

## IMPLEMENTATION CONSIDERATIONS

A number of barriers might hinder the implementation of certain options, which needs to be factored into any decision about whether and how to pursue any given option. Potential barriers to implementing the pharmacist-prescribing models presented here can be identified at the level of the public/patients (e.g., a lack of awareness of pharmacists' roles beyond dispensing drugs, potential confusion about what is or isn't a 'minor ailment,' or what an advanced practitioner can and can't do), healthcare professional (e.g., some healthcare providers may be reluctant to engage in a new model of care without tangible incentives, pharmacists may be concerned about managing patients' expectations), organizations (e.g., concerns that such reforms could slowly erode the role of some professional groups, concerns from employers offering supplemental drug coverage of the impact of such reforms on drug costs), and health system (e.g., some health-system leaders may be reluctant to focus on provider-centric reforms or may be reluctant to reconfigure scopes of practice since this is a very politically sensitive issue).

A detailed list of potential barriers to implementing the three options is provided in Table 6 as a way to spur reflection about some of the considerations that may influence choices about an optimal way forward. We have listed the barriers that were identified in a range of sources (not just empirical studies) and we have not rank ordered them in any way.

**Table 6: Potential barriers to implementing the options**

Levels	Option 1 – Facilitate the system-wide adoption of collaborative prescribing agreements in primary and community care settings	Option 2 – Establish a pharmacist-prescribing program for minor ailments	Option 3 – Establish an advanced practice pharmacist model
General barriers	<p><i>Public/patient</i></p> <ul style="list-style-type: none"> <li>Some members of the public may not be aware of pharmacists' roles beyond dispensing drugs (116)</li> <li>The public may have mixed views regarding pharmacist prescribing – a survey conducted in Saskatchewan revealed a high level of support for pharmacists prescribing in certain contexts (e.g., prescribing in emergency situations if a person had run out of a medication they had been taking for years, and when renewing prescriptions for chronic medications that had not been changed recently), but support dropped when it came to more complex levels of prescribing (e.g., altering the dosing frequency or strength of a medication or diagnosing a new illness and prescribing a treatment plan) (117)</li> </ul> <p><i>Healthcare professional</i></p> <ul style="list-style-type: none"> <li>Pharmacists' uptake of prescribing can be influenced by many factors (e.g., level of readiness, whether the new prescribing model legitimized prior practices, the model of practice in a pharmacy setting, relationships with physicians, degree of confidence, risk perception, and lack of clarity around liability and remuneration) (118;119)</li> <li>Some healthcare professionals may be reluctant to extend prescriptive authority to pharmacists and thereby expand their scope of practice (e.g., they may express concerns about qualifications, capacity to make a diagnosis, patient safety, need for physician support, potential conflict of interest, liability issues, and loss of income) (57;116;120)</li> <li>Some pharmacists may be concerned about the difficulty of managing patient expectations</li> <li>Some pharmacists and other healthcare professionals may be reluctant to take on new roles without tangible incentives (e.g., the Ontario government has expanded funding to pharmacies for some pharmacist-provided services with the introduction of Bill 179 – counselling for smoking cessation for patients eligible for the Ontario Drug Benefits Program (but not assessments related to initiation); reviewing medications under the MedChecks program; and administering the flu vaccine through Ontario's Universal Influenza Immunization Program – but pharmacists are not directly compensated through the government for assessments resulting in prescription adaptation or renewal)</li> <li>Pharmacists' dispensing and prescribing roles may raise a conflict of interest. Some argue that involving pharmacists in both assessing a medical condition and dispensing (selling) the medication to treat the condition presents a conflict of interest. The potential for conflict is exacerbated by some compensation models in Canada that link remuneration to the act of issuing a prescription rather than conducting an assessment that may or may not result in a prescription. This ties remuneration to the product and theoretically could result in pharmacists choosing to prescribe when there may be equally appropriate non-prescription alternatives. Some pharmacists</li> </ul>		

	<p>have been advocating for the establishment of independent billing numbers, allowing pharmacists to build ‘non-dispensing’ practices that separate them from the product, as a strategy that could potentially address the perceived conflict of interest. Some jurisdictions that have established minor ailments programs have also tried to address this challenge by establishing that patients must ‘self-diagnose,’ so that pharmacists would not be assessing a medical condition and dispensing the medication.(121)</p> <p><i>Organization</i></p> <ul style="list-style-type: none"> <li>• The Ontario Medical Association indicated a preference towards the delegation of medical authority as “the policy alternative to pharmacist prescribing”(120)</li> <li>• Various health colleges, professional associations, and stakeholder groups may want to weigh in on the expansion of pharmacist prescribing (including professional groups with prescriptive authority and those seeking prescriptive authority)</li> <li>• Some professional associations may be concerned that such reforms would slowly erode the role of their members (122)</li> <li>• Some employers offering supplemental drug coverage plans may be resistant to extending prescriptive authority to pharmacists (and other healthcare professionals) until the implications for drug costs have been identified</li> </ul> <p><i>System</i></p> <ul style="list-style-type: none"> <li>• Some health-system leaders may be reluctant to reconfigure scopes of practice since this is a very politically sensitive issue</li> <li>• Health-system leaders may face difficulties in developing a shared vision for the details of such models (e.g., defining the parameters of collaborative prescribing agreements, establishing the list of minor ailments that pharmacists could treat, defining criteria for who can be an advanced practitioner or the different types of advanced practitioners based on settings, disease states, patient populations, roles and responsibilities) (123)</li> <li>• Some health-system leaders may be reluctant to extend prescriptive authority given the complexity of navigating the corporate terrain of pharmacies</li> <li>• Health-system leaders have expressed divergent views regarding the potential impact of pharmacist prescribing on patient safety and access to primary care,(120) which may be exacerbated by the lack of evidence about the overall impact of pharmacist-prescribing models on clinical practice and patient outcomes (120;124)</li> <li>• The lack of a comprehensive information and communication technology infrastructure (e.g., electronic health records and drug-information system) may constitute a barrier to operationalizing the three options</li> </ul>		
Option-specific barriers	<b>Option 1 – Facilitate the system-wide adoption of collaborative prescribing agreements in primary and community care settings</b>	<b>Option 2 – Establish a pharmacist-prescribing program for minor ailments</b>	<b>Option 3 – Establish an advanced practice pharmacist model</b>
	<p><i>Public/patient</i></p> <ul style="list-style-type: none"> <li>• None identified</li> </ul> <p><i>Healthcare professional</i></p> <ul style="list-style-type: none"> <li>• Some pharmacists may perceive the increased use of direct orders and medical directives as a way to pacify them instead of making them fully accountable for the care that they provide</li> <li>• Some physicians may be reluctant to participate in such a model (e.g., they may express concerns about liability issues, loss of income)</li> <li>• Some healthcare professionals may be concerned by the potential burden of managing and updating collaborative prescribing agreements</li> </ul> <p><i>Organization</i></p> <ul style="list-style-type: none"> <li>• Some professional organizations may be concerned by the potential burden of managing and</li> </ul>	<p><i>Public/patient</i></p> <ul style="list-style-type: none"> <li>• The public generally perceive themselves as ‘customers’ instead of ‘patients’ when visiting a pharmacy, which may influence their care-seeking behaviours and make it difficult to create the demand necessary for expanded services (117)</li> <li>• The public may get confused by what is or isn’t a ‘minor ailment,’ and which drugs can be prescribed by pharmacists to treat these ailments</li> <li>• Some members of the public may be reluctant to seek care from a pharmacist if it required out-of-pocket expenses (e.g., according to an evaluation of a pilot project conducted in Nova Scotia, 70% of patients said they would be willing to pay for minor-ailments services in pharmacy settings if they had to pay out-of-pocket) (125)</li> </ul> <p><i>Healthcare professional</i></p> <ul style="list-style-type: none"> <li>• Some pharmacists may have</li> </ul>	<p><i>Public/patient</i></p> <ul style="list-style-type: none"> <li>• Citizens generally perceive themselves as ‘customers’ instead of ‘patients’ when visiting a pharmacy, which may influence their care-seeking behaviours and make it difficult to create the demand necessary for expanded services (117)</li> <li>• The public may get confused by the different types of advanced practitioners, and what they can or can’t do</li> </ul> <p><i>Healthcare professional</i></p> <ul style="list-style-type: none"> <li>• Some pharmacists may perceive this option as being elitist (as opposed to the current model with a single type of licence where all competent pharmacists meet minimum standards of practice)(123)</li> <li>• Some pharmacists may oppose adding an additional regulatory and/or administrative requirement that could potentially restrict the number of</li> </ul>

	<p>updating collaborative prescribing agreements</p> <p><i>System</i></p> <ul style="list-style-type: none"> <li>Some health-system leaders may be concerned by the potential burden of managing and updating collaborative prescribing agreements</li> </ul>	<p>difficulty integrating their new roles into daily work flow (e.g., managing the dispensary and minor-ailments services at the same time, the lengthy assessment process, and the documentation) (126)</p> <ul style="list-style-type: none"> <li>Some pharmacists may perceive this option as a piecemeal approach to expanding their scope of practice</li> <li>Some primary-care providers may not be aware of the new minor-ailments services offered by pharmacists or may be reluctant to have their patients use such a service (126)</li> </ul> <p><i>Organization</i></p> <ul style="list-style-type: none"> <li>None identified</li> </ul> <p><i>System</i></p> <ul style="list-style-type: none"> <li>Some health-system leaders may be reluctant to focus on reforms aiming to reconfigure the scope of practice for a single profession</li> <li>Some health-system leaders may be concerned about the risk of duplication and an increased fragmentation of care if multiple healthcare professionals are doing similar tasks and are not linked back to primary-care providers</li> <li>Some health-system stakeholders may be reluctant to expand the scope of practice of pharmacists (and make major changes to the regulatory framework) if they believe that they are not currently working at their full or optimal scope of practice</li> <li>Some health-system stakeholders may argue that it could be more efficient to de-regulate some drugs to over-the-counter (OTC) status instead of allowing pharmacists to prescribe for minor ailments (e.g., much effort was invested in pharmacy circles in British Columbia on emergency contraception, for it to later become an OTC drug, hydrocortisone 1% is on the list of prescribable drugs in Saskatchewan for minor skin irritations, itching and rashes, but is now an OTC drug, as is omeprazole for gastroesophageal reflux disease)</li> </ul>	<p>pharmacists who can prescribe (21)</p> <ul style="list-style-type: none"> <li>Some pharmacists may face various hurdles while completing the application process, including personal hurdles (e.g., lack of time to apply), procedural hurdles (e.g., uncertainty regarding expectations for the application), and professional hurdles (e.g., scepticism and obstruction from other pharmacists)(86;124)</li> </ul> <p><i>Organization</i></p> <ul style="list-style-type: none"> <li>Some professional organizations (e.g., Ontario College of Pharmacists and Ontario Pharmacists Association) may be reluctant to segment pharmacists into different tiers</li> </ul> <p><i>System</i></p> <ul style="list-style-type: none"> <li>Some health-system leaders may be reluctant to focus on reforms aiming to reconfigure the scope of practice for a single profession</li> <li>Some health-system leaders may be concerned that the introduction of a separate licence for advanced practitioners could lead to a two-tiered system and be divisive</li> <li>Some health-system stakeholders may be reluctant to expand the scope of practice of pharmacists (and make major changes to the regulatory framework) if they believe that they are not currently working at their full or optimal scope of practice</li> </ul>
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The implementation of the three options can also be influenced by policymakers' and stakeholders' capacity to take advantage of potential windows of opportunity. These windows of opportunity could facilitate or trigger the implementation of a pharmacist-prescribing model in Ontario. Some of these potential windows of opportunity apply to all options, whereas others are option-specific. A list of potential windows of

opportunities for implementing the three options, again not rank ordered in any way, is provided in Table 7 to spur further reflection.

**Table 7: Potential windows of opportunity for implementing the options**

Type	Option 1 – Facilitate the system-wide adoption of collaborative prescribing agreements in primary and community care settings	Option 2 – Establish a pharmacist-prescribing program for minor ailments	Option 3 – Establish an advanced practice pharmacist model
<b>General</b>	<p>In 2013, the two schools of pharmacy in Ontario received approval from the Ministry of Training, Colleges and Universities to offer an entry-to-practice Pharmacy Degree program, (127;128) which is expected to deliver a curriculum that aligns with the expanded scope of practice for pharmacy as promulgated under Bill 179, and may prepare them to tackle the three proposed options</p> <p>The Council of the Federation asked the Health Care Innovation Working Group to examine opportunities within the team-based model framework to increase the important role pharmacists and other healthcare professionals play in the provision of front-line services (129)</p> <p>In February 2015, the Ontario Premier and Minister of Health announced that the province would be moving forward with expanding the scope of practice of registered nurses and allowing them to prescribe medications,(6) which may constitute an opportunity to expand prescriptive authority to other regulated professions simultaneously</p> <p>Annual advocacy campaigns, such as Pharmacist Awareness Month, can be harnessed to help raise public understanding and awareness about the role that pharmacists can play in delivering quality care to patients, beyond the traditional dispensing role (130)</p> <p>Many pharmacists may be supportive of pharmacist prescribing since it reflects the evolution of the pharmacy profession and pharmacy education from traditional dispensary services towards patient-centered services (e.g., medication review and management),(117) and new roles and services may be perceived as a potential new revenue stream, and a way to increase patient loyalty (125)</p> <p>There are opportunities to learn from pharmacist-prescribing models that already exist in other Canadian jurisdictions and abroad (21)</p> <p>There is an active research community dedicated to pharmacy research (e.g., OPEN - Ontario Pharmacy Research Collaboration), which can foster research collaborations and knowledge translation initiatives regarding the optimization of pharmacists' scope of practice and new models of care that could meet the healthcare needs of Ontarians (131)</p>		
<b>Option specific</b>	<p>This option is aligned with Ontario's existing approach to interprofessional care (e.g., its commitment to transform the delivery of local healthcare and to encourage collaboration among existing local healthcare professions to better coordinate the care of the most complex patients with the creation of community Health Links) (1)</p> <p>This option is aligned with the work of the Federation of Health Regulatory Colleges of Ontario (FHRCO), which led initiatives to increase interprofessional collaboration at the delivery level (e.g., FHRCO Guide to Medical Directives and Delegation, or FHRCO Interprofessional Collaboration eTool) (29;32)</p>	<p>This option is aligned with recommendations made by the Health Professions Regulatory Advisory Council (9) and the Commission on the Reform of Ontario's Public Services (22) in support of extending prescriptive authority to pharmacists for minor ailments</p> <p>A minor ailments program has been the subject of intense advocacy efforts by pharmacy associations</p> <p>Continuing professional development programs for pharmacists offered by the University of Toronto and the Ontario Pharmacists Association specifically focus on minor ailments (76)</p>	<p>Some pharmacists may be motivated to apply to obtain advanced practice authorization (e.g., being at the leading edge of pharmacy practice, improving collaborative practice, validating some of the responsibilities they are already undertaking) (124)</p> <p>This option is aligned with health colleges and regulatory bodies across Canada and abroad involved in discussion about 'advance practice' roles (e.g., the College of Pharmacists of BC established an Advanced Practice Pharmacist Task Group in 2013 to obtain input into the development of the Advanced Practice Pharmacist program (35)</p> <p>Some healthcare providers (e.g., Ontario Medical Association) may be more favourable to a model requiring an additional approval process for individual pharmacists who must demonstrate competence in the activity they are permitted to perform (21)</p>



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## APPENDICES

The following tables provide detailed information about the systematic reviews identified for each option. Each row in a table corresponds to a particular systematic review and the reviews are organized by option (first column). The focus of the review is described in the second column. Key findings from the review that relate to the option are listed in the third column, while the fourth column records the last year the literature was searched as part of the review.

The fifth column presents a rating of the overall quality of the review. The quality of each review has been assessed using AMSTAR (A Measurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial, or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8).

The last three columns convey information about the utility of the review in terms of local applicability, applicability concerning prioritized groups, and issue applicability. The third-from-last column notes the proportion of studies that were conducted in Canada, while the second-from-last column shows the proportion of studies included in the review that deal explicitly with one of the prioritized groups. The last column indicates the review’s issue applicability in terms of the proportion of studies focused on pharmacist prescribing. Similarly, for each economic evaluation and costing study, the last three columns note whether the country focus is Canada, if it deals explicitly with one of the prioritized groups, and if it focuses on pharmacist prescribing.

All of the information provided in the appendix tables was taken into account by the evidence brief’s authors in compiling Tables 3-5 in the main text of the brief.

# Appendix 1: Systematic reviews relevant to Option 1 – Facilitate the system-wide adoption of collaborative prescribing agreements in primary and community care settings

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
Establishing collaborative prescribing agreements based on parameters defined through input from a multi-stakeholder working group	Exploring the volume, array and nature of research activity on pharmacist prescribing in Canada (86)	This scoping review identified 38 studies. Half of studies (20) used quantitative methods including surveys, trials and experimental designs with; 11 studies used qualitative methods and seven used other methods. Current research on pharmacist prescribing in Canada demonstrated an improvement in patient outcomes in heart disease, diabetes, and minor ailments (13 studies), varied stakeholder perceptions (10), and factors that influence this practice change (11). Pharmacist prescribing was adopted when pharmacists practiced patient-centred care. Stakeholders held contrasting perceptions of pharmacist prescribing. The review revealed that pharmacist prescribing in collaboration with other healthcare providers facilitated the detection of underlying diseases.	Not reported	2/11 (AMSTAR rating from McMaster Health Forum)	38/38	Not reported in detail	38/38
	Examining the effectiveness of clinical pharmacist services delivered in primary-care clinics (with or without other activities delivered collaboratively with family physicians)(69)	The review identified that most studies (25/38) reported positive effects on at least one primary outcome measure.  Positive effects were more often seen in studies that involved pharmacists delivering multifaceted interventions, which include: adherence assessment, health and lifestyle advice, medication initiation or adjustment, and monitoring in conjunction with verbal communication (i.e. telephone or face-to-face). Pharmacist interventions in clinics were also shown to improve the quality of prescribing and medication appropriateness.  The meta-analysis favoured the pharmacist	2013	6/10 (AMSTAR rating from McMaster Health Forum)	6/38	5/38	Not reported

*Exploring Models for Pharmacist Prescribing in Primary and Community Care Settings in Ontario*

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		intervention, with significant improvements in patient outcome.  However, the review indicated that there is a lack of methodological rigour among the included studies, and found difficulties when comparing studies, due to heterogeneity.					
	Examining the effectiveness of interventions to improve the appropriate use of polypharmacy and reduce medication-related problems in older people (including skill-mix changes, pharmacist-led medication review services, and regulatory interventions such as changes in government policy or legislation affecting prescribing) (56)	There is limited evidence to suggest that interventions to improve appropriate polypharmacy resulted in clinically significant improvement. However, there is some evidence that these interventions are beneficial in reducing inappropriate prescribing, especially when a multidisciplinary provision of care is included. The clinical impact is not known.	2013	11/11 (AMSTAR rating from McMaster Health Forum)	2/12	12/12	11/12
	Examining how the extent of collaboration between the family physicians and the pharmacist has an effect on the implementation of recommendations arising from medication review (72)	The review found a significant association between the number of key elements reflecting collaborative aspects in medication review, and the implementation rate of recommendations. Identified key elements included: pharmacist with clinical experience; pharmacist association with patient; sharing of medical records; patient interview by pharmacist; patient invitation for medical review by physician; case conference between the pharmacist and physician; accordance in action plan; and a follow-up to assess patients. However, the review identified that further studies would be needed to determine whether an increase in collaborative aspects lead to higher implementation rates of recommendations following medication review.	2012	6/10 (AMSTAR rating from McMaster Health Forum)	3/16	16/16	Not reported
	Examining what is known regarding interprofessional collaboration in Family Health Teams in Ontario (73)	In 11 studies, patients and providers described improved healthcare access, greater satisfaction and enhanced quality of healthcare using a	2012	6/11 (AMSTAR rating from	11/11	Not reported in detail	Not reported in detail

McMaster Health Forum

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		<p>family health team (FHT) approach.</p> <p>Interprofessional teams were able to provide enhanced access to care and extended healthcare services compared to a siloed approach. Interprofessional collaboration also assisted providers with shifting their approach and addressing mental health or chronic disease.</p> <p>Six of the 11 studies indicated a need for enhanced professional preparation for collaborative practice, which included enhancing understanding of professional roles, and interprofessional educational forums that support a team approach to care in day-to-day practice. However, healthcare professionals working at FHTs found frustration when there was uncertainty in their roles and responsibilities.</p>		McMaster Health Forum)			
	Examining the effectiveness of U.S. pharmacists as team members providing direct patient care on therapeutic, safety and humanistic outcomes (71)	The review found that pharmacists providing direct patient care had favourable effects across various patient outcomes, healthcare settings and different disease states. Identified interventions where pharmacists had a key role in making or recommending medication adjustments included: medication understanding education; disease understanding education; medication or intervention adherence education; prospective or retrospective drug utilization review; and chronic disease management. However, the authors noted that future studies are needed to further examine the usefulness of pharmacists as primary-care providers.	2009	7/11 (AMSTAR rating from McMaster Health Forum)	2/298	164/298	0/298

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
	Examining the effectiveness of task substitution between GPs and pharmacists and GPs and nurses for the care of older people with chronic disease (70)	The review found task substitution among nurses, physicians and pharmacists resulted in positive patient outcomes (e.g. improved disease control). Identified pharmacist interventions that provided disease management and health promotion positive outcomes included medication review, and patient management using algorithms (e.g. change of medication or dose adjustment, risk factor screening, counselling). However, there was no evidence to suggest health service use was reduced.	2007	3/9 (AMSTAR rating from McMaster Health Forum)	Not reported	46/46	Not reported
Educating and training providers in interprofessional care approaches that could support functional and safe collaborative prescribing agreements	Examining the effectiveness of university-based interprofessional education (IPE) for health students (100)	<p>Three studies found attitudinal changes among students partaking in university-based IPE.</p> <p>Three studies reported mixed results related to the learning outcomes of IPE. There were improvements in clinical decision-making ability, knowledge, improved patient care and communication. Overall, IPE can enhance attitudes, perceptions and clinical decision-making skills.</p> <p>However, there is inconclusive evidence for using IPE to teach communication skills and clinical skills.</p> <p>The limited number of studies should not be taken to imply that the effectiveness of IPE does not equate to evidence of ineffectiveness.</p>	2011	7/11 (AMSTAR rating from McMaster Health Forum)	1/9	0/9	0/9
	Examining the effectiveness of IPE compared to education interventions in which same health and social care professionals learn independently from one another, and compared to no education intervention (101)	Seven of the 15 studies reported positive outcomes following IPE, which included: improvements in diabetes clinical outcomes; healthcare quality improvement; patient-centred communication; and collaborative team behaviour. Four studies reported a mixed set of outcomes, while another four studies found	2006	9/11 (AMSTAR rating from www.rxforchange.ca)	0/15	0/15	0/15

## McMaster Health Forum

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		IPE interventions had no impact on either healthcare processes or patient healthcare or outcomes. The effectiveness of IPE is unclear and requires more rigorous IPE research to determine the impact on professional practice or healthcare outcomes.					
	Examining the evidence on IPE and assessing its influence on particular outcomes (87)	Key elements to the effectiveness of IPE included staff development, authenticity, customization and competent facilitation from staff. The authors noted that the development of tools to identify mechanisms during IPE that assist in positively changing attitudes and perceptions of others may provide insight for the development of IPE curricula content and delivery. However, more evaluations of IPE are needed.	2003	4/11 (AMSTAR rating from www.rxforchange.ca)	1/21	1/21	0/21
	Evaluating the outcomes of quality improvement-focused IPE among undergraduate healthcare professionals (132)	Systematic review in progress					
Implementing quality and safety monitoring systems	Examining the impact of public reporting on patient outcomes and disparities (99)	Low-quality studies found that public reporting has a positive outcome in nursing homes. There is limited evidence to support public reporting having an impact on disparities and patient outcomes.  The authors noted that the limited evidence on the effect of public reporting on patient-related outcomes does not imply a lack of effect.	2013	7/10 (AMSTAR rating from McMaster Health Forum)	0/25	6/25	0/25
	Examining the evidence on quality-improvement collaboratives (QICs), with an emphasis on identifying common components of QICs in healthcare (91)	The majority of controlled studies of QICs focus on chronic medical conditions. In contrast, there are no published controlled studies in behavioural health.  Studies included in this review provided evidence that QICs can affect changes at the provider level, particularly the process-of-care	2012	3/10 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	2/24	0/24

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		<p>variables (e.g., medication management and patient education). Some studies showed positive findings for provider outcomes. However, this conclusion needs to be taken cautiously because most of the outcomes measures were derived from medical records and did not directly assess changes in provider behaviour. This trend is similarly observed at the patient level where few studies directly assessed patient outcomes.</p> <p>QICs showed a relatively similar overall structure. As very few studies compared QICs' critical features, it was not possible to link active QIC features to specific outcomes.</p>					
	Evaluating the effectiveness of public reporting of healthcare quality information as a quality-improvement strategy (95)	<p>Most of the identified studies found no evidence that public reporting affects the selection of healthcare professionals by patients.</p> <p>Some studies found that public reporting has positive outcomes on the quality measures in long-term care (i.e. pain, satisfaction with care).</p> <p>There is more evidence of no harm than evidence of harm resulting from public reporting.</p> <p>Most of the studies reported that public reports resulted in positive changes in healthcare professionals' behaviours (e.g. offering new services, changing policies, increase in quality-improvement activities). These changes were more prevalent among competitive markets.</p> <p>There are little to no studies that examined whether report characteristics affected the</p>	2011	7/10 (AMSTAR rating from McMaster Health Forum)	8/198	0/198	0/198

## McMaster Health Forum

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		impact of public reporting on any outcome.					
	Identifying, assessing and synthesizing evidence on quality-improvement processes and accreditation in primary healthcare (93)	The report found that quality-improvement strategies may improve certain clinical outcomes (e.g. increase in screening); however it is difficult to evaluate the outcomes of quality-improvement strategies due to varying approaches in primary healthcare. There is limited evidence on the effect of quality-improvement strategies on patients' perceptions of care, healthcare utilization and costs, and the perceptions of primary healthcare providers.	2011	6/10 (AMSTAR rating from McMaster Health Forum)	3/77	3/77	0/77
	Examining the effectiveness of the public release of performance data in changing the behaviour of healthcare consumers, professionals or organizations (102)	There is limited evidence that the public release of performance data changes consumer behaviour, improves care, or influences the behaviour of healthcare organizations and professionals.	2011	8/9 (AMSTAR rating from McMaster Health Forum Impact Lab)	1/4	1/4	0/4
	Examining the effects of audit and feedback on the practice of healthcare professionals and patient outcomes, and on factors that may explain variation in the effectiveness of audit and feedback (89)	The review suggests there is evidence that audit and feedback lead to small improvements in professional healthcare practice. The effect of the intervention varied among the studies in the review, but overall the studies showed a range from little to no effect, to a substantial effect on professional behaviour and patient outcomes. The intervention may be more effective when the healthcare professional is not performing well; the auditor is a supervisor or colleague, there are multiple applications of the intervention, as well as verbal and written feedbacks, clear targets and an action plan. It is unclear if the intervention is more effective after a combination of interventions.	2011	9/11 (AMSTAR rating from McMaster Health Forum Impact Lab))	11/140	5/140	0/140
	Examining the evidence regarding three questions: (1) does pay-for-	There is some evidence to suggest clinical and communication involvement during	2010	5/10 (AMSTAR	Not reported in	0/73	0/73



Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
	performance improve the quality of care; (2) do surgical safety checklists improve the quality of surgical care; and (3) do practice guidelines improve the quality of care? (90)	<p>development of intervention and outcomes may increase the likelihood of positive results. Quality of care and reduction of mortality and morbidity could be enhanced by implementing pay-for-performance, surgical checklists and explicit practice guidelines.</p> <p>The review indicates the outcomes for the interventions are limited due to being highly contextual, a small scope for the review, and other considerations that must be taken into account. The effect of integrating these interventions is largely unknown and there is a lack of examination of potential strategies to enhance quality of care. The authors indicate there is limited literature in the search of pay-for-performance to health-administration journals.</p> <p>Pay-for-performance interventions, to be effective, must consider reduction in disparities, improvement in access to care, and unexpected outcomes. The key issues described in the review are the involvement of clinicians at all stages of development, with explicit and comprehensive plans for communication and implementation of the interventions.</p> <p>The authors indicate the contribution to better results and economic analyses are currently unknown.</p>		rating from McMaster Health Forum)	detail		
	Examining how consumers use publicly reported quality-of-care information (96)	Fourteen included studies examined quality information, usually 'Consumer Assessment of Healthcare Providers and Systems', with respect to its impact on the consumer's choice of health plans. Easily readable presentation	2008	4/9 (AMSTAR rating from McMaster Health Forum	0/14	0/14	0/14

## McMaster Health Forum

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		formats and explanatory messages improve knowledge about and attitude towards the use of quality information; however, the weight given to quality information depends on other features. These features include free provider choice and costs. In real-world settings, viewing quality information is a strong determinant for choosing higher quality-rated health plans.		Impact Lab)			
	Examining the effectiveness of various quality-improvement strategies for enhancing healthcare (88)	The review identified that healthcare professional and patient-driven quality-improvement strategies (QIS) were more efficacious than manager- and policymaker-driven QIS. The most effective strategies included healthcare professional-directed audit and feedback cycles, clinical decision support systems, outreach programs, continuing education, and patient-mediated healthcare professional reminders. However, there is limited evidence on the effectiveness of QIS.	2008	2/11 (AMSTAR rating from McMaster Health Forum Impact Lab)	0/97	22/97	14/97
	Examining the effectiveness of quality-improvement collaboratives in enhancing the quality of care (92)	A systematic review of nine controlled trials found a positive effect of quality-improvement collaboratives on processes of care and patient outcomes.  The review additionally examined the findings of 60 uncontrolled reports, of which 53 trials indicated specific improvements in patient care and organizational performance due to participation in a quality-improvement collaborative.	2006	4/11 (AMSTAR rating from www.rxforchange.ca)	Not reported in detail	0/72	0/72
	Examining evidence on promising practices for effective public reporting on healthcare quality (104)	The review suggests that for public reporting to be effective, attention must be focused on the reporting program's objectives, audience, content, product, distribution and impacts.  The review also indicates public reporting	Not reported	2/9 (AMSTAR rating from McMaster Health Forum)	1/13	0/13	0/13

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		should be part of broader efforts to develop and nurture a relationship with the report's intended audience in order to increase accountability and quality within the healthcare system.		Impact Lab)			
	Examining the effectiveness of publishing patient care performance data in improving quality of care (103)	Evidence is limited, particularly about individual providers and practices. Rigorous evaluation of many major public-reporting systems is lacking. Evidence suggests that publicly releasing performance data stimulates activity to improve quality at the hospital level. The effect of public reporting on safety, health outcomes and patient-centredness remains uncertain.	2006	5/11 (AMSTAR rating from McMaster Health Forum)	0/45	7/45	0/45
	Examining the effects of pay-for-performance and public reporting on racial disparities in healthcare (98)	In this review, only one empirical study provided data on how pay-for- performance and public reporting programs may have a neutral, narrowing or widening effect on racial disparities in healthcare. A major public reporting program increased disparities in coronary artery bypass graft rates. Interviews with leaders of 15 major performance incentive programs in the United States indicated that current programs are not designed to reduce disparities, and often lack characteristics that may be important in reducing disparities.	2006	4/9 (AMSTAR rating from McMaster Health Forum Impact Lab)	0/1	0/1	0/1
	Examining the evidence about the public release of performance data (97)	Seven U.S. reporting systems about the performance of hospitals, health professionals and healthcare organizations have been the subject of published empirical evaluations. Observational and descriptive methods predominate. Consumers rarely search out the information, and do not understand or trust it. It also has a small, though increasing, impact on their decision-making. Physicians are skeptical about such data and only a small fraction make use of it, whereas hospitals	1999	3/9 (AMSTAR rating from McMaster Health Forum Impact Lab)	0/25	6/25	0/25

# McMaster Health Forum

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		appear to be most responsive to the data. In a limited number of studies, the publication of performance data has been associated with an improvement in health outcomes.					
Launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model	Examining the effects of mass media on the utilization of health services (94)	Despite the limited information about key aspects of mass media interventions and the poor quality of the available primary studies, the review found that the majority of studies concluded that planned mass media campaigns and unplanned mass media coverage could have a positive influence on the utilization of health services.	1996	8/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	1/20	Not reported in detail	0/20
Identifying strategies to support evaluation and evidence-informed approaches to collaborative prescribing agreements	No reviews found						

**Appendix 2: Systematic reviews relevant to Option 2 – Establish a pharmacist-prescribing program for minor ailments**

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
Establishing the details of a minor ailments program that would be suitable in Ontario based on parameters defined through input from a multi-stakeholder working group	Examining the evidence regarding remunerated pharmacy clinical care services (including for minor ailments programs) (111)	<p>The review identified 60 programs ranging in complexity from emergency contraception counselling to minor ailments schemes and comprehensive medication management. Eligibility criteria, program requirements and fees offered for clinical services are highly variable across jurisdictions.</p> <p>Few programs collect data on the uptake, time required, clinical effectiveness and economic outcomes of these services.</p> <p>Three jurisdictions were identified with minor ailments programs: Saskatchewan (\$18 fee); England (varies by primary care trust, ranging from \$4.68-10.93); and Northern Ireland (\$15.68 for the first 500 consultations per pharmacy, \$12.55 for next 1,000 and \$10.21 per consultation thereafter).</p> <p>The authors concluded that the evidence suggests that the mere presence of a remuneration scheme is insufficient to ensure uptake in practice.</p> <p>Barriers identified by pharmacists as impeding the uptake and success of remunerated clinical care services include low reimbursement rates, cumbersome billing processes, time constraints, lack of privacy in the pharmacy, insufficient publicity regarding the availability of services, and lack of interest among physicians and patients. Patients noted the lack of privacy to be a barrier to seeking minor ailments advice from pharmacists.</p>	2012	7/11 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail

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Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
	Exploring the volume, array and nature of research activity on pharmacist prescribing in Canada (86)	This scoping review identified 38 studies. Half of studies (20) used quantitative methods including surveys, trials and experimental designs with; 11 studies used qualitative methods and seven used other methods. Current research on pharmacist prescribing in Canada demonstrated an improvement in patient outcomes in heart disease, diabetes, and minor ailments (13 studies), varied stakeholder perceptions (10), and factors that influence this practice change (11). Pharmacist prescribing was adopted when pharmacists practiced patient-centred care. Stakeholders held contrasting perceptions of pharmacist prescribing. The review revealed that pharmacist prescribing in collaboration with other healthcare providers facilitated the detection of underlying diseases.	Not reported	2/11 (AMSTAR rating from McMaster Health Forum)	38/38	Not reported in detail	38/38

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
	Examining the effectiveness of pharmacy-based minor ailments schemes (PMAS) on patient health- and cost-related outcomes, and their impact on primary-care clinics (41)	PMASs provide public access to the National Health Service (NHS) treatment, and pharmacists advise who may also refer patients to other health professionals. Evidence shows that PMASs reduce consultation rates for minor ailments in primary-care clinics. Where comparisons are available, re-consultation rates are similar for patients in pharmacies compared to those who presented to primary-care clinics. Some evidence shows that prescribing of medicines included in scheme formularies decreased when schemes were operating. There is insufficient data to determine whether these reductions led to an increase in pharmacy supply of those medicines. Furthermore, evidence shows that the mean consultation costs for scheme users were markedly lower than the mean cost of primary-care and emergency-department consultations. Evidence shows that the total number of consultations and prescribing for minor ailments at primary-care clinics declined following the introduction of a PMAS.	2011	7/11 (AMSTAR rating from McMaster Health Forum Impact Lab)	0/31	0/31	0/31
	Examining the impact of pharmacists as immunizers on vaccination rates, vaccine-preventable morbidity and mortality, safety, and cost-effectiveness (110)	Systematic review in progress					
Establishing a multi-stakeholder- and/or research-driven process for developing practice standards for a minor ailments program	No reviews found						
Implementing quality and safety monitoring systems	See reviews for sub-element 3 under option 1						

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
Launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model, and to educate the public about caring for minor ailments	See reviews for sub-element 4 under option 1						
	Examining the effectiveness of interventions which target healthcare consumers to promote evidence-based prescribing for, and medicines use by consumers (including providing information and education to the consumers) (109)	<p>This Cochrane overview of systematic reviews identified 43 reviews examining strategies to enable consumers to know about their treatment and their health. Interventions included those to educate, provide information or to promote health or treatment (e.g., written medicines information, medicines fact sheets; patient information materials such as booklets, newsletters, educational videos; and individual/group patient education with or without support, counselling, or tailoring of medicines regimen).</p> <p>The authors found that interventions providing information or education as a single component may be ineffective to improve adherence or clinical outcomes. There is insufficient evidence to determine whether these interventions, when delivered alone, reduce adverse effects, but there is some evidence that they may improve knowledge. There is also some evidence that patient education and/or information as a single component or as part of a more complex intervention may be effective in improving immunization rates. When used in combination with other interventions, such as self-management skills training, counselling, or as part of pharmacist-delivered packages of care, there is some evidence that education or information may improve adherence and other outcomes such as clinical outcomes and knowledge, but results are mixed.</p>	2012	No rating tool available for this type of document (overview of systematic reviews)	Not reported in detail	Not reported in detail	Not reported in detail



Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
Identifying strategies to support evaluation and evidence-informed approaches to pharmacist prescribing for minor ailments	No reviews found						

## Appendix 3: Systematic reviews relevant to Option 3 – Establish an advanced practice pharmacist model

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
Defining licence categories for advanced practice pharmacists with clear expectations and accountability for qualifications, competencies and patient-care activities, based on the input of a multi-stakeholder working group	Exploring the volume, array and nature of research activity on pharmacist prescribing in Canada (86)	This scoping review identified 38 studies. Half of studies (20) used quantitative methods including surveys, trials and experimental designs with; 11 studies used qualitative methods and seven used other methods. Current research on pharmacist prescribing in Canada demonstrated an improvement in patient outcomes in heart disease, diabetes, and minor ailments (13 studies), varied stakeholder perceptions (10), and factors that influence this practice change (11). Pharmacist prescribing was adopted when pharmacists practiced patient-centred care. Stakeholders held contrasting perceptions of pharmacist prescribing. The review revealed that pharmacist prescribing in collaboration with other healthcare providers facilitated the detection of underlying diseases.	Not reported	2/11 (AMSTAR rating from McMaster Health Forum)	38/38	Not reported in detail	38/38
	Examining the impact of pharmacists as immunizers on vaccination rates, vaccine-preventable morbidity and mortality, safety, and cost-effectiveness (110)	Systematic review in progress					
	Examining the risks and supports to clinical competence of healthcare practitioners and trainees engaged in field-based education (114)	Systematic review in progress					
Establishing a process whereby experienced pharmacists who meet all the criteria for advanced practice (except	No reviews found						

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
formal training beyond their undergraduate degree) can undertake a competency assessment for the credential							
Implementing continuous professional development initiatives to support advanced practice pharmacists' roles (e.g., post-licensure credentialing, training and education)	Examining the evidence on continuing medical education effectiveness and reform, specifically in terms of physician performance and/or patient health outcomes (112)	<p>Several systematic reviews addressing the effectiveness of continuing medical education on physician performance and patient health outcomes found improved physician performance, and knowledge acquisition and retention, attitudes, skills, behaviours and clinical outcomes, although with less certainty for the latter. Positive effects were generally greatest on physician knowledge, lower on their performance, and lowest on patient health outcomes.</p> <p>Physician performance and patient health were generally reported to experience greater improvement with continuing medical education interventions involving more interactivity (audit/feedback, academic detailing, interactive education, reminders), more methods, multiple exposures, longer durations, and more physician-important outcomes.</p> <p>This synthesis also discusses the American Board of Medical Specialties' Evidence Library of research studies, evaluating the value of Board Certification and Maintenance of Certification (four part process for continuous learning involving licensure and professional standing, lifelong</p>	2014	No rating tool available for this type of document	Not reported in detail	0/8	0/8

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Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		learning and self-assessment, cognitive expertise, and practice involvement assessment). The library was reported to present 129 of 220 articles demonstrating efficacy, primarily on physician performance and patient health outcomes.					
	Examining the evidence on educational interventions targeting prescribing practice improvement, and identifying educational methods to improve prescribing competency in medical and non-medical prescribers (113)	<p>Six studies demonstrated the efficacy of specific prescribing training based on the WHO Guide to Good Prescribing in increasing prescribing competency. Retention effects and transfer effects were noted. Structured prescribing tutorials and programs reported significant improvement in prescribing skills, increased appropriate medication selection and dosage, increased student therapeutic problem-solving abilities, and significantly reduced prescription errors.</p> <p>Academic detailing and educational outreach visits aiming to promote first-line therapy prescription and reduce inappropriate prescribing practices reported positive results in prescribing adherence to guidelines. Multidisciplinary interventions using interrelated educational and behavioural modification strategies, educational outreach visits, in-service training, multipronged approach training sessions, and management system reorganization were reported to be effective for appropriate and rational pharmacological therapeutic practices.</p> <p>Only four studies evaluated educational interventions targeting non-medical prescribers, with relatively small sample sizes and widely differing prescribing outcome</p>	2013	4/9 (AMSTAR rating from McMaster Health Forum)	3/47	2/47	1/47

*Exploring Models for Pharmacist Prescribing in Primary and Community Care Settings in Ontario*

Option element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on pharmacist prescribing
		measures (n=1 for pharmacy settings and pharmacist samples). Pharmacist/drug seller knowledge and prescribing choices, evaluated in a randomized controlled trial involving posters, individual information and one-to-one training sessions, were found to be significantly improved relative to control facilities.					
Establishing a process to ensure ongoing assessment of 'advance practice' competencies	No reviews found						
Implementing quality and safety monitoring systems	See reviews for sub-element 3 under option 1						
Launching a campaign to raise public awareness about the new, evolving roles and responsibilities of pharmacists with the introduction of this model	See reviews for sub-element 4 under option 1						
Identifying strategies to support evaluation and evidence-informed approaches for an advanced practice pharmacist model	No reviews found						

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