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Community Pharmacist–Led Medication Reviews

Policy Insight

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Key Messages

- Community pharmacist–led medication reviews are widely used in Canada and internationally.
- It has been shown that community pharmacist–led medication reviews can identify medication issues. Broadly speaking, pharmacists feel qualified to deliver this service and, from the few studies that measured patient satisfaction, patients find value in receiving a medication review in a community pharmacy.
- In terms of patient and health system outcomes, community pharmacist–led medication reviews seem to have limited impact. Individuals living with defined chronic conditions, such as diabetes or hypertension, or those living with multiple chronic conditions seem most likely to benefit.
- No studies of cost-effectiveness in the Canadian context were identified.
- A variety of barriers that impact pharmacist-led medication reviews were identified in the literature, including:
  - limited communication between community pharmacists and prescribers resulting in pharmacists' recommendations not being implemented
  - a lack of time on the part of pharmacists
  - challenges with patient selection.
- Policy interventions that may help alleviate these barriers include:
  - incentivizing communication and collaboration between pharmacists and prescribers
  - reducing administrative burden
  - improving access to patient information
  - enhancing patient selection by incentivizing service provision for the most medically complex patients.

Issue

Community pharmacist–led medication reviews are widely used in Canada and internationally. Community pharmacist–led medication reviews are intended to support appropriate prescribing and medication use as well as reduce polypharmacy among individuals living in the community. Building on a previous CADTH Rapid Review, this briefing note discusses the evidence related to the clinical effectiveness and cost-effectiveness of community pharmacist–led medication reviews and examines policy interventions that may increase the impact of community pharmacist–led medication review programs.

Background

Older adults often use multiple prescribed medications to manage a variety of age-related and non–age-related chronic health conditions.[1] Polypharmacy, or the use of more medications than are medically necessary, is common in older adults and can result in individuals taking prescribed medications that are not indicated, not effective, or duplicative. Polypharmacy places older adults at higher risk for adverse drug events and interactions and may also

contribute to medication nonadherence.[1] Polypharmacy also increases risk of impairments to physical or cognitive function, falls, and incontinence. In addition to being a potential driver of poorer health outcomes in older adults, polypharmacy can also increase direct costs to public drug plans and indirect costs in the public health care system due to increased use.[1] Additionally, individuals of any age with chronic conditions may see multiple physicians (general practitioners and specialists) and access multiple pharmacies, which can result in duplicative prescriptions or potential drug interactions.[1]

An intervention that has been used to support appropriate prescribing, reduce polypharmacy, and enhance appropriate medication use is pharmacist-led medication reviews.[2] Although approaches to and definitions of a pharmacist-led medication review vary, these generally involve an in-person visit during which a pharmacist discusses the individual's current medications with them and makes suggestions to optimize their drug therapies.[2]

Provincial Medication Review Programs

All Canadian provinces have publicly funded medication review programs delivered in community pharmacies. The goals for these programs include promoting appropriate medication use, ensuring pharmacy clients understand why they have been prescribed the medications they have and how to use them, and reducing polypharmacy and adverse drug events. There is some variability in eligibility criteria for a publicly reimbursed medication review across provincial programs as well as whether follow-up medication reviews within the same year are reimbursed.

Our literature search identified peer-reviewed evidence about 4 Canadian provincial medication review programs: Ontario's MedsCheck, British Columbia's Medication Review Service, Saskatchewan's Medication Assessment Program, and Alberta's Standard Medication Management Assessment Program. This section will describe the characteristics of these 4 provincial programs and the identified peer-reviewed evidence about them.

Ontario MedsCheck Program

Ontario's MedsCheck program involves a 1-on-1 interview between the pharmacist and client to review all prescribed and over-the-counter medications.[3] The stated goals of the program are to "encourage patients to better understand their medication therapy and help to ensure their medications are taken as prescribed and that patients are getting the most benefit from their medications." Ontario residents with a valid health card who are taking a minimum of 3 prescription medications for a chronic condition are eligible for a medication review. It is recommended that MedsCheck services be performed by appointment and in an acoustically private area of the pharmacy. The in-person consultation is expected to take 20 to 30 minutes. Only a registered pharmacist, pharmacy intern, or pharmacy student may conduct the in-person consultation, whereas pharmacy technicians can be involved in non-clinical tasks such as managing appointments, collecting patient information in preparation for the appointment, and administrative duties such as filing and record-keeping.[3]

The Ontario MedsCheck program also includes services aimed at Ontarians living with diabetes and long-term care residents. For those who are unable to attend the community pharmacy due to physical or mental health concerns, MedsCheck at Home funds 1 home

visit by a community pharmacist per patient per year for a medication review. These visits must be done in the home and not over the phone or by other virtual means, and community pharmacists are paid $150 per billed service.[3]

In 2016, enhancements were made to the MedsCheck program aimed at standardizing MedsCheck reviews, enhancing documentation, and improving communication between primary care providers and community pharmacies. Some changes included the creation of standardized forms for patient acknowledgement, pharmacist worksheets for professional notes, MedsCheck personal medical records, patient take-home summaries, and notification templates for primary care providers. These new standardized documentation requirements added significantly to the workload of pharmacists providing MedsChecks.[4] These policy changes led to immediate declines in provision of the MedsCheck service. Administrative data showed that among patients admitted to Sunnybrook Health Sciences Centre in Toronto, there was a 7.7% decline in those who had previously had a MedsCheck compared with before the program enhancement.[5] Another study of billing data showed that MedsChecks in community pharmacies declined by 47% to 64%, MedsCheck for Diabetes declined by 71% to 83%, MedsCheck at Home declined by 55%, and MedsCheck for Long-Term Care declined by 9% to 14%. Although gradual increases were seen over 24 months following the program enhancement, MedsCheck services were still performed at a lower rate than predicted by previous service volumes.[4]

A few quantitative studies were found that used administrative data to evaluate the impact of the Ontario MedsCheck program and the results were mixed. MedsCheck recipients were found to have lower risk of 30-day death and 30-day readmission after discharge from hospital, but no differences were found in 30-day return to the emergency department or adverse drug events. MedsCheck recipients also had more outpatient visits. A 2016 cohort study found that the strongest predictor of having a MedsCheck was having had a previous MedsCheck; recipients were likely to be healthier, younger, urban-dwelling, and taking fewer medications than non-recipients.[6] This evidence suggests that those in greatest need are not being selected to participate in the program.

One qualitative and 1 mixed-methods study related to Ontario's MedsCheck program were identified.[5,7] One, an ethnographic study, found that there was variability between pharmacies and between communities in how medication reviews were conducted. Pharmacist-led medications reviews were seen to enhance the role of community pharmacies and pharmacists themselves within the health system. Familiarity between pharmacists and primary care providers was seen as the key to effective communication, suggesting that MedsCheck could potentially influence prescribing behaviour to a greater extent in rural settings.[7] The other qualitative study described the experiences of patients, hospital pharmacists, and pharmacy technicians with the MedsCheck program and outlined the following themes[5]:

- **Quality.** Quality of assessments and supporting documentation was varied. There were challenges due to illegible, handwritten forms and missing or incomplete information. Hospital pharmacy professionals indicated that these assessments seemed to have been done hastily.
- **Benefit.** MedsChecks were viewed as "another piece of the puzzle" and potentially useful if conducted well and if the patient viewed the information provided as accurate.
- **Barriers.** A lack of time on the part of pharmacists and a lack of preparation by patients were identified as the main barriers to conducting high-quality reviews. Patient selection

was identified as an issue because respondents indicated that the most complex clients were not necessarily the ones using the MedsCheck program. Hospital pharmacists noted that they preferred to start medication review process all over because patients did not always have or share MedsCheck documentation.

- **Collaboration.** A lack of collaboration and a lack of communication between hospitals and community pharmacies were identified as issues.
- **Improvements.** Pharmacists felt that having the MedsCheck information available in electronic medical records or patient portals or apps would aid in sharing and collaboration. It was also felt that more of the work associated with medication reviews could be delegated to pharmacy technicians.
- **Patient views.** The patients interviewed felt the reviews were useful, but perhaps needed more time. Patient selection issues were also highlighted by some patients, who expressed the view that these reviews would have been more useful for "other patients" without the same understanding of their prescribed medications.[5]

Saskatchewan Medication Assessment Program

The Saskatchewan Medication Assessment Program (SMAP) is a provincial program for residents aged 65 and older living in the community.[8] To be eligible, individuals must be living in their own residence and taking 5 or more chronic medications, an anticoagulant, or a Beers List medication. Clients are eligible to receive an annual assessment and up to 2 follow-ups. Community pharmacists are eligible to bill the Drug Plan and Extended Benefits Branch $60 for an initial assessment and $20 for a follow-up assessment.[8] In the 2016–2017 fiscal year, Saskatchewan community pharmacists billed $776,653 in SMAP services.[9] Similar to the Ontario program, standardized forms are used to document the client interaction and for communication with primary care providers. The goals of SMAP are to help individuals better understand their medications and to prevent adverse drug events.[8]

One qualitative study was identified that looked at SMAP.[9] This study explored the experiences with SMAP of licensed community pharmacists in Saskatchewan through an online questionnaire. Most respondents agreed that SMAP is serving its intended purpose and that they enjoyed performing medication assessments. Pharmacists generally felt confident in their abilities to provide this service. However, a few barriers to impact were identified, including a lack of time, clients having difficulty coming to the pharmacy, and the restrictiveness of the eligibility criteria. Pharmacists felt that the forms and required documentation were onerous and time-consuming. Pharmacists further indicated that they often had insufficient access to patient information to complete the assessments, and that providing these assessments for complex patients was a challenge. Poor collaboration between physicians and a lack of physician and patient awareness and understanding of SMAP and its purposes were identified as barriers to implementing the pharmacist's medication recommendations.[9]

British Columbia Medication Review Service

British Columbia's Medication Review Service is available to residents of British Columbia of all ages with a valid health card who have been prescribed at least 5 medications in the last 6 months. The goal of the service is to help British Columbians better understand their medications.[10] Community pharmacists are eligible to bill 1 of 3 services per client every 6 months, including:

- **Medication Review - Standard,** which is a basic review of the client's medications and preparation of a Best Possible Medication History. Pharmacists can bill $60 for this service.
- **Medication Review - Pharmacist Consultation**, which is done when a medication management issue is identified during a standard medication review. In this case, the pharmacist works with the client and, if applicable, the prescriber to develop a care plan to resolve the issue and evaluate results. Pharmacists can bill $70 for this service.
- **Medication Review - Follow-Up**, which is aimed at clients who have already had a standard medication review or pharmacist consultation and require follow-up because of a medication change, to evaluate the care plan, or to resolve care plan issues. Pharmacists can bill $15 for this service.[10]

One 2016 analysis of the Medication Review Service using administrative data was identified.[11] This study found that although the program was popular, generating more than $16 million in billings to the province in the 2013–2014 fiscal year, it did not have an effect on optimizing use of medications or deprescribing inappropriate or unnecessary medications. The study found no impact of medication reviews on overall drug use and cost, and also no impact on pharmacy utilization patterns such as consolidating pharmacy visits or increasing loyalty to a specific pharmacy. The authors offered several possible explanations for this, including a lack of direct interaction between pharmacists and prescribers, an unwillingness of providers to act upon the pharmacists' recommendations, lack of time on the part of pharmacists, and a lack of access to patient information.[11]

Alberta Standard Medication Management Assessment

Alberta's Standard Medication Management Assessment (SMMA) program is available to all members of the Alberta Health Care Insurance Plan who are taking 3 or more prescribed medications for 1 or more chronic conditions. Targeted SMMAs are available for those living with diabetes and for smoking cessation.[12] Additionally, pharmacists can complete a Comprehensive Annual Care Plan (CACP) with clients with 2 or more chronic diseases.[12] For first-time SMMAs, pharmacists can bill $60; for follow-ups, they can bill $20. Up to 12 SMMAs per client can be billed per year, reflecting the enhanced role in both chronic disease management and smoking cessation that Alberta pharmacists are expected to play. CACPs can be billed for $100.[12]

One study of Alberta community pharmacies was identified in our search.[13] This trial aimed to assess the effectiveness of a facilitation intervention aimed at improving pharmacy workflow and the provision of medication reviews. The study also described baseline barriers and facilitators to service provision, and how the workflow intervention worked to address site-specific barriers. Barriers identified by participating community pharmacies included a lack of time or disruption to existing workflow to provide medication reviews, cumbersome documentation requirements, an emphasis on quality over quantity of services provided, and uncertainty of how to integrate reviews into existing practice. None of the participating pharmacies identified a strategy for proactively identifying clients who would benefit from the service. The facilitation intervention aimed to improve workflow by developing streamlined documentation that was still compliant with provincial and regulatory body standards; reduced re-transcription by having pharmacists scan handwritten notes when possible rather than retyping; setting a 30-minute goal for completing prep work, the patient interview, and all documentation; limiting medication review services to specified days of the week; and providing literature on patient selection and case finding. The authors concluded that although the external facilitation intervention was helpful and feasible, other demands on

the pharmacists' time and the effort needed still made it difficult for them to consistently provide high-quality medication reviews. For example, the trial period encompassed influenza vaccination season; therefore, provision of medication reviews declined significantly as pharmacists spent their time providing immunizations in addition to necessary dispensing duties.[13]

Evidence Reviews: Rapid Reviews, Systematic Reviews, Meta-Analyses

In September 2019, CADTH completed a Rapid Review of pharmacist-led medication reviews that searched for health technology assessments, systematic reviews, meta-analyses, or economic evaluations on the topic published since 2016.[2] Evidence from 4 moderate- to high-quality systematic reviews suggested that pharmacist-led medication reviews were associated with improvements in specific clinical outcomes, specifically hemoglobin A1C levels and blood pressure control. One systematic review found evidence that appropriateness of prescribing was improved, although authors of the included studies noted that the clinical significance of this improvement was unclear. One systematic review assessed hospital admissions, adverse drug events, mortality, and quality of life as assessed by a standard questionnaire (SF-36) and found no significant differences as a result of pharmacist-led medication reviews.[2] Additionally, 1 economic study was identified that suggested a net benefit to the Spanish national health system when pharmacists carried out medication reviews with follow-up in individuals aged 65 and older who were taking 5 or more medications. However, it is not clear whether this result is generalizable to the Canadian context, given the differences in our health systems.[2]

Six systematic reviews and meta-analyses were identified, some of which were included in the 2019 CADTH Rapid Review.[14-19] Results of these reviews were generally mixed, with some showing benefit in defined populations (e.g., individuals with type 2 diabetes; individuals with hypertension) or in defined clinical scenarios (e.g., immediately following discharge from acute care). However, most systematic reviews or meta-analyses we identified did not show a benefit to broad population groups (e.g., all adults or all adults older than age 65), and there was generally little impact on important health system outcomes such as acute care admissions or readmissions and mortality. A summary of results of identified systematic reviews and meta-analyses is presented in Appendix 1.

Conclusions

Value of Programs in Identifying Potential Medication Issues

Broadly speaking, the evidence suggests that pharmacist-led medication reviews can be useful in identifying potential medication issues. Most studies suggested that pharmacists are qualified and well-positioned to identify medication issues and to properly educate clients about their medications and how to use them.[5,9] Some studies discussed the importance of medication reviews in enhancing the role of community pharmacists and community pharmacies in the health system and that these programs are an important part

of pharmacists' scope of practice.[7] Some studies described a high level of pharmacist and patient satisfaction with medication reviews in community pharmacies.[7]

Value of Programs in Improving Patient and Health System Outcomes

Although there is agreement that pharmacist-led medication reviews can have a positive impact on client knowledge and identifying potential medication issues, the evidence to date that this has translated into positive impacts on patient and health system outcomes is limited. Evidence suggests specifically targeting individuals with complex health states, such as those living with specific chronic diseases like hypertension or diabetes or with multiple chronic diseases, may have higher impact than broadly targeting all older adults.[2,11]

Cost-Effectiveness or Value for Money

No cost-effectiveness evidence in the Canadian context was identified. One economic study was identified in the 2019 CADTH Rapid Review that suggested a net benefit to the Spanish national health system when pharmacists carried out medication reviews with follow-up in individuals aged 65 and older who were taking 5 or more medications. However, this may not be generalizable to the Canadian context.[2]

Consistent data on billing across Canadian programs was not identified in our search, but it appears that spending on pharmacist-led medication reviews varies considerably from jurisdiction to jurisdiction. For example, billing in British Columbia was $16 million in the 2013–2014 fiscal year,[11] whereas in Saskatchewan, for a population about one-fifth the size, billing was $777,000 in the 2016–2017 fiscal year.[9] This suggests that pharmacists in British Columbia are performing medication reviews at a far greater rate than their counterparts in Saskatchewan. In the study by Kohlatkar et al. (2016), medication reviews in British Columbia "had little impact, at considerable cost to the provincial government, on the prescription drug use outcomes we examined."[11] Of note, the British Columbia study examined not only outcomes of interest to public payers, but also those of interest to community pharmacy owners, including consolidation of pharmacy visits or increased client loyalty.[11]

Barriers to Impact of Pharmacist-Led Medication Reviews

There was striking consistency across all Canadian and international literature reviewed on what barriers were causing the limited impact of pharmacist-led medication reviews. These barriers included:

- **Lack of time on the part of pharmacists to conduct effective medication reviews.** Pharmacists felt that they did not have adequate time to devote to conducting thorough medication reviews given their other responsibilities. This was exacerbated by expanded scopes of practice; for example, 1 study documented a steep decline in medication reviews during influenza vaccination season when these vaccines were provided in community pharmacies.[13]
- **Limited communication between community pharmacists and prescribers to influence medication changes.** A number of studies described the challenge of acting upon the medication review to change or deprescribe medications, given the limited communication between prescribers and community pharmacies. One study noted that this challenge was lessened when there was greater familiarity between the prescriber and the community pharmacist, as is often the case in rural settings.[5] Still, it was identified that physicians may

not review documentation or act on pharmacist recommendations if they do not trust the quality of the assessment and/or they are not adequately compensated to do so.[11]

- **Lack of access to relevant and accurate patient information.** A lack of access to patient information was cited as a challenge in completing medication reviews and making relevant recommendations. Relying on patients to provide an accurate medical history was seen as time-consuming, and it was noted that patients do not always bring or have access to all the relevant information needed to inform the medication review.
- **Challenges with patient selection.** Patient selection was identified as a recurrent challenge.[13] In some cases, pharmacists felt it was a challenge to identify which clients could benefit from having a medication review the most; in other cases, it was identified that the lack of time to complete the reviews may contribute to more complex individuals being passed over. Additionally, international evidence suggests that marginalized individuals who are medically underserved (e.g., those who are racialized, living with disability, living with a mental disorder, unhoused, and/or part of the LGBTQ2I community) are underrepresented in those who receive medication reviews.[20]

Potential Policy Interventions to Enhance Impact of Pharmacist-Led Medication Reviews

The literature points to some potential policy interventions that could enhance the impact of pharmacist-led medication reviews. These can be divided into 4 categories: workflow optimization, incentivizing communications between pharmacists and prescribers, improving access to data and information, and enhancing patient selection and incentivizing reviews in highest-risk groups.

Workflow Optimization

A number of potential workflow optimizations were proposed in the study by Houle et al. (2020), including providing medication reviews on a specified day of the week, reducing re-transcription of notes, and setting target goals for the total amount of time spent on an review, including prep work, the meeting with the client, and completing supporting documentation afterward.[13] In this study, a facilitator worked with the province and the regulatory body to streamline the required documentation, ultimately resulting in fewer pages the pharmacist was required to complete.[13] Still, the burden of paperwork does seem to be a substantial barrier to enhancing uptake of medication reviews, as evidenced by the steep declines seen in Ontario when new documentation requirements were put in place in 2016.[4] Ministries and Departments should consider how they can lessen the administrative burden associated with medication review programs, and also consider how existing technological platforms could be used to reduce the need for re-transcription, if applicable.

A few studies noted that pharmacy technicians were potentially underutilized in performing medication reviews, with duties primarily limited to administrative tasks such as scheduling. If work associated with patient selection and documentation could be better shared between pharmacists and pharmacy technicians, that may free up more pharmacist time to complete more reviews and spend more time with complex clients.

Incentivizing Communication Between Pharmacists and Prescribers

Many jurisdictions have standard forms to facilitate sharing of information from the medication review with the prescriber. Still, this does not seem to have been sufficient to result in pharmacists' recommendations being acted upon. One study suggested that fee-for-service physicians may not feel they are adequately compensated for the time spent

reviewing and acting upon the results of the pharmacist-led medication review. This challenge could be addressed through the creation of new fee codes or the modification of existing fee codes related to medication review to include review of pharmacist-led reviews and, if necessary, consultation with the pharmacist.

Likewise, pharmacists are compensated for the act of completing the medication review and supporting documentation but not necessarily for the additional time spent consulting with the prescriber or advocating on behalf of the patient. A performance-based model that provides additional compensation or funding based on important outcomes such as deprescribing of unnecessary medications may provide more incentive for pharmacies to initiate this communication with prescribers.

Improving Access to Data and Patient Information

Existing health data platforms could be used to grant community pharmacists access to more complete patient information. Additionally, patient data portals that aim to provide patients with ready access to their own health information may play a role because patients with easier access to these data may facilitate data sharing with all health professionals, including community pharmacists.

Enhancing Patient Selection and Incentivizing Medication Reviews in Highest-Risk Groups

The evidence identified suggests that those with specific chronic conditions (e.g., hypertension or diabetes) or medically complex individuals with multiple chronic conditions may stand to benefit most from medication reviews. Canadian jurisdictions have acted on this evidence. Alberta and Ontario both have medication review programs specifically aimed at individuals living with diabetes. Alberta has a program, with higher rates of reimbursement, focused on individuals with 2 or more chronic conditions within a defined set. Additionally, there are Canadian medication review programs focused on those people residing in long-term care facilities, and medication reviews conducted in the home for clients who are unable to attend the pharmacy in person. As adoption of virtual care grows, it is possible that there will be demand for medication reviews via secure videoconference, which could potentially increase access for some medically complex individuals who are house bound. Although there may be value in continuing to provide medication reviews to all older adults taking a defined number of prescribed medications, specifically targeting the most complex, and therefore most likely to benefit, may enhance the overall impact of these programs. Additionally, evidence from Alberta suggests that training all pharmacy staff on case finding may enhance patient selection and improve access for those with the most potential benefit from medication review.[13]

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Appendix 1: Identified Systematic Reviews and Meta-Analyses

Table 1: Identified Systematic Reviews and Meta-Analyses

Study	Design	Findings
Abbott et al. (2020)[14]	Systematic review	Pharmacist home visits. No evidence of reduced hospital admissions or mortality. Nothing relevant identified on quality of life, medication adherence, and patient knowledge.
Clyne et al. (2016)[15]	Systematic review	Included 3 studies looking at pharmacist-led medication reviews in which feedback was provided to the primary care provider. All 3 studies reported a reduction in potentially inappropriate prescribing.
Loh et al. (2016)[16]	Systematic review	No differences in health-related quality of life and health care costs as compared with usual care without a medication review.
McNab et al. (2018)[17]	Systematic review and meta-analysis	After discharge from hospital. Two studies showed a reduction in clinically relevant medication discrepancies. No consistent evidence of reduction in readmission rates or emergency department attendance.
Tasai et al. (2019)[18]	Meta-analysis	Statistically significant reduction in emergency department visits for older adults taking 4 or more medications. Non–statistically significant reduction in hospitalization risk.
Tecklenborg et al. (2020)[19]	Systematic review and meta-analysis	Looked at all interventions to reduce adverse drug events in older adults, including pharmacist-led medication reviews. No statistically significant benefit in hospitalization, emergency department visits, mortality, quality of life, mental health, or physical function.