

Appendix 1: Methods

Background to the rapid synthesis

This rapid synthesis mobilizes both global and local research evidence about a question submitted to the McMaster Health Forum's Rapid Response program. Whenever possible, the rapid synthesis summarizes evidence drawn from existing evidence syntheses and from single research studies in areas not covered by existing evidence syntheses and/or if existing evidence syntheses are old or the science is moving fast. 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 rapid synthesis does not contain recommendations, which would have required the authors to make judgments based on their personal values and preferences.

The Forum produces timely and demand-driven contextualized evidence syntheses such as this one that address pressing health and social system issues faced by decision-makers (see our website for more details and examples: www.mcmasterforum.org/find-domestic-evidence/contextualized-es). This includes evidence syntheses produced within:

- days (e.g., rapid evidence profiles or living evidence profiles)
- weeks (e.g., rapid syntheses that at a minimum include a policy analysis of the best-available evidence which can be requested in a 10-, 30-, 60- or 90-business-day timeframe)
- months (e.g., full evidence syntheses or living evidence syntheses with updates and enhancements over time)

This rapid synthesis was prepared over a 30-business-day timeframe and involved five steps:

- 1) submission of a question from a policymaker or stakeholder (in this case, British Columbia Ministry of Health)
- 2) identifying, selecting, appraising and synthesizing relevant research evidence about the question
- 3) conducting and synthesizing a jurisdictional scan of experiences about the question from other countries and Canadian provinces and territories
- 4) drafting the rapid synthesis in such a way as to present concisely and in accessible language the research evidence
- 5) finalizing the rapid synthesis based on the input of at least two merit reviewers.

Identification, selection, quality appraisal and synthesis of evidence

For this rapid synthesis, we searched [Health Systems Evidence](#) and [PubMed](#) for:

- 1) evidence syntheses
- 2) protocols for evidence syntheses that are underway.

In Health Systems Evidence, we searched for evidence syntheses using the filter for provider – pharmacists – combined with an open search for (rural OR remote OR northern). In PubMed, we used an open search for (pharmacy OR pharmacist) AND (rural OR remote OR northern) combined with filters limiting the article type to reviews and a publication date in the past 10 years.

Each source for these documents is assigned to one team member who conducts hand searches (when a source contains a smaller number of documents) or keyword searches to identify potentially relevant documents. A final inclusion assessment is performed both by the person who did the initial screening and the lead author of the rapid synthesis, with disagreements resolved by consensus or with the input of a third reviewer on the team. The team uses a dedicated virtual

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10 October 2023

[MHF product code: RS 111]

channel to discuss and iteratively refine inclusion/exclusion criteria throughout the process, which provides a running list of considerations that all members can consult during the first stages of assessment.

For any included guidelines, two reviewers assess each guideline using three domains in the AGREE II tool (stakeholder involvement, rigour of development and editorial independence). Guidelines are classified as high quality if they were scored as 60% or higher across each of these domains.

For each evidence synthesis we included, we documented the dimension of the organizing framework (see Appendix 2) with which it aligns, key findings, living status, methodological quality (using AMSTAR), last year the literature was searched (as an indicator of how recently it was conducted), availability of GRADE profile, and equity considerations using PROGRESS PLUS.

For AMSTAR, two reviewers independently appraise the methodological quality of evidence syntheses that are deemed to be highly relevant. Disagreements are resolved by consensus with a third reviewer if needed. AMSTAR rates overall methodological quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. High-quality evidence syntheses are those with scores of eight or higher out of a possible 11, medium-quality evidence syntheses are those with scores between four and seven, and low-quality evidence syntheses are those with scores less than four. It is important to note that the AMSTAR tool was developed to assess evidence syntheses focused on clinical interventions, so not all criteria apply to those pertaining to health-system arrangements or to economic and social responses. 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, an evidence synthesis that scores 8/8 is generally of comparable quality to another scoring 11/11; both ratings are considered 'high scores.' A high score signals that readers of the evidence synthesis can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the evidence synthesis should be discarded, merely that less confidence can be placed in its findings and that it 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.)

For primary research (if included), we documented the dimension of the organizing framework with which it aligns, publication date, jurisdiction studied, methods used, a description of the sample and intervention, declarative title and key findings, and equity considerations using PROGRESS PLUS. We then used this extracted information to develop a synthesis of the key findings from the included syntheses and primary studies.

During this process we include published, pre-print and grey literature. We do not exclude documents based on the language of a document. However, we are not able to extract key findings from documents that are written in languages other than Chinese, English, French, Portuguese or Spanish. We provide any documents that do not have content available in these languages in an appendix containing documents excluded at the final stages of reviewing. We excluded documents that did not directly address the research questions and the relevant organizing framework. All of the information provided in the appendix tables was taken into account by the authors in describing the findings in the rapid synthesis.

Identifying experiences from other countries and from Canadian provinces and territories

For each rapid synthesis, we collectively decide on what countries (and/or states or provinces) to examine based on the question posed. We quickly discuss these choices with a subject matter expert to determine whether there are any countries or sub-national jurisdictions whose experience is particularly relevant to the question. For other countries, we searched relevant government and stakeholder websites including the sites of colleges of pharmacy and professional pharmacy associations, as well as searching research groups focused on rural health. In Canada, a similar approach was used, searching the website of provincial-delivery organizations, colleges of pharmacy and pharmacist associations, as well as drawing on any provincial strategies focused on health services delivery in rural and remote areas. While we do not exclude content based on language, where information is not available in English, Chinese, French or Spanish, we attempt to use site-specific translation functions or Google Translate. A full list of websites and organizations searched is available upon request.

Appendix 2: Framework to organize what we looked for

We used the framework below to categorize each of the evidence documents included in the rapid synthesis and to structure the presentation of findings in the rapid synthesis and appendices 3 and 4.

- How pharmacy services are designed to meet consumers needs
 - Availability of pharmacy services
 - Timely access to pharmacy services
 - Telepharmacy and virtual pharmacy services
 - Extended pharmacy hours
 - Online mail order pharmacies
 - Culturally appropriate care
- By whom pharmacy services are provided
 - Role expansion or extension
 - Task shifting/substitution
 - Participation in multidisciplinary teams
 - Communication and case discussions between distant health professionals
 - Continuity of care
- Where pharmacy services are provided
 - Innovative service sites (e.g., pop-ups, community settings, mobile pharmacies)
 - Integration with other services
 - Outreach
- With what supports care is provided
 - Electronic medical records/ electronic health records
 - Other information communication technology that support individuals who provide care
 - Information communication technology that support individuals who receive care
- How these models are paid for
 - Publicly financed
 - Privately financed
- How providers are remunerated within these models
 - Fee-for-service
 - Capitation
 - Salary
 - Episode-based payment
 - Targeted payments/penalties
- Priority populations
 - People living in rural and remote areas
 - Indigenous populations
- Quintuple-aim outcomes
 - Improved health outcomes
 - Improved care experiences
 - Improved provider experiences
 - Advanced health equity
 - Keeping per-capita costs manageable

Appendix 3: Key findings from highly relevant experiences in Canadian provinces and territories with innovative model for the delivery of pharmacy services in rural and remote areas

Jurisdiction	Program/model	Program/model description
Canada – Pan-Canadian	None identified	–
Canada – British Columbia	Rural Incentive Program	Rural pharmacies and telepharmacies that are the only one within 25 km driving distance are eligible to receive a subsidy for each claim submitted for any month in which the volume of claims submitted and paid (fully or partially) by PharmaCare is below a specific threshold
	Pharmacist prescribing for minor ailments and contraception	As of 22 June 2023, pharmacists can prescribe contraceptives and treatments for minor ailments, which, although it applies to all pharmacists, will significantly benefit rural and remote areas by reducing the burden on small doctors' offices
Canada – Alberta	Expanded scope of practice	- In Alberta, pharmacists have the largest scope of practice, allowing them to better service rural communities - The scope of practice includes: - prescriptive authority for Schedule I drugs (independently, in collaborative practice, for minor ailments and conditions, for smoking and tobacco cessation, and in emergency situations) - adapting and managing drug prescriptions including making therapeutic substitutions, changing drug dosage or formulation, and renewing or extending prescriptions for continuity of care - injection authority for drugs, vaccines and influenza vaccine - order and interpret lab tests - pharmacy technicians
	Med Wise	Peer-led program for rural seniors to help them manage their medications and build confidence when communicating with their pharmacists
	Expansion of telepharmacy services (CareRx)	Expansion of telepharmacy into rural long-term care facilities to provide chronic disease management, particularly focused on residents with diabetes
Canada – Saskatchewan	Saskatchewan's expansion of pharmacist's scope of practice	- Saskatchewan's expansion of the scope of practice for pharmacists in rural areas helps to meet the demands for consumer needs by increasing the availability and timely access of pharmacy services - This role expansion allows pharmacists to independently prescribe medications and order lab testing to facilitate continuity of care - This expansion improves care and provider experiences by increasing primary care capacity and providing patients with access to accessible services

Jurisdiction	Program/model	Program/model description
Canada – Manitoba	Manitoba's expansion of pharmacist's scope of practice	- Manitoba's expansion of pharmacists scope of practice, including Manitoba Smoking Cessation Social Impact Bond, prescribing drugs for self-limiting conditions, administering drugs and vaccines, prescribing drugs for uncomplicated cystitis, and ordering laboratory tests initiatives permits pharmacists in rural Manitoba to extend their role in the community - These programs allow pharmacists to participate in healthcare prevention services by providing counselling assessments to persons who wish to quit smoking and offering timely access to important pharmacotherapies and testing - This program has the potential to improve long-term health outcomes in persons living in rural Manitoba
	Extended Practice Pharmacist	Manitoba's extended practice pharmacist speciality training provides timely and accessible pharmacy services for persons living in rural and urban communities - This role expansion initiative facilitates continuity of care and communication between pharmacists and distant healthcare professionals by allowing pharmacists to prescribe and manage medication plans for persons requiring chronic pharmacologic treatment, including for conditions such as diabetes - This program improves care experiences by increasing access to services and decreasing medication wait times
Canada – Ontario	Expanded scope of practice	- Beginning in January 2023, community pharmacists are able to prescribe independently for 13 common ailments in both urban and rural areas - This effort was implemented to free-up doctors' bandwidth to provide care for more complex needs as well as increasing access to care in rural parts of Ontario
	Remote drug dispensing	- Select prescriptions can be dispensed using remote dispensing technology without a pharmacist being physically present - Remote dispensing machines provide safe, convenient and 24/7 access to pharmacy services - The service includes a consultation with an off-site pharmacist using two-way video monitoring, inserting the prescription into the machine where it is scanned and validated by the pharmacist, and following authorization by the pharmacist the machine dispenses the drug
	Rural dispensing fee	In Ontario, the dispensing fee paid to pharmacies in rural areas for each Ontario Drug Benefit prescription filled is typically higher than fees in more urban areas, with the highest fees being applied to pharmacies that are 25 km or more away from residents
Canada – Quebec	Pharmacists in family medicine groups	Pilot project in Quebec for pharmacists to participate in family medicine groups alongside physicians and nurse practitioners

Jurisdiction	Program/model	Program/model description
		Within the program, pharmacists share common electronic health records with the rest of the team and are empowered to independently initiate or modify drug treatments of patients whose health problems have already been diagnosed
Canada – New Brunswick	Rural Pharmacy Incentive	The New Brunswick Prescription Drug Program (NBPDP) offers rural pharmacies an additional \$2 dispensing fee for each of the first 10,000 NBPDP prescriptions filled per fiscal year, but only if they are the only pharmacy in the community and are 25 km or more from the nearest pharmacy
	Pharmacist prescribing for minor ailments and contraception	Pharmacists in New Brunswick can assess and treat for minor ailments that do not require lab or blood tests (e.g., ‘at-home’ or ‘self-care’ treatments, over-the-counter medication treatments)
Canada – Nova Scotia	Pharmacist Walk-in Clinic+ (PWIC+)	Nova Scotia Health, Sobeys and Lawton Drugs partnered to launch a program that elevates the clinical scope of both pharmacists and nurse practitioners, and pairs them in a clinical setting to offer comprehensive care and a quality patient experience to increase capacity in rural areas of Nova Scotia
Canada – Prince Edward Island	Pharmacy Plus PEI	- Pharmacists can assess and prescribe, free of charge, for 32 common ailments - This program will provide new options for urban and rural communities while alleviating the burden on walk-in clinics, doctor offices and emergency departments
Canada – Newfoundland and Labrador	Pharmacist prescribing for minor ailments and contraception	- Pharmacists in Newfoundland and Labrador are able to extend prescriptions to a maximum of 12 months, as well as assess and prescribe for 33 ailments and conditions - The government is making a \$16.6 million investment to support coverage of pharmacist fees for these expanded services in communities
	Telepharmacy	- Telepharmacy is an option for rural and remote hospitals or facilities that do not have a regular pharmacist on staff - This typically involves a two-way video telecommunication channel between a licensed pharmacist and the remote/rural site - The Pharmacist-in-Charge is responsible for all activity at the remote site - All remote sites must be associated with a licensed pharmacy and located within the province that does not have suitable pharmacy services - The Pharmacist-in-Charge must apply for this provision
Canada – Northwest Territories	None identified	–
Canada – Yukon	None identified	–
Canada - Nunavut	None identified	–

Appendix 4: Key findings from highly relevant experiences in other countries with innovative model for the delivery of pharmacy services in rural and remote areas

Jurisdiction	Program/model	Program/model description
Australia	Rural Pharmacy Australia	To address challenges faced by rural pharmacies such as isolation, lack of staff and physician support, and lack of contact with pharmacy companies and representatives, Rural Pharmacy Australia aims to establish a dedicated board of advisors and support network for rural pharmacies in Australia
	Rural Pharmacist Australia (RPA)	- The Rural Pharmacist Australia (RPA) represents thousands of pharmacy owners and pharmacists providing services across remote and rural Australia - RPA brings rural remote and Indigenous health pharmacists' perspectives to the National Rural Health Alliance (NRHA) to add pharmacy's voice to national rural health policy development and implementation
	Pharmacy Programs Administrator Rural Support Programs	- The Pharmacy Programs Administrator provides support for rural and remote pharmacy service providers, and includes: - the Regional Pharmacy Maintenance Allowance, which supports access to medicines and pharmacy services through financial support to eligible pharmacy owners in regional, rural and remote areas - the Rural Continuing Professional Education Allowance, which assists pharmacists from rural and remote areas access Continuing Professional Development (CPD) activities through financial assistance for travel and accommodation, along with funding for professional educators to travel to these areas to deliver CPD activities - the Regional Pharmacy Transition Allowance (RPTA) that provides Australian Government assistance to pharmacy owners in regional, rural and remote Australia transitioning business arrangements for 60-day prescriptions - the Emergency Locum Service that provides direct access to pharmacist locum in emergency situations to pharmacy owners for up to seven days.
	Telepharmacy	- Since the COVID-19 pandemic, telepharmacy services have increased in Australia, providing opportunities to scale up access to pharmacy services for rural and remote areas - Common telepharmacy services include telechemotherapy, remote patient monitoring, medication therapy management, drug information, review and monitoring, medication reconciliation post-discharge and patient counselling and assessment

Jurisdiction	Program/model	Program/model description
New Zealand	New Zealand ePrescription Service (NZePS)	- NZePS provides an online secure messaging channel to exchange prescription information electronically, improving access to important medicines for patients by reducing prescriber visits - The program is of particular benefit to those living in rural and remote areas, and also carries with it better communication between prescriber and pharmacist, the ability to evaluate and address patient medicines adherence issues, and improved quality of patient medication history information
	Nurse prescribers	Nurse prescribers in New Zealand can initiate Special Authority medicines, allowing for more equitable and timely access to healthcare for patients (especially those in rural areas)
U.S. (any national programs)	340B Drug Pricing Program	Allows select rural facilities to purchase prescription and non-prescription medications at a reduced cost, as well as supporting rural pharmacies to negotiate pricing below the ceiling price to help establish distribution solutions to improve access to affordable medications
	Telepharmacy state-by-state review	Though legislation for telepharmacy is maintained at a state level, the Center for Rural Health Policy Analysis put together a legislative review to examine the expansion of telepharmacy programs across the U.S.
U.S. – Maine	None identified	–
U.S. – Vermont	None identified	–
U.S. – West Virginia	Team-based care certification (with a focus on cardiovascular disease)	- Team-based care is rapidly expanding in rural areas in the U.S., including in West Virginia, and pharmacists are a frequent part of these teams to aid patients with chronic diseases - Pharmacists are the most accessible healthcare provider in most of the U.S. and as a result there have been concerted efforts to training pharmacists to serve as members of team-based patient care, including providing certificate training in cardiovascular disease and improving relationships between pharmacists and other providers - The state has developed statewide practice protocols for pharmacist–physician partnerships to improve access to care and better patient outcomes, and all three West Virginia schools of pharmacy have implemented a curriculum component to train pharmacists to be part of team-based care

Appendix 5: Detailed data extractions from evidence syntheses about innovative models for the delivery of pharmacy services in rural and remote areas

Dimension of organizing framework	Declarative title and key findings	Relevance	Living status	Quality (AMSTAR)	Last year literature searched	Availability of GRADE profile	Equity considerations
- How pharmacy services are designed to meet consumer needs - Availability of pharmacy services - Timely access to pharmacy services - Telepharmacy and virtual pharmacy services - By whom pharmacy services are provided - Role expansion or extension - Task shifting/substitution - Priority populations - People living in rural and remote areas - Quintuple-aim outcomes - Improved health outcomes - Improved care experiences - Improved provider experiences - Keeping per-capita costs manageable	Telepharmacy services (e.g., medication processing, dispensing, management) provide cost effective, timely, and accessible access to pharmacy services that improve care experience by increasing the capacities of care for on-site healthcare professionals (1) - While the benefits of telepharmacy services are particularly important for people living in rural and remote areas, it has benefits for areas with larger populations - The effectiveness of a telepharmacy program is dependent on the knowledge and experiences of telepharmacists, emphasizing the importance of sufficient training - Additional research describing best practices for payment plans, licensure agreements and patient confidentiality are needed	High	No	1/9	2020	Not available	Place of residence
- How pharmacy services are designed to meet consumers needs - Timely access to pharmacy services - Telepharmacy and virtual pharmacy services - By whom pharmacy services are provided - Participation in multidisciplinary teams - Communication and case discussions between distant health professionals - Continuity of care - Where pharmacy services are provided - Integration with other services - With what supports care is provided - Other ICT that support individuals who provide care - Priority populations - People living in rural and remote areas - Quintuple-aim outcomes	Telepharmacy services, whether in ICU or non-ICU settings, have been shown to improve patient outcomes, enhance nursing satisfaction, expand healthcare services and potentially reduce costs, particularly in underserved areas (2) - Telepharmacy services showed diverse benefits, including improved patient care, reduced medication errors, cost savings and enhanced satisfaction among nursing staff - Many different modes of telepharmacy technology were used, including remote access to electronic medical records and faxing or scanning documents, pictures or webcams - Pharmacists used email or electronic communication, facimile, video review and	Medium	No	6/10	2018	No	Place of residence

○ Improved health outcomes ○ Improved care experiences ○ Improved provider experiences ○ Keeping per-capita costs manageable	the telephone to speak directly with hospital personnel and patients						
• How pharmacy services are designed to meet consumer needs ○ Availability of pharmacy services ○ Timely access to pharmacy services ▪ Telepharmacy and virtual pharmacy services • By whom pharmacy services are provided ○ Role expansion or extension ○ Task shifting/substitution ○ Communication and case discussions between distant health professionals • Priority populations ○ People living in rural and remote areas • Quintuple-aim outcomes ○ Improved health outcomes ○ Improved care experiences ○ Keeping per-capita costs manageable	Telepharmacy services (e.g., medication processing, dispensing, management) can improve care experiences and health outcomes by facilitating communication with distant health professionals to ensure safe medication management and adherence and by providing cost-effective and timely solutions for persons requiring chronic pharmacological treatment (3)	High	Not living	3/9	2019	Not available	Place of residence
• How pharmacy services are designed to meet consumers needs ○ Availability of pharmacy services • By whom pharmacy services are provided ○ Role expansion or extension • Where pharmacy services are provided ○ Integration with other services • How these models are paid for ○ Publicly financed • How providers are remunerated within these models ○ Fee-for-service ○ Capitation • Quintuple-aim outcomes ○ Improved health outcomes ○ Keeping per-capita costs manageable	Irregularities in remunerations of community pharmacy practices can cause revenue issues and quality of service provided to patients (4) • The purpose of this systematic review was to examine remuneration programs available to pharmacists internationally for non-dispensing services from 2013 to 2018 • Opportunities to receive publicly funded remuneration for non-dispensing patient care services continue to expand • However, high levels of variation related to scope of practice, patient eligibility and fees suggest that payers and pharmacists should investigate the resources and time required to offer services of high quality to ensure uptake to the patients who would most benefit from them	High	Not living	4/9	2018	Not available	Place of residence
• How pharmacy services are designed to meet consumers needs ○ Timely access to pharmacy services ▪ Telepharmacy and virtual pharmacy services	Telepharmacy is shown to help with pharmacist shortages, improve medication access in underserved areas, enhance medication quality and safety, respond effectively to healthcare	High	No	5/9	2021	No	Place of residence

- By whom pharmacy services are provided - Communication and case discussions between distant health professionals - Continuity of care - Where pharmacy services are provided - Integration with other services - Outreach - With what supports care is provided - Other ICT that support individuals who provide care - Priority populations - People living in rural and remote areas - Quintuple-aim outcomes - Improved health outcomes - Improved care experiences - Improved provider experiences - Keeping per-capita costs manageable	crises like COVID-19, and promote innovation in healthcare (5)						
- How pharmacy services are designed to meet consumers needs - Timely access to pharmacy services - Telepharmacy and virtual pharmacy services - By whom pharmacy services are provided - Participation in multidisciplinary teams - Communication and case discussions between distant health professionals - Continuity of care - Where pharmacy services are provided - Integration with other services - With what supports care is provided - Other ICT that support individuals who provide care - Priority populations - People living in rural and remote areas - Quintuple-aim outcomes - Improved health outcomes - Improved care experiences - Improved provider experiences - Keeping per-capita costs manageable	Synchronous videoconferences with pharmacists in pharmaceutical care showed limited impact on patient-related outcomes, with no significant improvements in clinical or psychological endpoints, but some evidence of increased medication adherence, highlighting their potential for ensuring care in remote areas (6) The included studies focus on the use of pharmaceutical care for partly complex interventions including for adults suffering from asthma, chronic renal failure, HIV infection, hyperlipidemia, hypertension and/or diabetes	High	No	6/10	2018	No	Place of residence
- How pharmacy services are designed to meet consumers needs - Timely access to pharmacy services	Telephone calls and automated telephonic prompts were common forms of telehealth delivered by pharmacists, which showed	High	No	5/9	2020	No	Place of residence

▪ Telepharmacy and virtual pharmacy services • With what supports care is provided ○ Other ICT that support individuals who provide care ○ ICT that support individuals who receive care • Quintuple-aim outcomes ○ Improved health outcomes	promising improvements in smoking cessation, medication adherence and blood pressure monitoring across the included randomized control trial studies (7) • A study that used photo-aging software by community pharmacists to show individuals how they would look if they continued to smoke reported a higher quit rate than the usual care group • The use of telehealth (i.e., telephone calls) improved medication adherence across different jurisdictions such as Canada, United States, United Kingdom and the Netherlands • Two studies that focused on home blood pressure telemonitoring and patient education by pharmacists found significant improvements in blood pressure control						
• How pharmacy services are designed to meet consumers needs ○ Culturally appropriate care • Priority populations ○ Indigenous populations	The effects of pharmacist-led medication reviews in community pharmacies and multi-step comprehensive clinical reviews in outpatient units for community-dwelling adults in New Zealand (including Māori and older adults) are not clear, and requires further understanding on how to best develop culturally safe pharmacist-led medication review services (8) • There were relatively few studies that focused on pharmacist-led medication review services in New Zealand • None of the studies incorporated or reflected equity considerations • All of the included studies were observational with no comparator groups, making it difficult to examine effect on health outcomes and health care utilization	High	No	8/10	Not reported	No	Race/ethnicity/culture/language
• How pharmacy services are designed to meet consumers needs ○ Timely access to pharmacy services ▪ Telepharmacy and virtual pharmacy services • By whom pharmacy services are provided ○ Participation in multidisciplinary teams	Telehealth medication reviews show promising feasibility and cost savings, but more research is needed to reliably inform policy and practice (9) • Telehealth medication reviews were conducted in both hospital and outpatient settings, focusing on medication management, medication order reviews,	High	No	6/10	2019	No	Place of residence Socioeconomic status

○ Communication and case discussions between distant health professionals ○ Continuity of care • Where pharmacy services are provided ○ Integration with other services ○ Outreach • With what supports care is provided ○ EMRs/EHRs ○ Other ICT that support individuals who provide care • Priority populations ○ People living in rural and remote areas ○ Indigenous populations • Quintuple-aim outcomes ○ Improved health outcomes ○ Improved care experiences ○ Improved provider experiences ○ Keeping per-capita costs manageable	antimicrobial stewardship programs and geriatric services • Overall, studies found that telepharmacy was generally acceptable to patients and staff, and helped speed up medication order reviews • Some studies also showed promising findings for telehealth's potential to reduce costs by avoiding travel expenditures, reducing hospital-acquired illness and avoiding hospital readmission						
• How pharmacy services are designed to meet consumers needs ○ Availability of pharmacy services • By whom pharmacy services are provided ○ Role expansion or extension ○ Task shifting/substitution • Priority populations ○ People living in rural and remote areas • Quintuple-aim outcomes ○ Improved care experiences	Compared to urban community pharmacist users, rural users tended to be more willing to seek advice and spoke longer to pharmacists, and limited evidence suggests that rural pharmacists provided more comprehensive and higher levels of care (10) • Compared to community pharmacy practice in urban areas, rural community pharmacists were reported as offering additional professional services and having improved prescriber relationships • However, many studies noted that confounding factors may account for any observed differences • Overall, some evidence suggests that rural pharmacists may be more willing to take on new professional roles and deliver a higher level of service	High	No	8/10	2018	No	Place of residence
• How pharmacy services are designed to meet consumers needs ○ Availability of pharmacy services ○ Timely access to pharmacy services ▪ Extended pharmacy hours • Where pharmacy services are provided	Extended pharmacy services and drive-thru pharmacy services are perceived as useful by pharmacists and the general public, but their implementation is often hindered by lack of time and staff shortages (11) • Extended pharmacy services (EPS) include identifying medication-related problems	High	No	7/10	2022	No	Place of residence

○ Innovative service sites (e.g., pop-ups, community settings, mobile pharmacies) ○ Integration with other services ○ Outreach • Quintuple-aim outcomes ○ Improved care experiences ○ Improved provider experiences	through comprehensive medication reviews, monitoring, and contacting primary healthcare teams • Drive-thru pharmacy services are generally established at hospital or community pharmacy settings, and aim to reduce waiting time, improve the availability and provision of healthcare services for the target population, and improve safety • Overall, pharmacists and the public hold positive attitudes towards extended and drive-thru pharmacy services • Both EPS and drive-thru pharmacy services hold potential for improving pharmacy service availability and timely access in both urban and rural settings						
• How pharmacy services are designed to meet consumer needs ○ Availability of pharmacy services • By whom pharmacy services are provided ○ Role expansion or extension ○ Communication and case discussions between distant health professionals ○ Continuity of care • Where pharmacy services are provided ○ Integration with other services • How these models are paid for ○ Publicly financed ○ Privately financed • Priority populations ○ People living in rural and remote areas ○ Indigenous populations • Quintuple-aim outcomes ○ Improved health outcomes ○ Improved care experiences • Keeping per-capita costs manageable	Privately or publicly funded pharmacy services involving role expansion (e.g., antibiotic prescribing) and communication and case discussion between distant healthcare professionals for ear-related health issues can achieve quintuple-aim outcomes of improving health outcomes, care experiences and provider experiences (12) • The purpose of this scoping review was to explore the evidence of rural pharmacists' involvement in ear healthcare • Depending on region-specific healthcare plan, models were either privately or publicly funded • A lack of funding for ear health was reported as a barrier to accessible care in pharmacy settings • Improved care experiences and health outcomes were achieved by lowering the financial burden associated with accessing medical services, the wait times to access services, and the chance of developing an infection • Improved provider experiences were achieved by decreasing the healthcare system burden by facilitating referrals, increasing general practitioner availability,	High	Not living	5/9	2020	Not available	Place of residence

	and strengthening communication between distant health professionals • Models that demonstrated the most benefits where found in regions where pharmacists had larger responsibilities, such as the United Kingdom • Most studies presented in this review were pilot studies and additional information regarding per-capita costs, effective delivery of culturally appropriate care, and efficacy of interventions are needed						
• How pharmacy services are designed to meet consumers needs ○ Availability of pharmacy services • By whom pharmacy services are provided ○ Role expansion or extension • Where pharmacy services are provided ○ Integration with other services • How these models are paid for ○ Publicly financed ○ Privately financed • Quintuple-aim outcomes ○ Improved health outcomes	The expansion of professional pharmacy services to implement screening programs and smoking cessation services improves public health in European community settings (13) • The purpose of this systematic review was to assess the cost-effectiveness of professional pharmacy services in community settings in Europe • To improve public health, screening services or smoking cessation services should be implemented at pharmacies, but these decisions are dependent on the willingness of investment from stakeholders	Low	Not living	5/10	2015	Not available	Place of residence
• How pharmacy services are designed to meet consumer needs ○ Availability of pharmacy services ○ Timely access to pharmacy services • By whom pharmacy services are provided ○ Continuity of care • Where pharmacy services are provided ○ Innovative service sites (e.g., pop-ups, community settings, mobile pharmacies) • Quintuple-aim outcomes ○ Improved health outcomes	Mobile pharmacies were used during world conflicts (e.g., American Civil War and World War I) to provide timely care and minimize illness and/or death in soldiers working in remote areas (14)	Low	Not living	3/9	2015	Not available	Place of residence

Appendix 6: Documents excluded at the final stage of reviewing

Document type	Hyperlinked title
Evidence synthesis	Factors contributing to the recruitment and retention of rural pharmacist workforce
Single study	The cost-effectiveness of pharmacist-led treatment of cardiac risk in patients with type 2 diabetes
	Telepharmacy: A pharmacist's perspective on the clinical benefits and challenges
	Cognitive pharmaceutical services in emerging health care systems: New patient management and concordance services in community pharmacy

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The rapid-response program through which this synthesis was prepared is funded by the Ministry of Health of British Columbia. The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the rapid synthesis are the views of the authors and should not be taken to represent the views of the Ministry of Health of British Columbia or McMaster University.