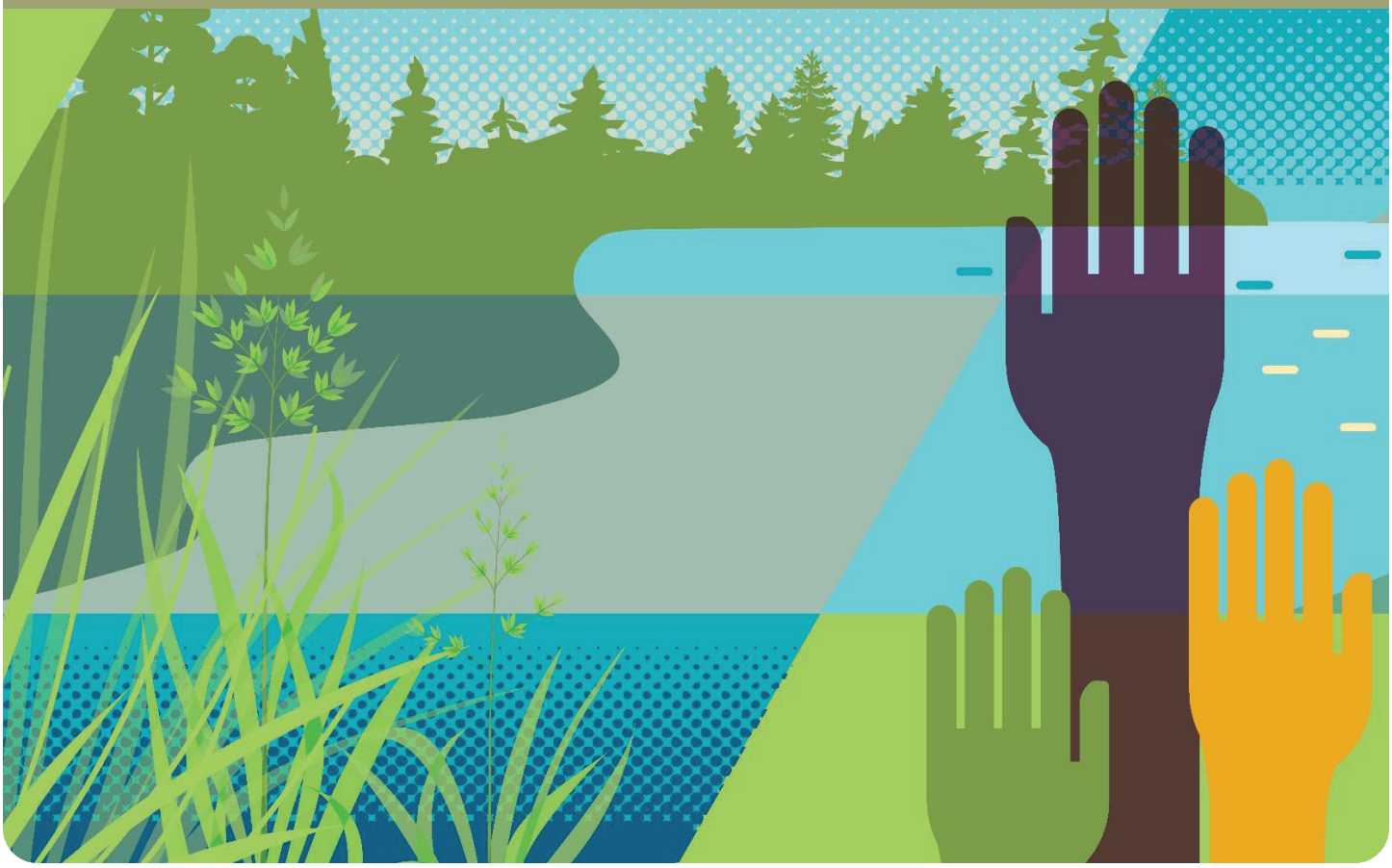
Strategic Clinical Networks™

Appropriate Prescribing and Medication Use Strategy for Older Albertans



Alberta Health Services

Seniors Health Strategic Clinical Network™

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Strategic Clinical Networks (SCNs) are collaborative clinical strategy groups that bring the perspectives of all stakeholders – clinicians, policy makers (government), researchers, operations and strategy leaders, key community leaders, patients and families – together to develop strategies (e.g., clinical pathways and care innovations) to achieve improvement in patient outcomes and satisfaction, improved access to healthcare, and sustainability of our healthcare system.

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The Seniors Health Strategic Clinical Network™ acknowledges the support and participation of numerous individuals and stakeholder groups involved in the development of this Appropriate Prescribing and Medication Use for Older Albertans Strategy. We are committed to continuing to partner with stakeholders to develop and implement potential actions.

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Vision

The vision of this strategy is to optimize the safety and quality of life of older adults in all care sectors across Alberta, through the appropriate use and prescribing of medications, and the deprescribing of inappropriate medications.

Objectives

The following objectives will be essential to attain the vision:

- Achieve optimal outcomes for older Albertans through person and family-centeredness.
- Achieve optimal outcomes for older Albertans through effective interprofessional teamwork.
- Support the specific needs of older persons and their families, and healthcare providers while considering the context of the care setting.
- Create collaborations with groups who have common goals and work together in a concerted manner to share resources and optimize impact on the promotion of safe medication use by older adults.
- Support implementation based on quality evidence and best practices.
- Prioritize the use of nonpharmacological interventions as an adjunct or replacement for medication use where appropriate.
- Perform ongoing monitoring of key patient-level and system-level outcomes and re-evaluation of interventions based on these results.
- Consider feasibility and economic viability.
- Consider long-term sustainability.
- Maximize opportunities for research for ongoing learning and to contribute to body of knowledge in the area of appropriate prescribing and medication use in older adults.

The mission statements of Alberta Health, Alberta Health Services (AHS) and the Seniors Health SCN, involved in initiating this work will serve as guiding principles in achieving the vision (Appendix A).


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Executive Summary

This strategy aims to support medication optimization to improve the quality of life and safety for older adults in Alberta and to enhance efficiencies in the healthcare system. It has been developed from the integration of literature analyses, a wide range of stakeholder consultations and from drawing inferences from Alberta's prescription data.

Stakeholder feedback from healthcare professionals, patients and families in various care sectors and geographic zones across Alberta identified the following key themes to be addressed toward improving the care of older Albertans, as it pertains to medications:

- Inclusion of the patient and family in care decisions
- Communication between healthcare professionals across settings, and with patients, families and caregivers
- Educational needs of healthcare professionals, older persons, families and caregivers
- Recognition of the role of interprofessional team members in contributing to medication optimization in older adults
- Improved access to health records by healthcare providers across care settings to close the information gap and enable better decision-making
- Optimization of the use of information technology to support communication and good prescribing practices
- Utilization of regulatory levers and policy to sustain system changes.

The strategy highlights that Alberta stakeholders prioritize the reduction of benzodiazepines and sedative hypnotics in older persons. Feasibility of implementation may favour a care sector where interprofessional teams are primed for successful change, such as long-term care and designated supportive living, which would follow the *Appropriate Use of Antipsychotic Project.* However, any sector which demonstrates motivation and readiness to achieve optimal prescribing and medication use and where funding is available may begin action planning and create work plans to pursue.

It is important that approaches be tailored to specific care sectors with partnerships being an essential aspect of successful implementation and sustainability. Older Albertans and families must be integral in the development of action plans and implementation. Working groups will be necessary to support the sector specific actions with an advisory committee to provide guidance on the overall direction. Utilization of evidence-based research, and best practices in the absence of evidence, is necessary as a foundation for action plans. Research projects should be taken advantage of where opportunities arise. The Health Quality Council of Alberta dimensions of quality provide a framework to support evaluation. The International Consortium for Health Outcomes Measurement (ICHOM) is an internationally validated outcomes framework for older adults, which may also be used.

Background

Adults over the age of 65 are projected to represent almost one quarter of the Canadian population by 2036. In Alberta, there are 575,000 people in this age group with the number expected to double in the next twenty years.[1,2] Medication utilization generally increases with age and older adults are more likely to experience safety concerns due to inappropriate polypharmacy (Appendix B). Inappropriate polypharmacy occurs when there is under-use, over-use or misuse of medications. Older adults are five times more likely than younger adults to be admitted into acute care facilities, and many of these admissions are medication-related and are preventable.[3,4] As a result, the quality of life of older adults and their families is compromised with a negative impact from a health system perspective, as well as the impact on society overall from productive time lost. The Seniors Health Strategic Clinical Network™ (SH SCN™) will work in collaboration with stakeholders in the province, to address the issues associated with inappropriate polypharmacy and to reduce the adverse consequences of inappropriate medications in older Albertans.

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The successes in decreasing antipsychotic use in long-term care centers across the province led the SH SCN to consider a review of other inappropriate medications in improving care for older Albertans. Antipsychotic utilization in long-term care centers fell from 26.8% in 2012 to 17.0% in 2018.[5] Positive benefits for residents and families included that residents became more alert and engaged, and families found their loved ones to become more interactive and communicative.[5] Furthermore, a culture of ensuring medication safety through a patient-centered approach was cultivated and staff felt empowered to be part of a process that improved patient outcomes.

Since antipsychotics are only one of a number of medication classes that can adversely impact quality of life in older adults, the SH SCN aims to build from its experience with antipsychotics to include other classes of medications and address their use in acute care, continuing care, and community and primary care settings. Through this work on appropriate prescribing and medication use, the SH SCN strives to enhance the quality of life for older Albertans, provide better healthcare and improve safety, while minimizing unnecessary costs.

Current State Review

To support the development of this strategy, the SH SCN conducted an environmental scan and literature review, comprehensive consultations with stakeholders and an analysis of the provincial medication dispensing databases.

Environmental Scan and Literature Review

The environmental scan included investigating national and international activities related to appropriate prescribing and medication use. The literature review was undertaken to search for evidence from primary and secondary research and gray literature sources. Search terms used included variations of the terms *deprescribing, polypharmacy,* and *medication optimization* limited to the English language, for those aged 60 years and older.

Deprescribing is a relatively new term which is becoming more commonly used in the literature. It is defined as "the systematic process of identifying and discontinuing medications in instances in which existing or potential harms outweigh existing or potential benefits within the context of an individual patient's care goals, current level of functioning, life expectancy, values, and preferences".[6] In addition, deprescribing is part of a continuum of good prescribing practices.[7]

Environmental Scan

Environmental scanning reveals that other provinces in Canada and national organizations have in recent years, prioritized medication safety efforts for older adults. British Columbia, for example, has utilized a global approach to the problem of polypharmacy by identifying high-risk medications for which evidence has been summarized to assist physicians in deciding whether a medication is appropriate for use in a particular patient.[8] New Brunswick has targeted specific medication classes with a reduction achieved in antipsychotic utilization and is currently working on reducing the use of sedatives and

hypnotics in long-term care.[9] In Alberta, in addition to the work by the SH SCN with antipsychotic reduction in long-term care and supportive living, other medication-related quality improvement initiatives including research is being undertaken in the community, primary care and hospital setting. It was discovered however, that many of these organizations within and outside Alberta Health Services were not aware of each other's work which limits sharing of best practices and collaboration for efficient healthcare resource utilization.

Several national organizations support appropriate prescribing in various ways ranging from, but not limited to, declarative statements to healthcare providers such as from Choosing Wisely Canada and Choosing Wisely Alberta, to evaluating evidence on medication effectiveness to promote best practices such as by the Canadian Agency for Drug Technologies and Health (CADTH). The Canadian Deprescribing Network (CaDeN) advocates for a multi- level approach to deprescribing through the engagement of the public, healthcare professionals and organizations and government. CaDeN along with other organizations such as the Ontario Pharmacy Evidence Network (OPEN), has developed educational resources and evidence-based algorithms to guide safe deprescribing to achieve medication optimization.[10]

The current opioid crisis has claimed priority with many national organizations that have developed guidelines and tools to reduce overall consumption. Other medications have also gained attention due to a perception that these medications are misused or are unsafe. See Appendix C for national organizations and their priorities.

Internationally, there are countries that have implemented policy changes and have invested in medication-related initiatives with successful reported outcomes.[11] By stipulating restrictions on the renewal of driver's licenses, Denmark has dramatically reduced the consumption and prescribing of high risk medications such as benzodiazepine sedative-hypnotic medications.[11,12] Policies which provide financial incentives to prescribers however, have resulted in negative outcomes such as in France where pay for performance reimbursement increased the number of benzodiazepine prescribing.[12,13] Some other policies such as changes in regulatory status to a restricted category in Australia, cessation of coverage

in the Netherlands and the United States, have led to mixed results.[12,14,15] Unintended consequences of these policy changes are, an increase in street value of restricted medications, limitations of access for patients in whom the medication is appropriate, the promotion of substitution prescribing of other inappropriate medications and out of pocket expense burden for the consumer.[12] Prescriber monitoring adopted by New York State in the United States has been one of the most effective policy strategies to mitigate harms from medications such as benzodiazepines. Similar unintended consequences have surfaced from those noted with other policy changes.[12] See Appendix D for policy actions by different countries and their respective success rates.

In Alberta and as part of prescriber monitoring, the College of Physicians and Surgeons of Alberta (CPSA) provides registered physicians with a report of their prescribing patterns to create awareness and encourage self-reflection toward optimal medication prescribing.[16] Other than the audit and feedback from the CPSA, and the Alberta Pain Strategy to reduce opioid use in the province, there is no provincial umbrella or policies which specifically supports appropriate prescribing and medication use and in particular, for older Albertans.[17]

Literature Review

The literature suggests that older persons can tolerate careful dosage reductions or withdrawal of some medication classes without harm.[18] A multifaceted approach is needed to address the issues related to polypharmacy and medication inappropriateness, from the perspective of healthcare professionals, patients/families and the healthcare system.

Healthcare professionals were found to be likely to deprescribe when they became more aware of their prescribing practices such as through audit and feedback.[19] Deprescribing was also more likely when they had more time with patients to discuss medications and had access to specialists for support when considering medication changes.[19] These enablers built confidence and skills in the provider breaking the ‘prescribing inertia’. Prescribing inertia results when medications that are no longer indicated, or that no longer align with patient or family goals, continue to be renewed or prescribed.[20]

Provider obstacles to deprescribing cited in the literature include feasibility within the constraints of the practice environment such as time and resources, individual prescribing insight and self-efficacy or confidence in the ability to change or stop medications safely.[19] There was also a fear of unknown consequences of when a medication is stopped or a dose is decreased.[19] A notable concern was that providers did not want to risk damaging relationships with patients or other prescribers.[19] Some prescribers had difficulty identifying potentially inappropriate medications (PIMs) as identified by the Beers Criteria, but also what to do about them, once recognized especially if guidelines advocated for prescribing medications or continuing treatment.[3,19]

A systematic review highlights that receptiveness to deprescribing by patients and families was present when there were supportive relationships in place such as an attentive family physician.[21] Minimal pressure to come off of medications where patients could be encouraged to 'just try' to come off their medicines with the option of restarting was also a facilitator.[21] Other reasons which encouraged patients to consider deprescribing were fear of addiction, fear of interactions, a sense of burden in taking too many medications and in the associated costs.[21]

Some barriers reported in reducing medications by patients and their families included fear of stopping long standing medications, hope for future benefit from medications, and lack of a process for discussing medication changes.[21]

A major system barrier to medication optimization in older adults was poor communication between healthcare professionals. In addition to enhanced interprofessional collaboration, integrated health information systems provide an opportunity to narrow this gap.[22]

Despite obstacles at the patient, provider or system levels, emerging literature shows that most patients will accept the idea of deprescribing if a provider were to suggest it.[23] A recent Canadian study showed that when community pharmacists were engaged in a conversation with older adults about deprescribing high risk medications, and communicated with the primary care physicians through a pharmaceutical opinion, a significant reduction in the utilization of PIMS was possible.[24] Therefore, providers can be reassured that patients will be open to conversations around this subject and that interprofessional collaboration can be a significant facilitator in achieving system change.[23,24]

Stakeholder Consultations

Feedback was solicited from various stakeholder groups including members of the public, patients and caregivers, prescribers and other healthcare professionals. Consultations were carried out through face to face discussion, virtual online meetings and surveys. In addition to consultations with individual practitioner groups, healthcare teams who work together were asked to share their opinions. Stakeholders from various geographic areas in Alberta; rural and urban, and care sectors including acute, continuing care, and community and primary care were consulted. Appendix E lists stakeholder groups consulted with and questions posed to each. The focus of the questions were intended to draw out concerns noted in daily life for the patient and family and in daily practice for the healthcare provider. The results of stakeholder feedback from patients and families and healthcare professionals were then themed. Themed categories are listed from stakeholder interviews only and are not from literature.

Key Themes: What Matters to Patients and Families

1. Patient and Family-Centered Care

Families of patients want to be acknowledged, respected and heard. They seek to be part of a partnership and included in the care team and in decision-making. When changes are made, such as to medication therapy or timing of medication, the family wants to be kept informed, recognizing the parameters established for information sharing under the Health Information Act.

2. Communication between Professionals and Patient/Family Members

Physical and cognitive deficits in older adults make it difficult for some seniors to advocate for themselves. Poor understanding of medical terminology and jargon is a barrier to communication. There is hesitation in seeking clarification especially when it is perceived that health practitioners are very busy. In some instances, literal interpretation of instructions can lead to unnecessary inconvenience for the older person. Patients and families would like more patience and time for explanation about their medications.

Most individuals interviewed receive their initial information regarding the prescription risks and benefits from their physician or specialist. The pharmacist is also increasingly involved with medication information and with adjustments related to their full scope of practice. However, there can be an inconsistency among healthcare professionals when providing education on medications such as reason for use, particularly if there is an off-label indication. This leads to confusion for the patient and family. Furthermore, lack of follow-up after a medication is prescribed impacts adherence and trust.

There are pragmatic challenges in terms of geography when doing medication reviews particularly in small, rural communities. Use of technology could be a medium for assessment, family engagement and facilitate medication review. In addition to the local community pharmacist, there is opportunity for healthcare teams to contribute toward optimal medication management remotely if teams do not exist in rural areas however there has yet to be clarity on what virtual teams look like.

When it comes to medication information from patient leaflets, most often provided by community pharmacists can be misunderstood. The multiple side effects listed can cause fear so that either prescribed medication is not taken, or side effects may be perceived to have developed. Some seniors however, like the leaflets received from the pharmacy because they feel that they get more information about their prescription.

Nonpharmacological approaches and alternatives to medications are sought by some individuals but they are either not covered, or there is limited information available about them.

3. Communication and Information Transfer between Care Settings

When moving between care settings (e.g., primary care to acute care, or acute care to long-term care), patients and care partners feel frustration in having to repeat medical histories many times. This practice results in the eventual unintended distortion and inaccuracy of information being conveyed. Patients and families

also notice that medication lists healthcare providers have during their care encounters, differ between settings.

Older persons and their families feel that there is confusion in terms of who provides oversight of their medications when multiple prescribers, specifically, family physicians and specialists are involved. There is uncertainty as to who is most responsible for determining ongoing need for therapy or discontinuation. There is a sentiment that family physicians appear reluctant to alter medication therapy prescribed by specialists including those which may have been started outside the community setting such as hospital and emergency departments.

4. Deprescribing Medication

While some individuals feel that the doctor knows best and would agree to stop a medication if advised to do so, most state that they would be concerned about the consequences yet would still go along with the deprescribing plan. A minority of older adults are adamant that medications should only be decreased or stopped if there is a very good reason to do so. If the deprescribing decision was thought to be in the best interest of the patient, then it is felt that the prescriber should also be open to being questioned. Some seniors in the community feel that there has never been a review of their medications so they do the research themselves and decide if they should take themselves off of any medication(s).

5. Consideration of Personal and Lifestyle Issues

Payment for medication can be a significant barrier for some lower income individuals and families. Sometimes, doses are missed so that medications last longer. Diabetic supplies may also be re-used even though there is risk of harm. Patients in the community in particular, state that sometimes it is a choice between taking medications and eating. This information is often not voluntarily shared during physician visits.

Medication changes have an impact on obtaining travel insurance and is a consideration when the provider suggests stopping or changing a medication. Going to the physician every three to six months for renewal of medications is felt to be a burden.

Although blister packs could help with adherence to intended medication regimens, they are not covered and cost may be a barrier. In some instances, such as for those individuals with severe cognitive impairment, blister packs are not thought to be helpful unless supervised by others. There is intense utilization of resources such as in homecare where healthcare aides make several trips to homes of older adults, solely for administering medications. Technologies such as electronic dossettes may have promise in ensuring medication adherence with more effective use of healthcare resources.[25]

Older adults in the community feel that prevention programs for seniors need to be better funded because many of these are not affordable. There is conviction that community exercise programs would lessen the long-term need for medications by maintaining good health.

Key Themes: What Matters to Healthcare Professionals

1. Healthcare Professional (HCP) Education and Culture Shift

Healthcare professionals including physicians feel that increased knowledge about geriatric concerns would enhance their ability to care for older adults. More education on the impact of multiple medications on older adults would help care teams recognize and address situations, such as prescribing cascades, where deprescribing may be the best option.

Family physicians in particular, expressed that they do not have adequate support to address all the healthcare needs of older adults. Patients who also have social or mental health needs for example, complicate prescribing and deprescribing decision-making. Better access to geriatric specialty to discuss specific questions or access to a qualified healthcare team with expertise in older adult care, including nonpharmacological alternatives to medications and knowledge of community resources would be helpful.

2. Patient Education and Culture Shift

Most healthcare professionals feel that patients and families lack evidence-based information about medications which is a

barrier to medication optimization. It is felt that in some cases, patients hesitate to change medications even when the provider recommends that they may no longer be of benefit. In contrast, there can be poor medication adherence even when evidence supports medication use. Despite the recognized need for patient and family education, HCPs indicate there is insufficient time, partly due to physician reimbursement models or a dispensing-focused business model in a pharmacy, to explain the benefits and risks of medications to patients. However, healthcare professionals acknowledge that time should be taken for regular medication reconciliation, medication reviews and ongoing monitoring when a medication is started, tapered or discontinued.

3. Interprofessional Collaboration

Interprofessional team members can facilitate appropriate prescribing and medication use by assisting in patient education about medications. For those who may not be directly involved in medication management such as dietitians or rehabilitation therapists, awareness of the risks of medications in older persons allows them to bring forward concerns to prescribers when there is suspicion of a medication-related problem. They can also provide nonpharmacological approaches to support overall medical management.

Medication expertise by pharmacists and nurse practitioners can help support regular medication reviews and patient-centered deprescribing plans. There is a concern that medication experts, such as pharmacists with prescribing authority, are poorly integrated in the health system limiting their ability to support the team with their full scope of practice. Furthermore, while interprofessional collaboration is known to be beneficial in general, creating an optimally functioning team in a clinical practice, is still in the process of being understood.

4. Health Information/Information Technology

Healthcare professionals feel that information technology needs to be less fragmented across care settings in Alberta as they are not set up to send and receive information from each other. Interprofessional collaboration would be strengthened with better

sharing of information between care settings. There is inconsistent access to patient medical records. Not all settings (e.g., some long-term care sites) have access to the Alberta Netcare system, the provincial repository of an individual's medical record. There are gaps in transfer of information during care transitions from hospital to home or facility living for example, from the patient to provider and between providers.

While Alberta Netcare is helpful, healthcare professionals feel that it is limited in its capabilities such as in providing any clinical guidance. Physicians state that the integration of evidence-based clinical tools embedded in electronic medical records would be a facilitator toward appropriate prescribing and deprescribing, although there is a risk of ignoring any alerts if they occur frequently. In addition, universal access to a common record or interface could lay the foundation to support the transfer of real time health information to ensure medication safety in older adults.

5. Policy and Regulatory Considerations

Both system-level facilitators and gaps to medication management are identified by healthcare professionals. For example, the expanded role of pharmacists through additional prescribing authorization is identified as a system-level support of addressing appropriate medication use in older adults. However, the limitations in the pharmacist's scope of practice such as modifying controlled substances like benzodiazepines is an obstacle for pharmacists in promoting safe medication use and in optimizing a patient's medication regimen. The lack of system level restriction on renewals of potentially harmful medication was identified as a possible area for policy to support review of medication appropriateness. Healthcare providers expressed that an examination of existing policies and regulations could be done to seek opportunities to influence safe and appropriate medication use.

Medications of Concern in Older Adults (as Prioritized by HCP)

Healthcare professionals were asked through surveys to rank medications which were of most concern to them in the safety

of older persons. See Appendix F for a listing of medications requested to be ranked. Although ranking of prioritized medications varied among groups of respondents, healthcare professionals from all care areas and geographies consistently prioritized the following five classes of medications. See Appendix G for Medications Prioritized by Survey groups.

The top five classes of medications identified as requiring action obtained from aggregated data of surveyed groups include:

- Anticholinergics
- Antipsychotics
- Benzodiazepines
- Opioids
- Sedative/Hypnotics

Other classes of concern within the top ten ranking were:

- anti-hypertensives
- anticoagulants
- antidepressant
- non-steroidal anti-inflammatory medications
- proton pump inhibitors

Discrepancies in the ranking of medications of concern between groups surveyed was more pronounced in the rank ordering of medications that fell lower in the priority listing, as shown in Appendix G. For example, geriatric specialists listed antidiabetic agents as being the sixth most important while this medication class did not fall within the top ten ranked by primary care teams nor by the healthcare teams. Similarly, anticoagulants like warfarin and anti-hypertensive medications were a higher concern for primary care physicians and healthcare teams compared to geriatric specialists.

It is plausible that variances noted within the survey groups were due to small sample size. It may also be indicative of a knowledge gap that was noted in the stakeholder consultation related to care to the geriatric population. The discrepancies noted between geriatric specialists and primary care physician may also correlate with what each group encounters in their respective practice settings.

Of special mention is that antimicrobials was not listed among the top ten medications of concern but antibiotic prescribing in

long-term care for asymptomatic bacteriuria is inappropriate. This can have a significant impact on resistance and cause adverse effects in older persons such as *Clostridium difficile* infections.[26] Moreover, data shows that anti-infectives as a medication class is the third most prescribed in Alberta (Appendix H). The Antimicrobial Stewardship team under Alberta Health Services is active in advocating for the appropriate use of antibiotics in the province.

Review of Alberta Data and Trends

Alberta data was accessed from two main sources, to review trends in prescribing and dispensing in older adults:
1) Government of Alberta. Alberta Health, Health Standards, Quality and Performance Division, Analytics and Performance Reporting Branch and 2) the Pharmacy Information Network (PIN). Other supportive data was also retrieved from the Canadian Institute of Health Information (CIHI). It is important to note that prescribing and dispensing data may not indicate medication actually consumed due to adherence issues.

Data from the Government of Alberta (Alberta Health) revealed dispensing trends from Alberta pharmacies from 2010 to 2017 for specific age groups. It does not include hospital dispensations for patients in acute care. PIN data reflects dispensing activities from pharmacies for all community dwelling older adults, clients in supportive living environments and for approximately two-thirds of residents in long-term care. PIN data does not reflect approximately one-third of long-term care dispensations which are obtained from non-community-based pharmacies or acute care pharmacies. It is reasoned that two-thirds of data will be an adequate sample to determine trends within the long-term care sector. Data from acute care pharmacies will be reviewed when available through the Drug Optimization, Sustainability and Evaluation (DOSE) initiative and with data retrieved in partnership with Alberta Health Services, Pharmacy Department. The PIN data was analyzed by Alberta Health Services Data Analytics.

Key Findings

Data from Alberta Health in Appendix I shows that older adults receive the highest number of medications compared to other age

groups. In 2017, 91% of seniors received at least one prescription from a pharmacy over the past year, compared to 73% for the overall population. When looking at the proportion of people who had a medication dispensed in the past three months, there is a trend in increased medication use for all population groups studied. For example, the percentage of obtaining at least one dispensed medication in the past three months for a senior was 76% in 2010 and 82% in 2011 with this increasing trend continuing into 2017. This corresponds with the notion that multi-morbidity increases with age for which prescription medication are likely prescribed and medication utilization is increasing with time. When compared to the national average for 2016–2017 data, Alberta reports a higher percentage of potentially inappropriate medications (PIMs) in older adults (53.4%), compared to the national average (46.8%). See Appendix I for PIM data from Canadian Institute for Health Information (CIHI).

Data from PIN shows that the top dispensed medications in Alberta according to the categories as defined by the World Health Organization, Anatomical and Therapeutic Classification (ATC) were:

1. Cardiovascular System
2. Alimentary Tract and Metabolism
3. Anti-infectives for Systemic Use
4. Nervous System
5. Musculoskeletal System

The medication which was dispensed the most in Alberta in 2017–2018 was the proton pump inhibitor pantoprazole under the ATC classification of ‘Alimentary Tract and Metabolism’. Many high risk medications identified by stakeholders fall under the category of the nervous system. Common medications within this category include antipsychotics, antidepressants, benzodiazepines and sedative-hypnotics and painkillers such as acetaminophen, opiods and gabapentin. The medication zopiclone, a non-benzodiazepine sedative-hypnotic also known as a Z-Drug, was the highest dispensed medication within the nervous system ATC category. See Appendix H for the list of the top 20 medications dispensed.

The data for the highest number of dispensed medication correlates closely with medications of concern identified by stakeholders, such as those for the central nervous system like zopiclone, and the proton pump inhibitors like pantoprazole. While opioid utilization is a concern in Alberta and among stakeholders, the government has invested in several action plans within a provincial Pain Strategy.[17] To avoid duplication, a direction toward reducing opioids is not prioritized for the purposes of this document. The excess use of proton pump inhibitors also, is not emphasized since this is being undertaken by Alberta Health Services' Digestive Health Strategic Clinical Network™. Nonetheless, it is recognized that these initiatives contribute to overall appropriate prescribing and medication use and should be supported where possible.

National and provincial bodies included sedative-hypnotics in their definition of benzodiazepines whereas on the survey provided to healthcare professionals as part of consultations, sedative-hypnotics were listed in a separate category. Despite this difference in categorization, both sedative-hypnotics and benzodiazepines were rated within the top three classes of medications of concern among the surveyed groups.

Due to overwhelming interest in the sedative-hypnotic Z-Drugs and benzodiazepines, by stakeholders and national organizations and the high dispensing rates of sedative-hypnotics, this class of medications was explored further, as the next potential class of medications to reduce prescribing and utilization in the province, following the AUA initiative with antipsychotic focus.

Benzodiazepines and Sedative-Hypnotic Z Medications

PIN data reports were obtained for benzodiazepines and benzodiazepine-like Z-Drugs such as zopiclone and zolpidem. Benzodiazepines classified as anxiolytics and sedative-hypnotics were included in retrieving data. Benzodiazepines indicated as anticonvulsants, or for alcohol withdrawal were excluded since the reasons for prescribing and using them in these instances, are likely to be appropriate. Appendix J lists benzodiazepines and Z-Drugs most likely to be used as sedatives.

The data from PIN shows that approximately 24% of seniors in LTC receive sedative hypnotics including benzodiazepines and Z-Drugs. However, their use decreases with increasing age. This is in contrast to the pattern in the community where an increase in dispensing of these medications with increasing age is noted. The average use for all zones is approximately 17% in the community. Women are prescribed these medications more frequently than men (Appendix K). The definitive reasons for these observations are unknown.

Chronic use of benzodiazepines is defined as utilization for over 4 to 6 weeks. When reviewing data from CIHI for utilization of benzodiazepine medications for more than 365 days, Alberta has one of the highest uses in Canada, also surpassing the OECD average (See Appendix L).

Summary of Current State Review

There is significant correlation between the findings from stakeholder consultations, Alberta data, the literature review and the environmental scan. The systemic facilitators and barriers are remarkably similar between the literature and the perceptions of stakeholders.

There is growing awareness that inappropriate medication use in older persons is a problem with the term *deprescribing* gaining attention in the medical community. Research in this area is increasing exponentially and interest groups are becoming more active in deprescribing initiatives including prudent initiation of medication as part of appropriate medication prescribing. It is recognized that care to the older adult requires a holistic approach which can be supported by expertise from the interprofessional team. Initiatives to optimize medication prescribing and use are occurring at provincial, national and international levels. The SH SCN is well positioned through its experience and learnings from the Appropriate Use of Antipsychotic work, and through its provincial reach and collaborations, to impact change toward expanding safe medication prescribing and use, to other classes of medications such as the benzodiazepines and Z-Drugs.

Governance

Governance to guide future implementation is recommended to draw from a broad cross-section of health sectors, healthcare professionals, patients and families, post-secondary institution members, researchers, policymakers and professional regulatory and advocacy bodies. A broad cross-sectoral representation will allow for sharing of possible opportunities for collaboration within and outside of Alberta Health Services. An Advisory Committee will be formed to recommend on the initial and ongoing implementation and direction when funding is secured.

Enablers for Implementation

Enablers are broad categories to guide implementation but do not provide specific recommendations as actions will differ between practice settings. Work plans in each care setting could therefore be guided by the enablers identified.

Enablers identified during stakeholder consultations, from both healthcare professionals and patients and families, aim to have impact on individual, organizational and system levels. Patient empowerment may be achieved through public engagement and education of patients and families. Healthcare professionals need to be supported through education and promotion of the interprofessional team approach. Organizations need to collaborate to achieve systemic goals such as access and integration of information through the use of technology. Government engagement with respect to policy can be a key enabler to achieve appropriate prescribing and medication use in older adults in Alberta. Details of each enabler is provided as follows.

Older Adult Education and Culture Shift

Empowering older adults and families and considering their values, preferences and goals, should be a key focus.

How can this be achieved?

- Processes and policies need to emphasize older adult and family as being central to the interprofessional team so that they are included in decision-making and conversations about medications.
- Public campaigns could be held to increase awareness and educate patients and families on medication optimization and to encourage them to advocate for themselves and ask questions to healthcare professionals about their medications.
- Interprofessional teams within care processes where available, should be accessed to assist in educating older adults and families about potential benefits and harms of medications including reason for use, expected duration of treatment and reevaluation and follow up plan.
- Education about medications should be made readily available to older adults and families in the community and to those in long-term care and designated supportive living environments. Education may be delivered such as through clinic days or learning events and forums.
- Older adults and families should be made aware of existing sources of reliable information so that misinformation is avoided.

"If a medication is extremely beneficial yet has a high risk of side effects, it should be the patient's choice to choose whether to take the medication or not."

– Patient and Family Survey

"Educate seniors that they need to take responsibility to ask as many questions as they need for clarity – some of today's seniors come from a compliant era."

– Patient and Family Survey

"A written note about why a medication is started would be helpful."

– Patient and Family Survey

Healthcare Professional (HCP) Education and Culture Shift

"Educating clinicians, and front line care professionals related to inappropriate polypharmacy in the general sense would be the first step."

– Healthcare Teams survey

"It is not always apparent that the patient's presenting concerns are due to medication inappropriateness and requires astuteness from the physician."

– Primary Care Survey

Competencies of various HCPs specific to care of older adults, should be identified. Skills and knowledge of individual team members around assessing appropriateness of medications and alternative nonpharmacological approaches would result in optimal outcomes for the older adult.

How can this be achieved?

- Education and continuing education could be provided for physicians and interprofessional teams about recognizing polypharmacy, the importance of medication appropriateness including knowing about best practices in prescribing and deprescribing in older adults.
- Hesitation to deprescribe or to not treat with a medication, due to a belief that it would provide substandard care or create legal implications should be addressed. An understanding of legal consequences may allay fears about not prescribing and deprescribing.
- Family physicians and interprofessional teams could be supported by specialist physicians and the expertise of the interprofessional team toward appropriate prescribing and deprescribing in older adults. Existing tools and guidelines, and capabilities leveraged from information technology such as alerts, clinical pathways, smartphone applications and automated order sets tailored to older adult care could also be helpful.
- Sharing of nonpharmacological approaches should be facilitated between health team members, such as during care conferences, team huddles and meetings to increase learning on strategies which could be utilized. The use of a prescription for nonpharmacological interventions instead of a medication could be considered to shift away from a culture where medications are primarily used for treatment and prevention.
- Key competencies about medication use in older persons could be embedded in post-secondary education curriculum for healthcare professionals including opportunities for learning during experiential education.[27]

Interprofessional Collaboration

Highly effective teams improve outcomes for patients.[28] Interprofessional collaboration should be a key intervention approach, where teams exist. Principles to promote optimal team functioning such as sharing leadership, clarity of roles and responsibilities and communication between team members should be encouraged.[28] This will maximize the contribution of the individual team member's skills and knowledge so that the whole team comes together to achieve appropriate prescribing and medication use in the older adult.

"There is a need for "better interprofessional teams so I don't have to do this myself."

– Primary Care Survey

How can this be achieved?

- Teams should be encouraged to actively look for, and recognize polypharmacy in older adults and to seek further understanding of the rationale for various medications including root causes due to the social determinants of health, through dialogue with other healthcare professionals and family.
- Processes and policies, within the parameters of the Health Information Act, should emphasize older adults and family as being central to the interprofessional team so that they are included in decision-making and conversations about medications.
- Direct care providers and teams should be encouraged to engage other team members within the care setting, outside the care setting including outside the healthcare system if needed, to provide comprehensive, consistent and holistic care which is integrated and coordinated. Care teams may also include practitioners who can provide nonpharmacological alternatives such as nutrition services, spiritual care, social work, recreation and rehabilitation therapists, and others.
- The full scope of nurses, nurse practitioners and pharmacists should be encouraged and utilized, with an emphasis on communication of any changes in a patient or resident's medication therapy to the primary provider.
- Regular pharmacist-led, team medication reviews should be encouraged in all practice settings and during changes in patient status such as in the event of a fall or sudden onset of confusion. A medical review by a physician should accompany the medication review at this time.

"Everyone needs to talk to each other more. There are mixed messages."

– Patient and Family Group

"There is more support from pharmacists especially after being given more leeway in Alberta such as to renew medications."

– Patient and Family Group

"Pharmacists are an underutilized resource in Long-term Care and assisted living."

– Healthcare Teams Survey

- Driven by the patient and family, a common care plan between all healthcare professionals should be the guiding source for all professionals and for medication reviews so that decisions are made in the context of the older adult's overall health and personal goals. Care plans are currently created separately by healthcare professionals which counteracts health system integration efforts and the promotion of interdisciplinary practice.

Health Information Management, Transfer and Access

"The hospital doctor said that medications were added and that the family doctor would sort it out."

– Patient and Family Survey

There is a recognition of the current systemic limitations around health information; its availability and how it is shared when patients move between care settings. Therefore, improving access of information by healthcare providers and enhanced communication such as between practitioners and sectors, to support appropriate prescribing and medication use should be prioritized.

How can this be achieved?

- Discrepancies in medication information for an individual older Albertan can exist between care settings. These discrepancies can be minimized through the regular practice of performing a medication reconciliation. A current list of medications taken should be encouraged to be carried by the older adult or shared through a common technological interface. Strengthening medication reconciliation processes within the system can help ensure patient safety especially during care transitions, and an accurate medication list also forms the basis of a thorough evaluation of a patient's medication regimen, or medication review. While a medication reconciliation focuses on accuracy of the list, a medication review is intended to be a critical evaluation of the appropriateness and safety of an individual's medication regimen.[29] Performing a medication review requires specialized expertise and knowledge about medications while considering the patient context and is strengthened when informed by the perspectives of the interprofessional team.
- Processes need to be established during transitions where medication reviews become routine practice such as on admission and discharge with a concomitant plan for follow up. There is also significant potential for appropriate prescribing and medication

use in older adults through medication reviews performed by community pharmacists since these providers may have frequent contact with older persons taking medications.

- Wherever possible, a common care plan should also be shared by all care settings as a consistent record of the patient's comprehensive health record. Medical information in the common care plan should include information obtained from patient and family and should be shared with the patient in addition to being kept in the medical record.

Information Technology

There is a recognition of the opportunities to maximize the capabilities of information technology, as part of a multi-pronged strategy, to achieve appropriate prescribing and medication use.

How can this be achieved?

Wherever possible, the same electronic chart should be used across the system for universal access to the same health information preventing confusion between multiple prescribers, professionals and patients.

"We need integration of evidence-based clinical tools into our EMR's."

– Primary Care Survey

Electronic medical records could provide more clinical guidance than they do currently. Some suggestions are noted below:

- Indications for medications should be included at the time of prescribing to facilitate informed deprescribing at a future date.
- Medication related intolerances and allergies should extend to document what medication was stopped and why, to avoid re-prescribing.
- Embed high risk medication alerts in electronic medical records.
- Embed automated order sets as prescribing guidelines specific for older adults.
- Embed guidelines, algorithms and tools within the system to facilitate decision making for prescribing and deprescribing.

Technology can also reduce the gaps in care to rural and remote areas, such as access to a remote interprofessional team which may not be available locally, access to specialist consultations for patients and rural family physicians and opportunities for enhanced medication monitoring and regular medication review.

Policy and Regulatory Considerations

Policies and regulatory changes to support appropriate prescribing and deprescribing should be considered.

How can this be achieved?

- Coverage of high-risk medications should be reviewed for modification, while assuring minimal adverse unintended consequences.
- Coverage for alternative interventions including pharmacologic and nonpharmacological treatments, should be explored where there is evidence that they are safe and are cost-effective.
- Mandatory medication reviews could be considered at transitions of care and before adding any new medication. Community or primary care pharmacists may also be leveraged as part of the process, to ensure medication safety and appropriateness and for ongoing monitoring. Accompanied reimbursement for performing medication reviews could be considered to encourage uptake.
- Advocacy for upholding healthcare provider prescribing standards should be encouraged to ensure that the prescriber discusses and documents indication, expected time patient is to be on medication and the follow up plan. Prescribers must provide adequate information or through referral to an interprofessional team member, about the risks and benefits of medication therapy. Only providing medication information handouts should no longer be sufficient.
- Medication inserts or information sheets such as those provided to patients at the time of medication dispensing should be cleared to be free of bias and be up to date. Pharmacists must provide adequate information about the risks and benefits of medication therapy. Only providing medication information handouts should not be sufficient.
- Developments on the full scopes of practice such as for nurses and pharmacists, or policies such as ‘Universal Pharmacare’ may present opportunities toward appropriate prescribing and medication utilization.

Approaches to Consider to Reduce High Risk Medications in Older Adults

Several approaches may be taken to reduce inappropriate or high risk medications in older adults. The detailed action plans for implementation will vary to meet the unique context of the healthcare sectors and consist of enablers identified. Approaches suggested include targeting a specific class or medication, providing the healthcare practitioner with a menu of medications for which accompanying resources could facilitate appropriate prescribing or deprescribing or, an approach based on unmet needs of a specific population of older adults.

Whichever approach is chosen, tools, guidelines and resources developed by other provinces or national organizations which have followed rigor in evidence-based development should be utilized for efficiency and to avoid duplication and wastage of healthcare resources. Some approaches may require collaboration with partners outside the healthcare system, such as to support older persons with social needs such as housing or food insecurity, which may be root causes of inappropriate polypharmacy.

With all approaches, the processes established at a pilot site could spread to other sites or practices. Every approach must include a monitoring and evaluation plan which should also address the potential risks or unintended consequences.

Option 1: The Targeted Approach

When choosing a medication class or medication to be the focus of appropriate prescribing and targeted deprescribing, priority could be given to classes to which the following criteria apply. The class of medication:

- Is known to have potentially negative outcomes which outweigh the benefits in older adults such by causing falls, fractures, decreased cognition, need for emergency department visits or acute care admission and other negative impacts on quality of life.
- Is dispensed in high volume provincially and/or by zone, or disproportionately in a particular type of care setting.
- Is identified as a priority by Alberta stakeholders and other jurisdictions and/or national organizations.
- Has a viable and safer pharmacologic and, or nonpharmacological alternative.

The AUA approach targeted the class of atypical antipsychotics in long-term care and designated supportive living, which increased teams' expertise leading to successes in the reduction of antipsychotic use. Targeting for example, specifically the benzodiazepine medication class, including the sedative-hypnotic Z-Drugs; medications identifed as a concern by Alberta stakeholders, could produce similar results. The benzodiazepines and related medications are primarily used for sleep and anxiety but have other indications. See Appendix M for a brief background on benzodiazepines. The initial focus could be on a specific indication such as the inappropriate use for sleep. Use in other indications could follow in the future, including the off-label use for responsive behaviors.

The targeted medication class approach facilitates the development of medication specific implementation plans such as professional resources, consistent public messages and evaluation. The targeted approach favors cross-learning with messaging being socialized from one care sector to another resulting in a system-wide impact. This cross-sector influence was observed during the AUA project where physicians shared that they changed

practice to stop antipsychotics in acute care prior to the transition from acute to long-term care or designated supportive living. Data from the AHS Analytics group supports that fewer residents are being admitted to long-term care on antipsychotics than prior to the AUA project. The targeted approach builds confidence in teams for successful implementation while achieving the delivery of key educational messages which could serve as a foundation for the reduction of other inappropriate medication classes in the future. Monitoring of balancing measures is essential to avoid unintended consequences such as substitution with another medication class.

Option 2: Menu of Medications Approach

A menu approach that identifies several medications that could be considered for judicious prescribing or deprescribing, allows the prescriber a choice of which potentially inappropriate medication to tackle, based on context and preferences. The discrepancies noted earlier in survey results indicate that different practice settings prioritize different groups of medications beyond the top five medication classes identified as a concern in older adults. A menu approach therefore, may provide flexibility to target those medications which are thought to be most problematic in a particular practice setting or geographic area.

A focus on the number of medications per person is discouraged due to the challenges in developing relevant resources to support the implementation and evaluation of this type of approach. Moreover, not all polypharmacy is inappropriate, and focusing on numbers contradicts this notion.[30]

Option 3: Population Based Holistic Approach

Thirdly, a population-based approach could look at administrative data for older patients to identify the unmet needs of groups of individuals who demonstrate trends in high rates of medication utilization or uncontrolled conditions such as insomnia, hypertension or pain for which medications are sought. Tracing medical presentation back to social needs such as housing, isolation or mental health concerns provides an opportunity to address the root causes of the medical concerns exhibited toward a more holistic, person-centered and more effective approach to care. Identifying older persons presenting repeatedly to primary care clinics or emergency departments for acute, episodic care, could also potentially benefit from this approach.

The goal of this population-based approach is therefore focused on the social determinants of health which impact overall wellbeing of the older person. Outcomes could be indicated by an improvement in benchmarks met based on best practices for the specific condition which may also include a more appropriate medication regimen, or the discontinuation of a high risk medication and the utilization of nonpharmacological options. However, other indicators may be observed such as access to food and shelter or improved mental status. The multidimensional approach to care may result in lowered overall health system utilization while improving the quality of life of the older Albertan.

Potential Care Sector Specific Actions

Implementation of the approach chosen may be prioritized based on several factors. Current work and activity in specific care sectors to support appropriate prescribing and medication use could be given precedence to maximize resource utilization. Priority may also be given to situations where the risk is greatest to older adult populations. The availability of funding would also be a determinant in the feasibility for implementation in one care setting over another.

Approaches are recommended to be tailored to specific care sectors with working groups supporting the sector specific actions with an Advisory Committee to provide guidance on the overall direction.

Continuing Care (Long-term Care and Designated Supportive Living)

Due to successes with a targeted approach from AUA and the readiness of teams from this project, a targeted medication approach such as with benzodiazepines and related medications could be considered in LTC and DSL sites as an addition to current antipsychotic reduction efforts. Teams were noted to be very well versed in resident-centered approaches and management through nonpharmacological approaches. These skills are transferrable to reduce the inappropriate use of other medications like benzodiazepines. Education on supporting sleep using nonpharmacological approaches has been offered to LTC and DSL sites as part of the AUA project implementation which would also assist in the reduction of benzodiazepine and sedative-hypnotic Z-Drugs. Indications for other uses such as for anxiety or off-label uses could be addressed later if feasible.

Balancing measures are essential. For example, efforts to reduce antipsychotic utilization should be sustained even when initiating actions to reduce benzodiazepines. Any new initiatives should not replace AUA sustainability in continuing care. Resistance to perceived added workload and other concerns will need to be

managed and guidance may be sought from the working group and, or Advisory Committee.

While this strategy does not recommend a focus on the total number of medications, residents in continuing care facilities generally take the greatest number of medication classes which increases the likeliness of adverse effects compromising safety in this group reinforcing that this care sector could be a priority for implementation.[31,32]

Acute Care – including Alternate Level of Care (ALC)

The Appropriate Prescribing and Medication Use strategy may be introduced to the acute care sector as part of Elder Friendly Care – an initiative by the SH SCN to reduce the use of physical and pharmacological restraints.[33] Benzodiazepines and related medications, and antipsychotic medications can both be used as pharmacological restraints in practice due to their sedative effects. Collaboration with groups and programs within the hospital setting such as AHS Inpatient Pharmacy or others may enable implementation of one of the approaches illustrated. The acute care sector can often provide access to an interprofessional team who could support admitted patients and older persons ready for discharge, in a comprehensive manner. This presents an opportunity to address the underlying causes of illness such as through a population-specific approach for example. However any approach could be suitable and an acute care specific working group may guide the best direction in this care sector.

Community – including Primary Care and Home Care

Due to varying priorities of primary care providers and teams, a menu approach may be practical although any approach suggested could be implemented. A menu approach provides primary care practitioners flexibility to apply processes for appropriate prescribing based on clinic and population needs, and the availability of team and administrative support.

Through the Primary Healthcare Integrated Geriatric Services Initiative (PHC IGSI), a project to enhance dementia care in the community, the SH SCN partners with Primary Care Networks and the Primary Healthcare Integration Network where an opportunity exists to incorporate appropriate use and prescribing of medication in cognitively impaired persons.[34] PHC IGSI could be a significant facilitator toward successful implementation of appropriate prescribing and medication use in primary care. Other partnerships may be formed in the community setting including with home care, community pharmacists and other organizations external to AHS who could support safe medication use in older Albertans.

Due to increased monitoring of benzodiazepine and Z-Drug use by the College of Physicians and Surgeons, family physicians may wish to participate in a targeted approach to reducing potentially unnecessary use of these medications. Similarly to other settings, a working group specific to primary care could provide further direction.

Research

Several opportunities may surface for research during the implementation of work plans guided by the enabling themes identified. In addition, the Pharmacy Information Network database offers a platform for secondary analysis on the current, and future use, of various medications in Alberta. Researchers, including students from post-secondary institutions in Alberta, may choose to investigate how enablers may contribute to best practices and appropriate prescribing and medication use in older adults and, or mine provincial databases for new insights. Research with sound methodology, has the potential to contribute to real world evidence where learnings can be shared through dissemination and knowledge translation activities. Another possible area for research involves the impact of knowledge translation strategies such as using audit and feedback to influence appropriate prescribing or deprescribing.

Outcomes and Evaluation Plan

An evaluation framework is necessary to ensure that the prescribing and use of potentially inappropriate medications is being reduced in the province. Outcomes will vary depending on the approach chosen for each care setting and should be project-specific. The Health Quality Council of Alberta dimensions of quality are demonstrated as a framework for evaluation and are listed as follows:

- **Accessibility:** Health services are received in a suitable setting within a reasonable period of time.
- **Acceptability:** Health services respectful and responsive to user needs, preferences and expectations.
- **Safety:** Mitigate risks to avoid unintended or harmful results.
- **Effectiveness:** Health services are provided based on scientific knowledge to achieve desired outcomes.
- **Efficiency:** Resources are optimally used to achieve desired outcomes health service utilization.
- **Appropriateness:** Health services are relevant to user needs and are based on accepted or evidence-based practice.

These dimensions may apply to the following evaluation measures.

Clinical Outcomes

Clinical measures must include expected outcomes sought from the intervention such as monitoring for nighttime awakenings, cognitive changes and falls when sedative hypnotics like Z-Drugs for example, are de-prescribed. However, unintended consequences should also be monitored and measured, such as increased daytime drowsiness, decreased nutritional intake or increase in restraints use including the prescribing of a substituted medication to promote sleep (Safety).

Qualitative Indicators

In addition to quantitative indicators, patient/family and healthcare professional experience should be measured (Acceptability). Patient reported outcomes and patient experience can also have a significant impact on clinical outcomes (Acceptability).

System Indicators

System indicators may include parameters of health service utilization such as admission to emergency department and hospitalizations, or calls for paramedic services as a result of changes in clinical care (Accessibility) (Efficiency). These may be collected from administrative data as part of AHS Discharge Abstract Database. Data from the Health Quality Council of Alberta and/or the College of Physicians and Surgeons of Alberta (CPSA) may also be used to monitor changes in prescribing.

PIN and DOSE data

Data from the Pharmacy Information Network (PIN) and Drug Optimization, Sustainability and Evaluation (DOSE), when available, may be utilized to establish baseline measures at the provincial and zone levels. These may indicate the number of dispensed records of inappropriate or high risk medications which could be tracked over time. To ensure that substitution with other medications is not occurring, secondary monitoring of other medications for similar indications may be undertaken. Audit and feedback techniques could be utilized to provide quantitative results to teams participating in the practice improvement initiatives.

Economic Outcomes

System indicators will translate to economic outcomes and will be monitored through return on investment analyses (Efficiency).

Process Measures

Process measures may be used by teams as they engage in quality improvement cycles. They could be related to enablers such as the number of educational interventions delivered for healthcare professionals and families (Appropriateness), the number of medication reviews (Effectiveness) or discharge plans communicated to primary care physicians or community pharmacies and changes in policy to support long-term appropriate prescribing and medication use.

Sustainability

Planning for sustainability at every phase of the project cycle; from initiation to implementation to post-project phases is recommended to ensure maintenance of best practices and desired outcomes from the intervention or approaches adopted.

Also key to sustainability is collaboration and alignment with others who have similar endeavors in achieving medication safety and optimal outcomes in older persons.

Collaborations with stakeholders, groups and organizations undertaking similar work within and outside of the SH SCN and AHS is essential to reinforce mutual work and leverage resources to meet the goals and objectives of this paper.

Discussion and Next Steps

The complex nature of healthcare systems has made it challenging for well-meaning healthcare professionals and administrators to address appropriate prescribing and medication use in older Albertans.

The environmental scan and literature reviews align closely with the views of stakeholders and provincial medication dispensing data. The emerging messages which recur from these sources have laid the foundation in the development of this strategy. Subject to funding availability, implementation is recommended by overcoming obstacles and harnessing existing facilitators in the system.

The key next steps include but are not limited to the following:

- Circulate the draft to key stakeholders with the intent of seeking input and to find potential partners to champion the work. (November 2018 – September 2019)
- Identify key stakeholders that will support the successful implementation of the work. Stakeholders should include researchers, universities, national and provincial interest groups, regulatory agencies, policymakers and local groups inside and outside of AHS involved in promoting medication safety in older adults.

- Obtain approval of the strategy by key collaborating partners to enable transformation of the document into a Provincial Strategy (September 2019).
- Create an Advisory Committee to guide the overall direction for strategy implementation. (March – June 2019).
- Establish Working Groups to advise on the implementation of actions in specific care sectors (pending funding).
- Devise a work plan for specific activities related to each sector toward implementation (pending funding).
- Develop a detailed 3 to 5-year action plan (pending funding).
- Determine outcome measures which will be utilized for each care sector (pending funding).
- Gather external resources for implementation and plan for the development of internal resources specific to approach for each care sector (ongoing/pending funding).
- Seek funding to support the implementation of actions to achieve appropriate prescribing and medication use in older adults (ongoing).

National and international attention on appropriate prescribing and deprescribing and the Alberta experience with reducing antipsychotic use demonstrates that change is possible through strategic approaches. Medication safety is a priority with a growing population of older adults. Though appropriate prescribing and medication use, the Seniors Health SCN aims to mitigate avoidable healthcare utilization while improving the quality of life of older Albertans.

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Appendix A: Mission Statements

Mission Statement: Alberta Health

The Ministry ensures that Albertans receive the right healthcare services, at the right time, in the right place, provided by the right healthcare providers and teams.

Alberta Health's Mission and Vision. 2018. Alberta Health. Retrieved from: http://www.health.alberta.ca/about/vision-mission.html

Mission Statement: Alberta Health Services

To provide a patient-focused, quality health system that is accessible and sustainable for all Albertans.

Vision, Mission, Values and Strategies. Alberta Health Services. 2018. Retrieved from: https://www.albertahealthservices.ca/about/Page190.aspx

Mission Statement: Seniors Health Strategic Clinical Network

To make improvements to healthcare services and practices that enable Alberta's Seniors to optimize their health, well-being and independence.

Seniors Health Strategic Clinical Network. March 2013 Vol 1, Issue 1. Alberta Health Services. Retrieved from: https://www.ascha.com/PDF_files/rollout/2013/SH%20SCN%20Newsletter%201.pdf

Appendix B: Polypharmacy

Polypharmacy is a term which has been used for many years yet its definition has not been agreed. Historically, it had been defined, without consensus, as five or more medications.[1] However, there has been a recognition that the term polypharmacy may indeed fall into one of two categories; *potentially inappropriate polypharmacy* (PIP) requiring the need for deprescribing or dosage revisions and *appropriate polypharmacy,*[2] whereby number of medications consumed are required to maintain a patient's function and quality of life and does not lead to any harm. Therefore healthcare providers must acknowledge these two facets of polypharmacy with their clinical judgement to ascertain whether polypharmacy is truly problematic. Avoidance of polypharmacy due to fear that it may be inappropriate may result in "potential prescribing omissions" (PPO) in which medications needed by patients to optimize health are not prescribed, which may also lead to harm.[1] Tools such as the *Beer's Criteria* and more recently, *MedStopper* and *STOPP/START* have been devised in an attempt to assist the clinician in determining appropriateness of medication therapy.[3,4,5]

The increasing number of older adults in many countries including Canada coupled with their longevity contribute to rising rates of polypharmacy where this population consumes the most amount of medications.[1,6] Other related reasons for polypharmacy include increased chronic disease burden experienced in the older adult and an attempt by healthcare practitioners to adhere to guidelines in treating these.[6] An estimated 27% of those living in the community and 50% of those living in Long-term Care facilities are on more than five medications.[7] Persons aged 85 years and older on 10 or more medications was reported to be a staggering 40% in 2012.[8]

Polypharmacy itself, increases the likeliness of nonadherence, interactions and side effects resulting in inappropriateness.[7,9] Physiologic changes predispose the older adult to adverse effects such as falling, delirium or cognitive impairment and unnecessary placement into facility living due to loss of independence in daily living activities.[6] A recent Canadian publication demonstrated that for each additional medication added, there is a 2–3% increase in hospitalization and a 3–4% increase in ED usage, an issue which is expected to deepen with the burgeoning senior population.[10]

Inappropriate medications result in significant economic burden. There is concern at national and global levels that the irrational use of medications results in a wastage of valuable resources and causes avoidable harm to patients.[11] Canadians over the age of 65 account for sixty percent of public medication spending.[8] 40% of seniors in Alberta filled at least one inappropriate medication in 2013 and the total nationwide cost related to these medications was 419M.[12] Moreover, up to an estimated 25% of admissions into acute care are thought to be due to adverse effects from medications of which almost 70% were considered preventable in this older adult group.[6]

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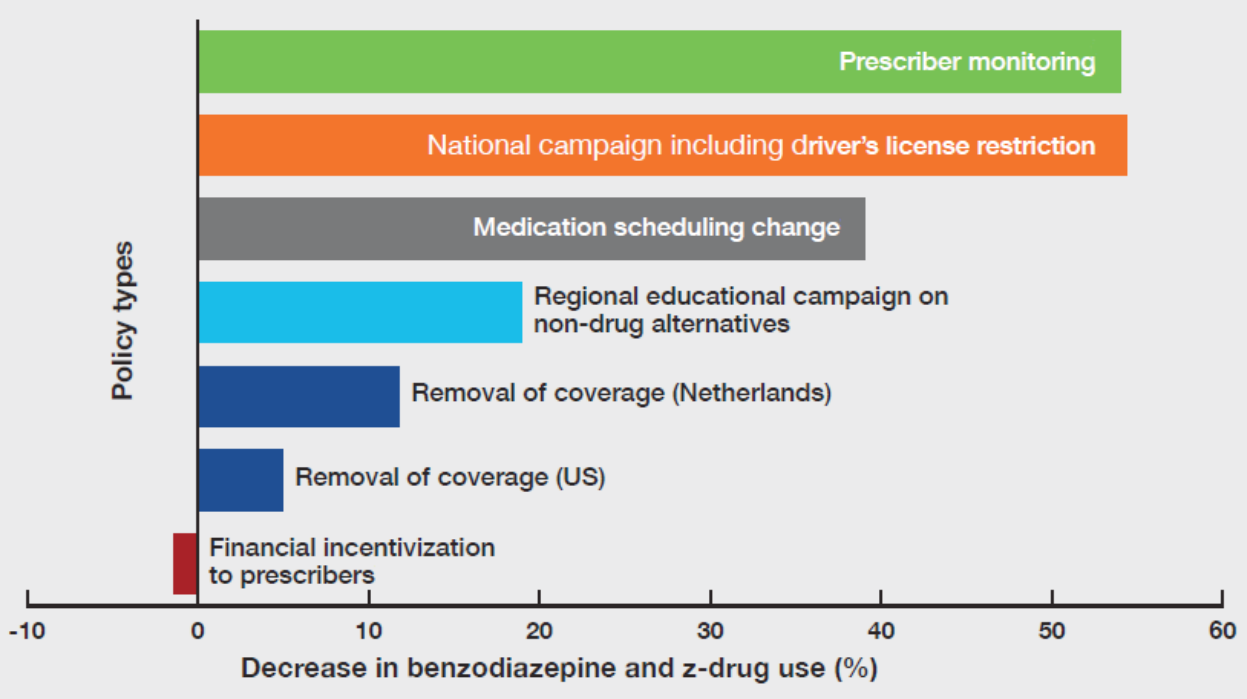
Appendix C: Provincial/National Organizations: Drug Class Priorities (aggregated)

Agency
Canadian Agency for Drug Technologies and Health
Canadian Center for Substance Abuse
Canadian Deprescribing Network
Canadian Institute for Healthcare Improvement
Choosing Wisely Canada
Institute of Safe Medication Practices
British Columbia (Shared Care BC)
New Brunswick (York Care Center)

Drug Class Priorities (aggregated)
1. Benzodiazepines (including Z-Drugs)
2. Opioids
3. Antipsychotics
4. Antihyperglycemics
5. Proton Pump Inhibitors
6. Statins
7. Anticoagulants
8. Anticholinergics
9. Antihypertensives
10. Antimicrobials

Appendix D: Impact of Medication Policy Changes by Country



Adapted from: Deprescribing by Policy. Canadian Deprescribing Network. May 2018.

Reference: Gardner et. al (2018). Deprescribing by Policy. *Canadian Deprescribing Network.* [Powerpoint slides] Retrieved from: https://www.cadth.ca/sites/default/files/symp-2018/presentations/april16-2018/Concurrent-Session-A4-Deprescribing-by-Policy.pdf

Appendix E: Stakeholder Consultations

- In-person (8), virtual Lync/Skype (13), surveys (4)
- Healthcare Professionals
  - » physicians (family physicians and specialists)
  - » pharmacists (community and clinical)
  - » nurses, nurse practitioners, licensed practical nurses, geriatric specialty nurses
  - » dietitians
  - » rehabilitation therapists
  - » social work
  - » healthcare teams
- University faculty (University of Alberta)
- Patient and Family Advisors, Alberta Health Services
- Public Engagements
- Surveys
  - » PCN groups (66) 91%physicians
  - » Physician groups (12)
  - » Healthcare groups (181)
  - » Patient and family members (17)
- Sectors represented
  - » acute care
  - » continuing care (LTC, Designated Supportive Living, Home Care)
  - » community and primary care
  - » rural and urban

Questions – Patient and Family

1. Which of the following best describes you (over age 65 years, caregiver for person age over 65, both 65 and caregiver)?
2. How comfortable are you in the ability to manage your medications? Explain.
3. Where do you go the most for information about your medications? Explain.
4. How satisfied are you with the support you receive in regards to medications from healthcare providers? Explain.
5. What things in the healthcare system work well so that seniors get the right medications to keep them healthy and that problems with medications like side effects are avoided?
6. What things in the healthcare system could be improved so that seniors get the right medications to keep them healthy and that problems with medications like side effects are avoided?
7. What do you think of feel when a healthcare professional recommends stopping a medication for you or for someone you care for?
8. Do you have any additional comments?

Questions – Healthcare Provider

1. Please share your professional background (physician, nurse, pharmacist, dietitian etc.).
2. How many years of experience do you have working with older adults?
3. What is your greatest concern when it comes to inappropriate medications in older adults?
4. Which medications would you identify as being high risk to older adults where the harms outweigh the benefits? Please rank.
5. How do providers decide which medications to start and which ones to stop and when?
6. What would your approach be to reducing inappropriate medicines in older persons (targeted, menu approach, other)?
7. How could your profession contribute to optimal prescribing and medication use?
8. What are the facilitators to appropriate prescribing and medication use?
9. What are the barriers to appropriate prescribing and medication use?

Appendix F: Medications Listed in Survey for Ranking

Anticholinergics (antihistamines, urinary agents, muscle relaxants)

Anticoagulants (warfarin and antiplatelets)

Antidepressants

Antidiabetics

Antihypertensives

Antimicrobials

Antipsychotics

Benzodiazepines

Bisphosphonates

Cholinesterase Inhibitors (donepezil, memantine)

Digoxin

NSAIDs

Opioids

Proton Pump Inhibitors

Sedative/Hypnotics (zopiclone)

Statins

Appendix G: Medications Prioritized by Healthcare Professionals and National Organizations

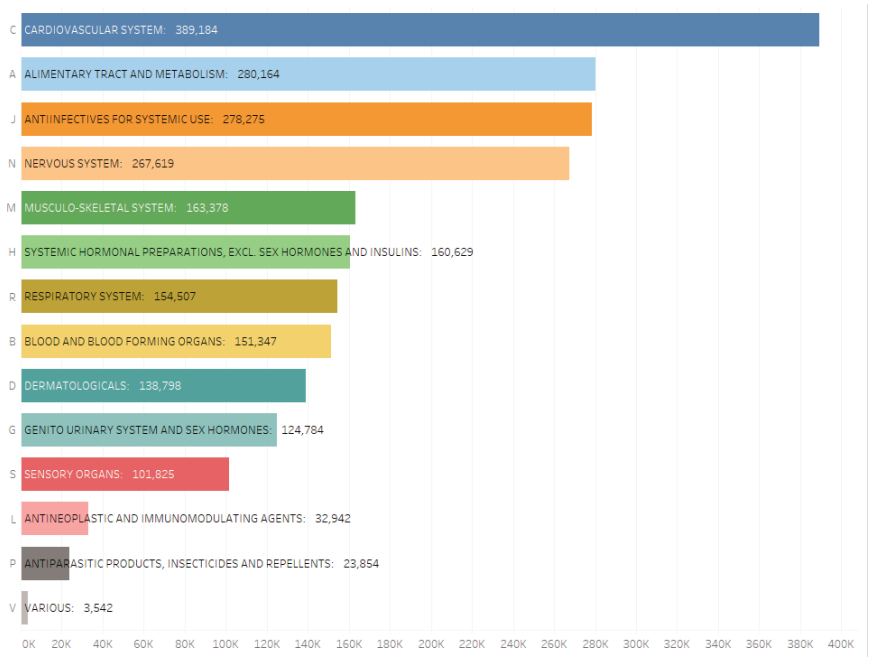
Geriatric Specialists (n=11)	**Primary Care Physicians** (n=66)	**Healthcare Teams** (n=92) (MD 1%, RN 37%, Pharm 34%, Diet 10%, SW 10%, other 10%)	**Aggregated priorities of provincial and national organizations**
1. Benzodiazepines	1. Benzodiazepines	1. Antipsychotics	1. Benzodiazepines (including related Z-Drugs as sedative-hypnotics)
2. Anticholinergics	2. Sedative/ Hypnotics	2. Sedative/ Hypnotics	2. Opioids
3. Sedative/ Hypnotics	3. Antipsychotics	3. Benzodiazepines	3. Antipsychotics
4. Opioids	4. Anticholinergics	4. Opioids	4. Anti-hyperglycemics
5. Antipsychotics	5. Opioids	5. Anticholinergics	5. Proton Pump Inhibitors
6. Antidiabetics	6. NSAIDs	6. Antidepressants	6. Statins
7. Proton Pump Inhibitors	7. Anti-hypertensives	7. Anticoagulants	7. Anticoagulants
8. NSAIDs	8. Anticoagulants	8. NSAIDs	8. Anticholinergics
9. Statins	9. Antidepressants	9. Proton Pump Inhibitors	9. Anti-hypertensives
10. Antimicrobials	10. Proton Pump Inhibitors	10. Anti-hypertensives	10. Antibimicrobials

MD=physician; RN=Nurse and Nurse Practitioners; Pharm.=Pharmacists; Diet.=Dietitians
SW=Social Worker; Other= Nurse Practitioner, Rehabilitation Therapists

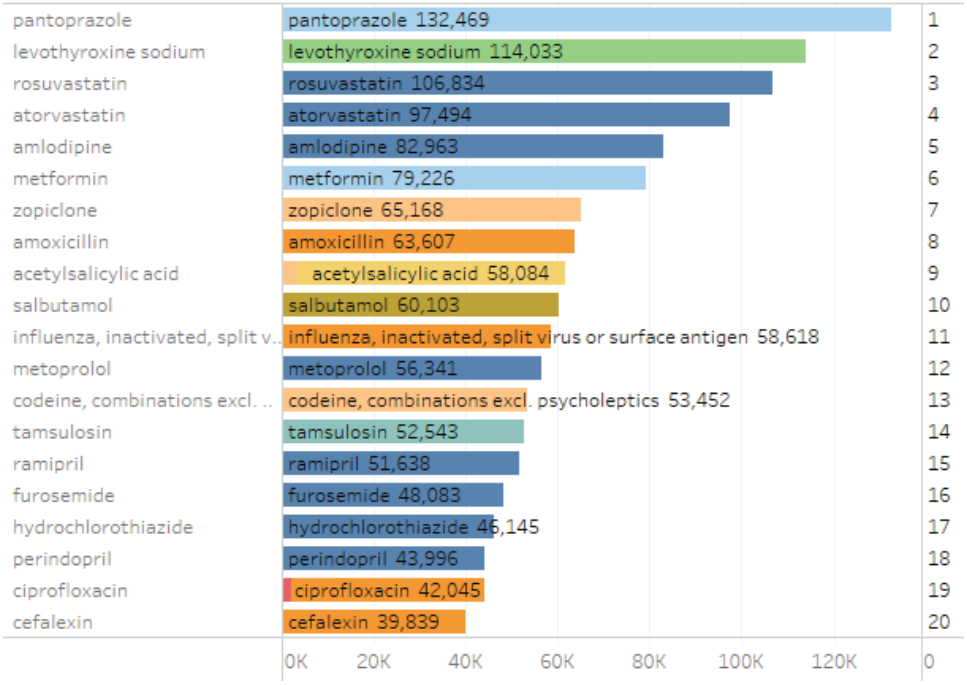
Appendix H: Prescription Medications Dispensed to Alberta Seniors

Data from Pharmacy Information Network (PIN)

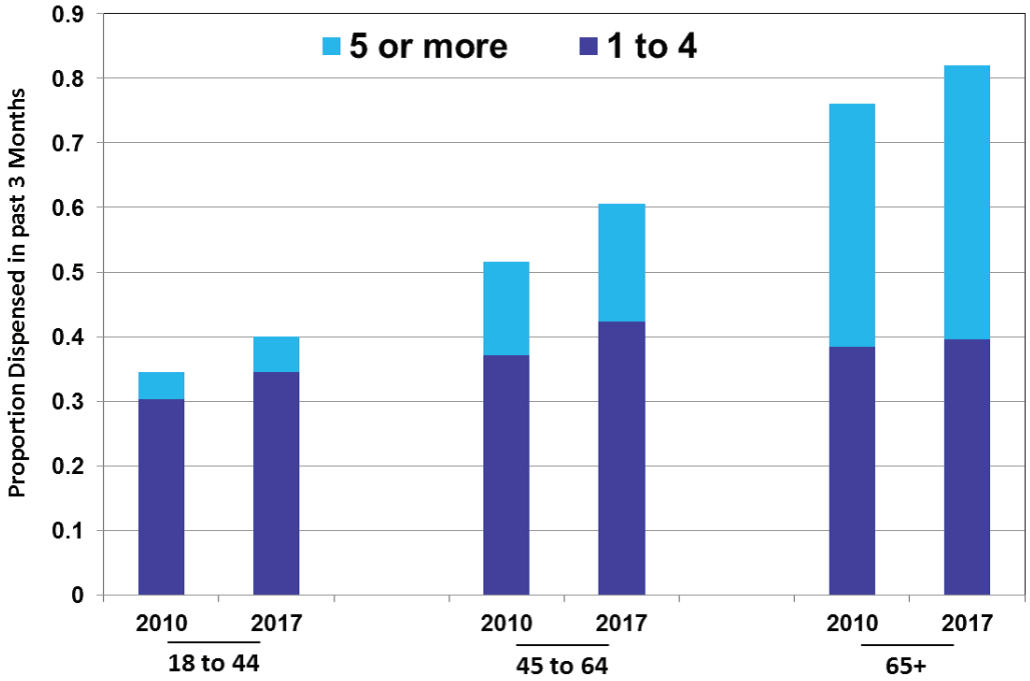
Prescription Rates Dispensed by WHO ATC Classification (2017–2018)



Top 20 Medications Dispensed to Seniors (2017–2018)



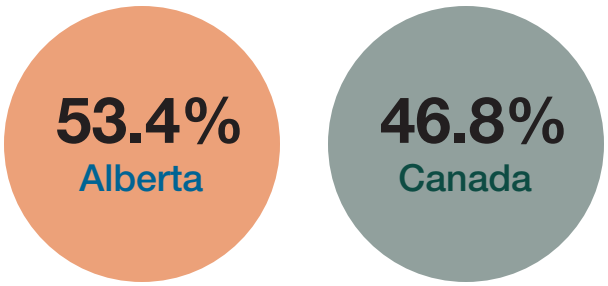
Appendix I: Prescription Drug Utilization Trends over Time



Alberta Health, Health Standards, Quality and Performance Division, Analytics and Performance Reporting Branch (2018)

Potentially Inappropriate Medication Prescribed to Seniors

(2016–2017)



Canadian Institute for Health Information (2018)

Appendix J: Benzodiazepines and Sedative Drugs

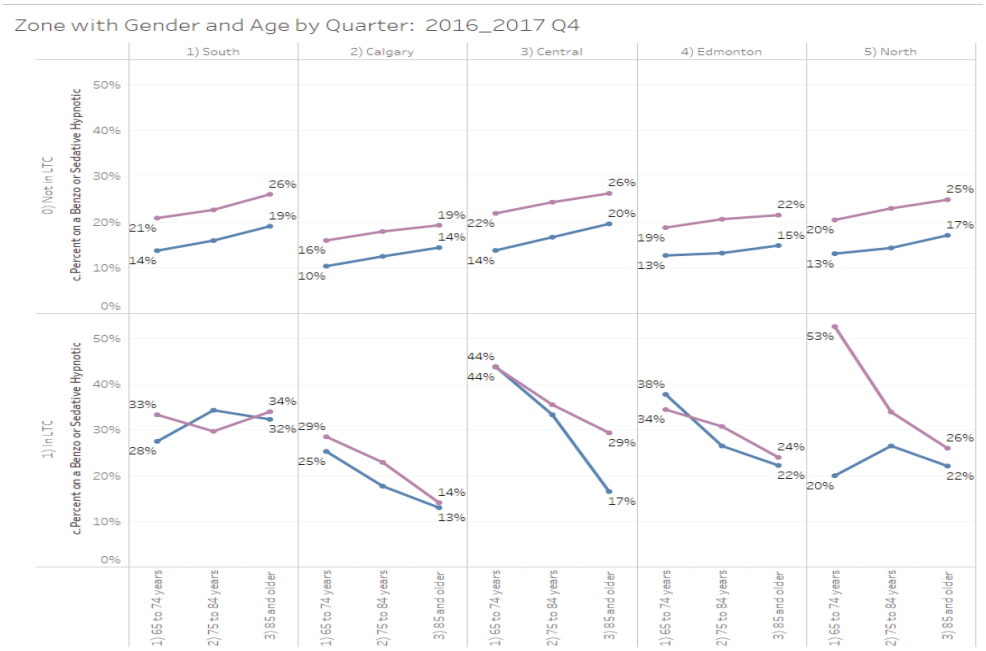
Benzodiazepine and Z-Drugs as Sedatives (Available in Canada)

Benzodiazepines	alprazolam
	bromazepam
	clonazepam
	diazepam
	flurazepam
	lorazepam
	midazolam
	nitrazepam
	oxazepam
	temazepam
	triazolam
Z-Drugs	zopiclone
	zolpidem
Other Sedative-Hypnotics (excluding anti-epileptics, antipsychotics, antidepressants and for alcohol withdrawal)	Phenobarbital
	Chloral hydrate
	valerian

Reference: RxFiles. Drug Comparison Charts (2017)

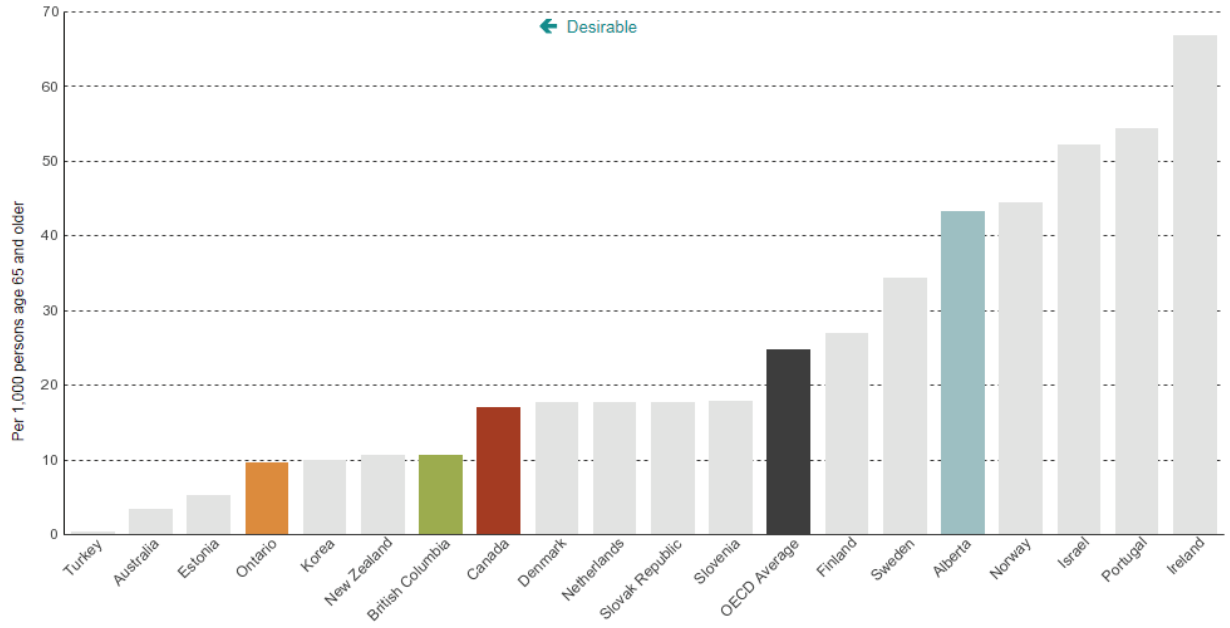
Appendix K: PIN Data Results Continuing Care and Community

Seniors in the Community and in LTC Facilities: Benzodiazepines and Sedative Hypnotics by Zone, Gender and Age



Seniors in the Community and in LTC Facilities: Benzodiazepines and Sedative Hypnotics by Zone and Gender

Appendix L: Data on Chronic Use of Benzodiazepines



Chronic Use Number of patients per 1000 age 65+ with prescriptions for benzodiazepines or related medications for more than 365 days. National Prescription Drug Utilization Information System 2015, CIHI; OECD Health Statistics 2017

Appendix M: Background Benzodiazepines and Related Z-Drugs

Benzodiazepine (BZD) and benzodiazepine-related medications (Z-Drugs), also classified as sedative-hypnotics are listed on the Beers Criteria as being potentially inappropriate in the elderly. These medications are mostly prescribed for sleep and anxiety but the benzodiazepines are also indicated for use in seizure disorder and for alcohol withdrawal syndrome.

BZD and Z-Drugs can cause sedation, confusion, dizziness and instability as well as a drop in blood pressure in some instances.[1] Therefore, BZDs and Z-Drugs in older adults increase the likelihood of causing delirium, cognitive impairment, falls and accidents leading to hospitalizations and subsequent morbidity and mortality with associated, higher healthcare costs.[2] Studies have shown a correlation between use of substances such as zolpidem and a 220% increase in emergency department visits.[3] Therefore, even the newer Z-Drugs, previously believed to be safer, have similar properties in terms of side-effects and interactions compared to the classic benzodiazepines.

There is a growing concern about the overuse of both the BZD and Z-Drugs as they are listed as one of the top five inappropriate prescriptions in Canada among provinces such as Alberta.[4] Lorazepam, for example was one of the most prescribed agents for anxiety in older adults and the use of these types of medications was double in Long-term Care facilities, compared to in community-dwelling individuals.[5] In 2015, the Alberta Triplicate Prescription Program, overseen by the CPSA (College of Physicians and Surgeons of Alberta) with its partners, included BZD and related medications for heightened monitoring.[6]

The benefits of benzodiazepine and Z-Drugs are modest compared to the risks. Positive effects are noted in physical, psychological and cognitive functioning when withdrawn appropriately.[7] Reducing the use of these medications among older persons in Alberta provides an opportunity to prevent harm and improve health in the older adult population while reducing healthcare costs.

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