Health care providers' roles and responsibilities in management of polypharmacy: Results of a modified Delphi

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As a member of an inter-professional clinical team caring for the frail elderly, I have grown to appreciate the roles each of our team members play in managing aspects of polypharmacy. I pursued this research because I wanted to explore the potential roles and related competencies more widely and help others think about how to work as teams to improve medication-related care for older people.

À titre de membre d'une équipe clinique interprofessionnelle qui assure le suivi de personnes âgées vulnérables, j'ai appris à respecter le rôle de chacun d'entre nous dans la prise en charge des divers aspects de la polypharmacie. J'ai mené cette recherche afin d'explorer plus à fond les rôles possibles et les compétences pertinentes au sein d'une telle équipe et de susciter la réflexion sur la façon de travailler en équipe pour améliorer la prise en charge de la médication chez les patients âgés.

ABSTRACT

Background: Little is known about the roles that allow interprofessional teams to effectively manage older patients experiencing polypharmacy.

Objectives: To identify and examine the consensus on salient interprofessional roles, responsibilities and competencies required in managing polypharmacy.

Methods: Four focus groups with 35 team members practising in geriatrics were generated to inform survey development. The sessions generated 63 competencies, roles or responsibilities, which were categorized into 4 domains defined by the Canadian Interprofessional Health Collaborative. The resulting survey was administered nationally to geriatric health care professionals who were asked to rate the importance of each item in managing polypharmacy; we sought agreement within and across professions using a confirmatory 2-round Delphi method.

Results: Round 1 was completed by 98 survey respondents and round 2 by 72. There was high intra-professional and interprofessional consensus regarding the importance of competencies among physicians, nurses and pharmacists; though pharmacists rated fewer competencies as important. Less consensus was observed among other health care professionals or they indicated the nonimportance of competencies despite focus group discussion to the contrary.

Discussion: Although there is a strong consensus of polypharmacy management competencies across team members who have been more traditionally involved in medication management, there continue to be health care providers with differing understandings of competencies that may contribute to reduced reliance on medication. Lower importance ratings suggest pharmacists may not acknowledge or recognize their own potential roles in interprofessional polypharmacy management.

Conclusion: Further exploration to understand the underutilization of professional expertise in managing polypharmacy will contribute to refining role clarity and translating competencies in practical settings, as well as guiding educators regarding curricular content. *Can Pharm J (Ott)* 2018;151:395-407.

Introduction

As people age, they often develop more chronic conditions, many of which are treated with

medications. Polypharmacy has been described as the concomitant use of ≥ 5 medications and, more recently, as taking more medications than

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KNOWLEDGE INTO PRACTICE

- Interprofessional collaboration is an important part of the effective care of older persons.
- The contributions of health care team members (particularly those not traditionally seen as being involved with pharmacotherapy) in managing polypharmacy should be acknowledged and encouraged.
- Pharmacists should consider the competencies and roles of other health care professionals, particularly in managing health conditions with nonpharmacologic approaches that minimize the risks of polypharmacy.
- Pharmacist educators should reflect on the importance of competencies required for polypharmacy management and identify means to incorporate the teaching and assessment of these competencies in undergraduate curricula and continuing education.

necessary or where harm may outweigh benefit. In the United States, the prevalence of polypharmacy is rising, with recent data from the National Health and Nutrition Examination Survey indicating 39% of those aged 65 years and over took ≥ 5 medications in 2011 to 2012.¹ In comparison, a recent Canadian Institute of Health Information report indicated that 66% of Canadians over the age of 65 years were prescribed ≥ 5 medications in 2016, with nearly 40% of those over 85 prescribed ≥ 10 different medications.² While drug therapy has benefits, polypharmacy is associated with risks of drug interactions, adverse drug reactions (ADRs), hospitalizations and falls.³⁻⁶

Effectively managing polypharmacy can be challenging and can involve a number of complex and interwoven barriers for health care professionals (HCP) and patients alike.^{7,8} Innovative approaches involving collaboration between physicians, pharmacists and sometimes nurses have demonstrated reductions in inappropriate medications.^{3,9-14} These approaches build on growing evidence that highlights the importance of team-based care delivery in ensuring that care practices are patient-centred, safer, timelier and more effective.¹⁵⁻¹⁹ Despite the emergence of interprofessional teams as an effective approach to caring for older people,²⁰⁻²³ little is known about how HCPs, including those outside the traditional roles of prescribing, distribution and administration of medication, individually recognize and respond to polypharmacy within their clinical practice. Central to the success of a collaborative interprofessional polypharmacy

mandate is an understanding of how each HCP understands their individual and collective roles and responsibilities in managing polypharmacy. Highlighting similarities and differences that exist across interprofessional HCP team members about their roles and responsibilities and, where possible, reaching a consensus about how these elements inform competencies and clinical practice, offers critical information about how and in what ways geriatric programs and institutions can appropriately respond to the rapidly growing issue of polypharmacy in our aging patient populations.

The purpose of this study was to identify and reach a consensus on salient HCP roles, responsibilities and competencies for the management of polypharmacy in older patients.

Methods

Study design

A sequential, exploratory, mixed-methods study,²⁴ including focus groups, followed by a 2-round Delphi process (Figure 1) was conducted.

Phase 1: Focus Groups

Data Collection – Sample and Focus Group Procedure. Four focus groups were held with interprofessional geriatric care teams in a subacute care hospital in Ottawa, Canada, to draft roles and responsibilities required for the management of polypharmacy. Each focus group was structured around a discussion of a polypharmacy case.²⁵ A facilitator provided prompts and asked probing questions (Appendix 1—all appendices are available online at <http://www.cpjjournal.ca>), using the Canadian Interprofessional Health Collaborative (CIHC), National Interprofessional Competency Framework as a guide.²⁶ The National Interprofessional Competency Framework offers an overarching, “integrative” approach that outlines 6 domains, including role clarification, team functioning, patient-/client-/family-/community-centred care, collaborative leadership, interprofessional communication and interprofessional conflict resolution.²⁶ Discussions were audio recorded and transcribed.

Data analysis. Using a deductive content analysis approach²⁷ guided by the CIHC competency domains, 4 coders individually identified codes and relevant quotes within the first focus group transcript. Each coder described their

FIGURE 1 Visual diagram of sequential exploratory mixed-methods design

coding during a research team teleconference; the team-agreed codes and emerging themes were aligned with 4 of the CIHC domains; these codes were then applied by 2 coders for the remaining transcripts, paying attention to ensure data were not left out if they didn't immediately align with the domains. Only one individual needed to describe a competency for its inclusion in the coding; this ensured that all HCP perspectives were captured, even in situations where there may have been only one participant representing that profession. Codes, organized by theme or competency domain, were compiled, along with relevant quotes and participant demographics.

Survey creation. Two investigators transformed the codes to competency statements to generate survey items organized by CIHC domain. Survey items were revised iteratively and compared to focus group transcripts to ensure no items were missing or significantly altered from the source material. The survey was pilot tested among a small group of focus group participants for face validity (Appendix 2).

Phase 2: Delphi Survey

Data Collection – Sample. Canadian HCPs (family physicians, geriatricians, pharmacists, nurses, physiotherapists, occupational therapists, recreation therapists, dietitians, social workers, clinical psychologists, speech-language pathologists) with expertise in caring for older patients who would likely have polypharmacy concerns, and who worked as part of a team, were recruited. Expertise was defined as having at least 4 years of experience working with older persons, academic appointments involving a geriatric focus, publications in the geriatrics field and/or training or certification in Care of the Elderly.^{28,29}

Participants were identified through networks, HCP organizations, institutional websites of HCP faculties, and via the snowball method.³⁰

Data Collection – Survey Procedure. Two survey rounds via email (Fluid Surveys) were conducted. To identify importance, participants were asked to rate the criticality³¹ of each competency statement based on the level of potential harm (no, low, moderate, severe and not responsible) that a patient might experience if the stated competency was performed poorly or not at all by them. Participants were invited to comment on unclear items, suggest additional items and provide general feedback. Following Round 1, participants were provided with a table indicating the frequency with which their profession group selected response choices for each item (Appendix 3), and they were then invited to complete the Round 2 survey. Each round was live for 4 weeks (reminders at 2 weeks, 1 week and 1 day remaining).

Data Analysis. Ratings of little harm/no harm and moderate/severe harm were collapsed, then assessed to determine whether a consensus was reached within each profession and by groups of professions for each item, calculating the proportion of items where a consensus about importance was achieved. Consensus was defined as >75% (for profession groups with >6 participants) or >50% (for profession groups with ≤6 participants) of participants selecting the same level of harm. A lower consensus cut-off was chosen for smaller professional groups to ensure we did not exclude potential competencies; both levels of consensus cut-off are within the range of acceptable Delphi consensus thresholds.³² Where there appeared to be similar levels of consensus, certain professions were grouped

MISE EN PRATIQUE DES CONNAISSANCES

- La collaboration interprofessionnelle joue un rôle primordial dans la prestation de soins efficaces aux personnes âgées.
- La participation des membres de l'équipe de soins à la gestion de la polypharmacie doit être reconnue et encouragée (particulièrement en ce qui concerne les membres qui ne participaient pas à la gestion de la pharmacothérapie autrefois).
- Les pharmaciens doivent tenir compte des compétences et du rôle des autres professionnels de la santé, particulièrement au chapitre de la prise en charge non pharmacologique des maladies, de manière à réduire les risques associés à la polypharmacie.
- Les pharmaciens éducateurs doivent réfléchir à l'importance des compétences nécessaires à la gestion de la polypharmacie et recenser des moyens d'intégrer l'enseignement et l'évaluation de ces compétences dans les programmes d'études de premier cycle et la formation professionnelle continue.

and the number of items that reached a consensus in these groups summarized. Physicians, nurses and pharmacists were grouped together because they are typically viewed as professions that manage medications.

Phase 3: Interpretation. Three team members analyzed focus group data, survey results and survey comments to create a joint display diagram.³³ Investigators discussed the joint display results to identify key areas of consensus or non-consensus and how those related to focus group findings.

Ethical considerations. The study received approval from the Research Ethics Boards at Bruyère Continuing Care, Ottawa Health Science Network, University of Toronto and University of Waterloo. All participants provided informed consent with each focus group and survey iteration.

Results

Demographics and survey response rate

Demographics of the 35 focus group participants and 98 survey participants are summarized in Table 1. In Round 1, 98 participants responded, whereas in Round 2, 72 of 97 recipients responded (one Round 1 participant gave no email address for follow-up, 2 withdrew and 23 people did not complete the survey within the allotted time).

Phase 1: Focus group results. Focus group participants identified several potentially important competencies. Many different HCPs (physicians, pharmacists, nurses and also social workers, physiotherapists, occupational therapists) described contributions to polypharmacy management. For example, physiotherapists and occupational therapists said they monitored the effect of analgesics and evaluated potential effects of medications on function. Psychologists and social workers discussed managing mood disorders and social problems to reduce reliance on antidepressants, and also mentioned communication with other HCPs on these issues to coordinate care. Overall, 63 competencies relevant to the management of polypharmacy were identified (Table 2). More than half of these competencies were linked to the CIHC Role Clarification Competency Domain (34 of 63). The remaining competencies were distributed among 3 additional CIHC Competency Domains (8/63 Patient-Centred Care, 9/63 Team Functioning, 12/63 Interprofessional Communication).

Phase 2: Survey results. The final results in Appendix 4 illustrate the degree of consensus on the importance of each item for each HCP group.

Consensus that competencies were important. There was agreement among physicians, pharmacists and nurses that 39 of 63 (61%) items were important (i.e., harmful if not addressed). Occupational therapists and physiotherapists agreed with the group of physicians, nurses and pharmacists on 26 of the 39 important items (40% overall), also reflected in survey comments:

"I try to learn as much as I can about the medications I come across as I can reasonably do (often includes journal research or consulting with our pharmacist), to help identify if someone may be at risk of falls or other adverse events. I never give advice re: medications, however, my job is to work with the RN and communicate back/refer on to the pharmacist/MD when appropriate." (PT – survey)

The number of competencies rated as important (i.e., a consensus was reached) by each health profession and groups of HCPs is shown in Table

TABLE 1 Participant demographics

	Focus groups (n = 35)	Delphi round 1 (n = 98)	Delphi round 2 (n = 72)
Profession			
Dietitian	1 (2.86%)	5 (5.10%)	4 (5.56%)
Family physician	1 (2.86%)	5 (5.10%)	4 (5.56%)
Geriatrician	0	7 (7.14%)	4 (5.56%)
Nurse practitioner	1 (2.86%)	16 (16.3%)	13 (18.0%)
Occupational therapist	4 (11.4%)	11 (11.2%)	5 (6.94%)
Pharmacist	3 (8.57%)	16 (16.3%)	14 (19.4%)
Physiotherapist	4 (11.4%)	12 (12.2%)	10 (13.9%)
Psychologist	1 (2.86%)	3 (3.06%)	3 (4.17%)
Recreation therapist	0	6 (6.12%)	3 (4.17%)
Registered nurse	15 (42.9%)	6 (6.12%)	4 (4.17%)
Social worker	2 (5.71%)	5 (5.10%)	2 (2.78%)
Speech-language pathologist	0	6 (6.12%)	6 (8.33%)
Other (aid, rehab assistant)	3 (8.57%)	0	0
Years of practice			
Less than 4 y		6 (6.12%)	5 (6.9%)
4 to 9 y		17 (17.4%)	10 (13.9%)
10 to 14 y		19 (19.4%)	16 (22.2%)
15 to 19 y		22 (22.5%)	17 (23.6%)
20+ y		34 (34.7%)	24 (33.3%)
Geriatric or care of the elderly training		47 (48.0%)	31 (43.1%)
Interprofessional practice type			
Hospital		45 (45.3%)	41 (56.9%)
Community		24 (24.5%)	16 (22.2%)
Independent in community		7 (7.14%)	3 (4.17%)
LTC		6 (6.12%)	4 (5.55%)
Other		16 (16.3%)	8 (11.1%)
Province			
AB		5 (5.10%)	5 (6.94%)
BC		6 (6.12%)	4 (5.55%)
MB		10 (10.2%)	3 (4.16%)
NB		2 (2.04%)	6 (8.33%)
NL		1 (1.02%)	NA
NS		3 (3.06%)	2 (2.77%)
ON		56 (57.1%)	40 (55.5%)
QC		6 (6.12%)	5 (6.94%)
SK		9 (9.2%)	7 (9.72%)

TABLE 2 Competencies identified through focus group discussions

ROLE CLARIFICATION	
1.	Describing your own role, and recognizing and respecting the diversity of other health and social care roles, responsibilities and competencies (with respect to polypharmacy management):
a.	Acknowledge elderly patients have differing needs and require the various perspectives of different providers and multiple approaches to their care
b.	Elicit and respect the patient's cultural beliefs related to health care delivery
c.	Take or interpret a medical history appropriate to your scope of practice to assess:
i.	Physical status
ii.	Mental status
iii.	Emotional status
iv.	Social status
v.	Clinical, diagnostic and laboratory data (e.g., CrCl, electrolytes, ECG)
d.	Document a list of medications a patient is currently taking or has taken recently
e.	Assess a patient's current medications, along with medical history, to determine:
i.	When a medication was started
ii.	For what reason a medication was started and why it is being used now
iii.	Whether a medication is necessary and effective
iv.	Compliance of the patient with medications
v.	Potential drug-related causes of symptoms
vi.	Drug interactions
vii.	Contraindications to medications
f.	Question if a medication is still required for a condition
g.	Assess a patient's past medications, along with medical history, to determine previous experiences with medication effectiveness, safety and compliance
h.	Assess the effectiveness of nonpharmacological approaches that a patient has previously used or is using for a condition
i.	Consider whether controlled, monitored dose decreases or discontinuation of medications may be useful in optimizing the patient's health
j.	Consider whether other pharmacological treatments may be safer or more effective for a patient
k.	Monitor the safety and effectiveness of medication changes and progress of the patient in achieving goals of care
l.	Consider whether nonpharmacological approaches that reduce reliance on medications may be useful in optimizing the patient's health
m.	Monitor the safety and effectiveness of changes in nonpharmacological approaches and progress of the patient in achieving goals of care
2.	Communicating roles, knowledge, skills and attitudes using appropriate language (with respect to polypharmacy management):
a.	Modify communication techniques to accommodate patients experiencing temporary or permanent challenges in cognition
3.	Accessing others' skills and knowledge appropriately through consultation (with respect to polypharmacy management):
a.	Recognize when additional expertise is required to appropriately manage a patient's polypharmacy issue
b.	Seek consultation from a range of HCPs, both those that are part of the team and those that are not
c.	Refer to other HCPs where appropriate
d.	Receive formal interprofessional education to understand what other HCPs do
4.	Considering the roles of others in determining their own professional and interprofessional roles (with respect to polypharmacy management):
a.	Acknowledge that scopes of practice may overlap when determining who assumes responsibility for specific aspects of a patient's care
b.	Distinguish which tasks and responsibilities to take on for a specific patient to manage polypharmacy
c.	Recognize roles other HCPs will take on to avoid duplication of effort and ensure comprehensive care
d.	Trust other HCPs to employ appropriate role(s) in managing polypharmacy (i.e., HCPs will work within their scope and will perform their stated role)
5.	Integrating competencies/roles seamlessly into models of service delivery in the interprofessional management of polypharmacy:
a.	Document who is responsible for specific aspects of a patient's care
b.	Document plans, actions, follow-up and patient responses in a timely, effective manner so that all members of the health care team remain informed

(continued)

TABLE 2 (continued)

PATIENT/FAMILY-CENTRED CARE	
1.	Supporting the participation of patients and their families as integral partners (with respect to polypharmacy management): <ol style="list-style-type: none"> Negotiate and discuss realistic treatment goals/expectations with the patient and/or family Involve the patient (and/or family) in planning and get their buy-in to care plan Elicit ongoing involvement of the patient (and/or family) throughout care process (e.g., modification of plans and goals) Involve the patient (and/or family) in monitoring and assessment Engage the patient (and/or family) to act as an information source for all HCPs involved in their care
2.	Sharing information with patients (or their family) in a respectful manner and in such a way that is understandable encourages discussion and enhances participation in decision-making and care (with respect to polypharmacy management): <ol style="list-style-type: none"> Ensure that patients have access to hearing aids, eye glasses or other aids that can help optimize their understanding of their care Accommodate for patient's cognitive or health literacy challenges when discussing their care with them Respect a patient's socioeconomic status when considering goal setting, treatment planning and discharge planning (e.g., access to care in the community)
TEAM FUNCTIONING	
1.	Ensuring optimal team functioning (with respect to polypharmacy management): <ol style="list-style-type: none"> Coordinate care for a specific patient (i.e., communicate findings with other HCPs, monitor progress and work together to achieve goals) Involve HCPs in the community where the patient is to be discharged to ensure a continuity of care and prevent recurrences of problems (e.g., liaise with community support networks and community HCPs on discharge) Consult appropriate HCPs (e.g., specialists) for advice on treatment Ensure your own accessibility to other health care team members Acknowledge that consistency in staffing for a particular patient will facilitate care Develop goals of the care and treatment plan as a team Encourage input from every HCP involved in goal setting and treatment planning Understand the need to be flexible and adaptable in your own role (within the scope of practice) for a specific patient Respect other team members' professional responsibilities (e.g., documentation needs, legal requirements for their college, scopes of practice)
INTERPROFESSIONAL COMMUNICATION	
1.	Communicating with health care team members and HCPs in the community (with respect to polypharmacy management): <ol style="list-style-type: none"> Communicate changes in the patient's care plan, progress and new findings with regard to medications with other HCPs Communicate changes in the patient's care plan, progress and new findings with regard to nonpharmacological approaches with other HCPs Communicate changes in the patient's care plan, progress and new findings with regard to medications with HCPs in the community Conduct discharge planning (e.g., communication with community care and access centres, community pharmacy, private physiotherapy clinic, family medical practitioner)
2.	Communicating within the health care team using various techniques (with respect to polypharmacy management): <ol style="list-style-type: none"> Communicate using formal tool(s) (e.g., rounds, charting, electronic record, etc.) Communication using informal tool(s) (e.g., phone calls, hallway discussion) Ensure ease of access to patient information, such as care plan, treatment changes and progress notes (e.g., electronic medical record(s) that can be accessed by multiple HCPs at once)
3.	Communicating information with HCPs in the community (with respect to polypharmacy management): <ol style="list-style-type: none"> Communicate using formal tool(s) (e.g., standardized forms or discharge summaries) Communicate using informal tool(s) (e.g., phone calls)
4.	Communicating with patients and families (with respect to polypharmacy management): <ol style="list-style-type: none"> Ensure consistent messaging from all HCPs Have a primary team contact person for the patients and their families Develop trust with patients and their families

TABLE 3 Summary of main findings

CIHC domain	Themes from focus groups	Survey item examples derived from the focus groups	Survey items where a consensus was reached
Role clarification	Understand and describe own role and that of others	Distinguish which tasks and responsibilities to take on for a specific patient to manage polypharmacy	Consensus important: FP 33/34, Ger 31/34, Pharm 24/34, NP 26/34, RN 32/34, OT 23/34, PT 17/34, RT 15/34, SW 2/34, Psych 4/34, RD 1/34, SLP 4/34
	Thorough patient assessment	Take or interpret a medical history appropriate to your scope of practice to assess physical status	
	Reduce reliance on medications	Consider whether controlled, monitored dose decreases or discontinuation of medications may be useful in optimizing patient health	
	Monitoring	Monitor the safety and effectiveness of medication changes and progress of patient in achieving goals of care	
Patient/family-centred care	Involvement of patient and family in care	Engage the patient (and/or family) to act as an information source for all HCPs involved in care	Consensus important: FP 7/8, Ger 7/8, Pharm 7/8, NP 7/8, RN 8/8, OT 8/8, PT 5/8, RT 6/8, SW 7/8, Psych 0/8, RD 0/8, SLP 2/8
Team functioning	Collaboration with HCPs on team	Develop goals of the care and treatment plan as a team	Consensus important: FP 7/9, Ger 7/9, Pharm 5/9, NP 9/9, RN 9/9, OT 8/9, PT 8/9, RT 9/9, SW 3/9, Psych 1/9, RD 0/9, SLP 1/9
Interprofessional communication	Streamline communication with HCPs, patient and family	Communicate changes in patient care plans, progress and new findings with HCPs in the community regarding medications	Consensus important: FP 11/12, Ger 12/12, Pharm 9/12, NP 11/12, RN 11/12, OT 12/12, PT 10/12, RT 9/12, SW 0/12, Psych 0/12, RD 5/12, SLP 0/12
	Facilitators of communication	Communicate using formal tools (e.g., rounds, charting, electronic record, etc.)	

RD, registered dietitian; FP, family physician; Ger, geriatrician; NP, nurse practitioner; OT, occupational therapist; Pharm, pharmacist; PT, physiotherapist; Psych, psychologist; RT, recreation therapist; RN, registered nurse; SW, social worker; SLP, speech-language pathologist.

3. Agreement was distributed relatively equally among the 4 CIHC domains. No items were deemed important by all HCPs.

Consensus that competencies were not important, or that the professional was not responsible. Psychologists reached a consensus that they were not responsible for a competency or that it was not important (i.e., would cause little or no harm if they did not do it) for 39 of 63 items, speech-language pathologists for 22, dietitians for 18 and recreation therapists for 15. Family physicians and geriatricians all agreed that 1 of 63 items was not important. For pharmacists, nurses and nurse practitioners, all competencies

were important or a consensus was not reached regarding the importance of an item.

Phase 3: Interpretation. A joint display available in Appendix 5 illustrates examples of themes emerging from focus groups, followed by relevant quotes, interpretation, competency statement (i.e., survey item) generation and a description of survey items for which a consensus was achieved.

Consensus about the importance of many competencies across all 4 domains was apparent among physicians, pharmacists and nurses, and was consistent with their focus group discussions.

“I work with a physician and an eldercare pharmacist. We all look at the medications that are prescribed, over-the-counter meds and often try to suggest nonpharmacological modalities if it is appropriate.” (NP – survey)

The within-group agreement among these professions for these important competencies was even higher. Among the physician group, agreement regarding importance was highest; such agreement was less so for nurses and least for pharmacists. For example, pharmacists did not come to a consensus about the importance of items such as assessing cultural beliefs, social status, or when a medication was started. Neither pharmacists nor nurse practitioners came to a consensus about the importance of assessing safety/effectiveness of nonpharmacological approaches, acknowledging overlap of responsibility for patient care or communicating with patients by phone.

There was less consensus about important competencies among other HCPs, particularly for items in the Role Clarification domain, and some HCPs (dietitians, psychologists, speech language pathologists) rated competency items as not important to, or not part of, their role across all domains despite focus group comments to the contrary.

Discussion

The aim of this study was to identify and reach a consensus on the salient interprofessional roles, responsibilities and competencies required in managing polypharmacy in older adults.

Numerous competencies were identified and organized into a nationally accepted framework for interprofessional care. Not surprisingly, those HCPs traditionally thought of as responsible for managing aspects of prescribing, dispensing, advising on and administering medication-related care (physicians, pharmacists, nurses) agreed that more than half of the competencies were important in their roles; these represent both individual and shared competencies. The finding that physicians and nurses rated more competencies as important to their roles compared to pharmacists was surprising, given the focus of pharmacy education on medication management skills.³⁴ It is possible that some pharmacists do not recognize or acknowledge that certain tasks are within their

scope (e.g., determining when a medication was started, assessing safety/effectiveness of non-pharmacologic approaches, assessing cultural beliefs or social status, recognizing the roles of other HCPs in managing polypharmacy, documenting responsibility for aspects of patient care, communicating with patients by phone). It is also possible that pharmacists did not believe that their ability to perform the task well mattered to the patient's health because someone else would take responsibility for the task, or even that they might not have understood that the task(s) might affect the patient's health. This area requires further exploration with a larger group of pharmacists, as well as pharmacy educators, to gain knowledge about the variation in understanding of these competencies and their impact, as well as whether important competencies are not being stressed, or are being missed in undergraduate or professional development curricula.

Other HCP groups, who had described their roles in managing polypharmacy during focus group discussions, did not reach a consensus about the importance of related competencies in the survey. When they did reach a consensus, it was primarily about items that they felt were not important or not within their scope of practice (e.g., psychologists agreeing that taking a medical history poorly or not at all would not cause harm, that they were not responsible for documenting a list of medications; speech and language pathologists agreeing that they were not responsible for determining whether a medication was necessary or effective; dietitians agreeing it was not important for them to be involved in planning or monitoring medication treatment goals). This overall lack of consensus and sense of unimportance of competencies from some survey respondents may reflect the environment in which the focus groups were held—in a single institution, albeit in different programs, where team members worked in an interprofessional manner and with whom much work has been done to promote the management of polypharmacy and deprescribing.³⁵⁻³⁹ This could have led to an increased awareness of potential roles and responsibilities within that environment. Survey participants from across Canada, despite working in geriatric care teams, may not have worked in an environment emphasizing the management of polypharmacy, leading them to indicate non-involvement or non-importance of a competency

without realizing their potential role. Further, heterogeneity in practice sites and individual team composition may explain the differences in perceived and actual roles and responsibilities. Overall, the results highlight the importance of creating awareness for ways in which HCPs can help manage polypharmacy—either, for example, by reducing reliance on medications through nonpharmacological means, or by helping monitor the effects of medication changes.

Geriatric care teams often include several different HCPs, and attempts have been made to compare geriatric competencies across disciplines and to provide guidance for interdisciplinary team training to ensure quality care.^{40,41} However, there has been little description of what team members can do to effectively manage the common problem of polypharmacy. Such knowledge is critical in shaping training curricula and continuing education programs related to polypharmacy management across disciplines. Specific competencies related to geriatric care are not consistently integrated into medical professional curricula, even though medical and pharmacy schools are gradually changing to incorporate more geriatric content.⁴¹⁻⁴⁵ Whereas medication management is a key competency in medical and pharmacy entry-to-practice competency documents, there are no specific details related to management of polypharmacy in older patients.^{34,46-48} This is reflected in the lower agreement among pharmacists regarding the importance of competencies for managing polypharmacy.

The focus group data suggest that exploration and discussion are needed to determine how various HCPs, other than those traditionally involved in medication use, can contribute to polypharmacy management. The view by some HCPs (shared in our survey phase)—that they do not play an important role or any role at all in managing polypharmacy despite working in geriatric care teams—is an important finding. Further study is required to really understand if, how and why these HCPs believe their role does not include polypharmacy management, and how these beliefs may be operationalized at professional, team and institutional levels, including a comparison with teams that are more advanced or experienced in polypharmacy management. The results signal a need for education of all HCPs surrounding their potential role in team management of polypharmacy. They also support the findings of others who have attempted

to identify competencies in front-line collaborative care and encountered difficulties in defining and measuring such competencies.^{49,50}

Strengths

The established sequential exploratory mixed methods²⁴ approach offered an opportunity to explore with HCPs who work on interprofessional elder care teams, how they manage polypharmacy to generate a wide range of information about roles, responsibilities and tasks that they draw on in their practice. Focus group composition reflected typical geriatric care teams with a high ratio of nurses and individual HCP representatives. In exploring the applicability of the qualitative findings with a wider cross-Canadian HCP audience, target sample sizes (minimum of 5 to 10)²⁸ were achieved for physicians, pharmacists, nurses, occupational therapists, physiotherapists and speech-language pathologists. This aided in understanding the relevance and importance of the competencies in these groups. Using the modified Delphi approach helped in identifying where there was, and was not, a consensus about the importance of various competencies.^{28,42,51}

Limitations

Sample size was small for some HCP groups (e.g., social workers, 2; recreation therapists, 3; psychologists, 3; and dietitians, 4) limiting the ability to make conclusions about reaching a consensus by these professions. These results are hypothesis-generating and raise questions about the role of certain HCPs in managing polypharmacy. In addition, many survey participants worked in different practice environments and provinces where scopes of practice and expected responsibilities may differ. Further, all focus groups took place at a single institution, which may not reflect the practice environment of survey participants. This likely contributed to the inability of the survey process to confirm focus group findings. More exploratory work, with larger numbers of participants, is clearly needed to fully understand the perspectives of disciplines that position managing polypharmacy as less central to their role.

Conclusion

This study identified salient interprofessional competencies required for the management of polypharmacy. Consensus about the highly ranked importance of competencies among

professions typically responsible for medication management (i.e., physicians, nurses) was not surprising, but pharmacists' assessment that certain competencies (e.g., determining when a medication was started) were less important for them to perform was unexpected. This could reflect gaps in pharmacy curricula and practice standards. Variations in how other health care professionals responding to the survey viewed their responsibility for, or the importance of, competencies was contrary to focus group findings and requires further exploration. Overall, the findings suggest variation in practice and the need to build role recognition within professions and among different team members as it relates to polypharmacy management. Identification of the competencies that can be applied across health professions will be useful in building efficient and collaborative learning approaches in interprofessional curricula and within practice sites.

Ensuring that these competencies are seen as a "living document" reminds us of the important work required in translating research findings (such as competencies) into clinical care and, ultimately, towards improving patient care and demonstrating stronger health outcomes.⁵²

The application of interprofessional competencies into practice, particularly in the area of polypharmacy in aging patient groups, requires a multipronged approach, wherein there is a focus, such as in this study, on both exploratory methods where interprofessional team members relay their roles, responsibilities and processes, as well as broader approaches that work to reach a consensus about what are integral competencies. Effective coordination and collaboration can only occur when each profession knows and uses the others' expertise and capabilities in a patient-centered way. The different findings that arose across these 2 sequentially linked methods emphasize the need for future research to explore how interprofessional team members can construct their individual and interpersonal roles in understanding, identifying and managing polypharmacy. Future work that builds on the areas of consensus across interprofessional teams (even if few in the beginning) offers an important starting point in exploring common understandings and practices and, ultimately, how and in what ways knowledge, practices and understandings may be different but linked in the common goal of providing good patient care. ■

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References

1. Kantor E, Rehm C, Haas J, et al. Trends in prescription drug use among adults in the United States from 1999-2012. *JAMA* 2015;314(17):1818-30.
2. Canadian Institute for Health Information. *Drug use among seniors in Canada*, 2016. Ottawa (ON): CIHI; 2018.
3. Maher R, Hanlon J, Hajjar E. Clinical consequences of polypharmacy in the elderly. *Expert Opin Drug Saf* 2014;13(1):1-11.
4. Reason B, Turner M, Moses McKeag A, et al. The impact of polypharmacy on the health of Canadian seniors. *Fam Pract* 2012;29(4):427-32.
5. Ziere G, Dieleman JP, Hofman A, et al. Polypharmacy and falls in the middle age and elderly population. *Br J Clin Pharmacol* 2006;61(2):218-23.
6. Fried TR, O'Leary J, Towle V, et al. Health outcomes associated with polypharmacy in community-dwelling

- older adults: a systematic review. *J Am Geriatr Soc* 2014;62(12):2261-72.
7. Anderson K. Prescriber barriers and enablers to minimizing potentially inappropriate medications in adults: a systematic review and thematic synthesis. *BMJ Open* 2014;4(12):e006544.
8. Reeve E, To J, Hendrix I, et al. Patient barriers to and enablers of deprescribing: a systematic review. *Drugs Aging* 2013;30(10):793-807.
9. Owens NJ, Sherburne NJ, Silliman RA, et al. The Senior Care Study. The optimal use of medications in acutely ill older patients. *J Am Geriatr Soc* 1990;38(10):1082-7.
10. Bergkvist A, Midlöv P, Höglund P, et al. A multi-intervention approach on drug therapy can lead to a more appropriate drug use in the elderly. LIME-Landskrona Integrated Medicines Management. *J Eval Clin Pract* 2009;15(4):660-7.
11. Lang PO, Vogt-Ferrier N, Hasso Y, et al. Interdisciplinary geriatric and psychiatric care reduces potentially inappropriate prescribing in the hospital: interventional study in 150 acutely ill elderly patients with mental and somatic comorbid conditions. *J Am Med Dir Assoc* 2012;13(4):406.e1-7.
12. Gnjjidic D, Le Couteur D, Kouladjian L, et al. Deprescribing trials: methods to reduce polypharmacy and the impact on prescribing and clinical outcomes. *Clin Geriatr Med* 2012;28(2):237-53.
13. Tija J, Velten S, Parsons C, et al. Studies to reduce unnecessary medication use in frail older adults: a systematic review. *Drugs Aging* 2013;30:285-307.
14. Mudge A, Radnedge K, Kasper K, et al. Effects of a multidisciplinary clinic for frequent attending elderly patients on deprescribing. *Aust Heal Rev* 2016;40(1):86-91.
15. Reinertsen J, Gosfield A, Rupp W, et al. *Engaging physicians in a shared quality agenda*. Cambridge (MA); 2007. Available: <https://www.reinertsengroup.com/publications/documents/IHIEngagingPhysiciansWhitePaper2007.pdf> (accessed Oct. 1, 2018).
16. Committee on Quality of Health Care in America. *Crossing the quality chasm: a new health system for the 21st century*. Washington (DC): National Academies Press; 2001.
17. Mion L, Odegard PS, Resnick B, et al. Interdisciplinary care for older adults with complex needs: American Geriatrics Society position statement. *J Am Geriatr Soc* 2006;54(5):849-52.
18. Kirkman S, Briscoe VJ, Clark N, et al. Diabetes in older adults: a consensus report. *J Am Geriatr Soc* 2012;60(12):2342-56.
19. Besdine R, Boulton C, Brangman S, et al. Caring for older Americans: the future of geriatric medicine. *J Am Geriatr Soc* 2005;53(6 Suppl):S245-56.
20. Trivedi D, Goodman C, Gage H, et al. The effectiveness of inter-professional working for older people living in the community: a systematic review. *Heal Soc Care Community* 2013;21(2):113-28.
21. Briggs M, McElhaney J. Frailty and interprofessional collaboration. *Interdiscip Top Gerontol Geriatr* 2015;41:121-36.
22. Blachman N, Blaum C. Integrating care across disciplines. *Clin Geriatr Med* 2016;32(2):373-83.
23. Deschodt M, Claes V, Van Grootven B, et al. Structure and processes of interdisciplinary geriatric consultation teams in acute care hospitals: a scoping review. *Int J Nurs Stud* 2016;55:98-114.
24. Creswell J, Plano Clark V. *Designing and conducting mixed methods research*. 2nd ed. Thousand Oaks (CA): SAGE Publications; 2011.
25. Farrell B, Merkley VF, Thompson W. Managing polypharmacy in a 77-year-old woman with multiple prescribers. *CMAJ* 2013;185(14):1240-5.
26. The Canadian Interprofessional Health Collaborative (CIHC). *A National Interprofessional Competency Framework*. Vancouver, BC; 2010. Available: http://www.cihc.ca/files/CIHC_IPCompetencies_Feb1210r.pdf (accessed Oct. 1, 2018).
27. Silverman D. *Qualitative research*. 3rd ed. Silverman D, ed. London: SAGE Publications Ltd; 2011. p. 464.
28. Hsu C, Sanford B. The Delphi technique: making sense of consensus. *Pract Assess Res Eval* 2007;12(10).
29. Baker J, Lovell K, Harris N. How expert are experts? An exploration of the concept of "expert" within Delphi panel techniques. *Nurse Res* 2006;14(1):59-70.
30. Vogt W, Gardner D, Haeffele L. *When to use what research design*. New York (NY): The Guilford Press; 2012.
31. Raymond M. A practical guide to practice analysis for credentialing examinations. *Educ Meas Issues Pract* 2002;21(3):25-37.
32. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. *J Adv Nurs* 2000;32(4):1008-15.
33. Fetzters M, Curry L, Creswell J. Achieving integration in mixed methods designs—principles and practices. *Heal Serv Res* 2013;48(6):2134-56.
34. National Association of Pharmacy Regulatory Authorities (NAPRA). *Professional Competencies for Canadian Pharmacists at Entry to Practice* (2014): Available: https://napra.ca/sites/default/files/2017-08/Comp_for_Cdn_PHARMACISTS_at_EntrytoPractice_March2014_b.pdf (accessed Oct. 1, 2018).
35. Farrell B, Mohanah A, Dore N, et al. Piloting a geriatric day hospital approach to targeting blood pressure in the very old. *Can Fam Physician* 2014;60:e350-5.
36. Farrell B, Shamji S, Monahan A, et al. Clinical vignettes to help you deprescribe medications in elderly patients: introduction to the polypharmacy case series. *Can Fam Physician* 2013;59:1257-8.
37. Chen C, Farrell B, Ward N, et al. Stopping benzodiazepines: an interdisciplinary approach at a geriatric day hospital. *Can Pharm J (Ott)* 2010;143(6):286-95.
38. Farrell B, Pora V, Babcock K. Stopping medications in complex continuing care: the example of baclofen and dantrolene. *Can J Hosp Pharm* 2006;59:264-72.
39. Farrell B, Babcock K, Hughes L. Facilitating the process of medication re-evaluation and withdrawal in the long-term institutionalized population. Example: cisapride. *Can J Hosp Pharm* 2003;56:32-40.
40. Mezey M, Mitty E, Burger SG, et al. Healthcare professional training: a comparison of geriatric competencies. *J Am Geriatr Soc* 2008;56(9):1724-9.

41. Partnership for Health in Aging Workgroup on Interdisciplinary Team Training in Geriatrics. Position statement on interdisciplinary team training in geriatrics: an essential component of quality health care for older adults. *J Am Geriatr Soc* 2014;62:961-5.
42. Masud T, Blundell A, Gordon AL, et al. European undergraduate curriculum in geriatric medicine developed using an international modified Delphi technique. *Age Ageing* 2014;1-8.
43. Gordon J. Updated survey of the geriatrics content of Canadian undergraduate and postgraduate medical curricula. *Can Geriatr J* 2011;14(2).
44. Ogegard P, Breslow R, Koronkowski M, et al. Geriatric pharmacy education: a strategic plan for the future. *Am J Pharm Educ* 2007;71(3):47.
45. Kostas T, Zimmerman K, Salow M, et al. Improving medication management competency of clinical trainees in geriatrics. *J Am Geriatr Soc* 2014;62:1568-74.
46. Office of the Fairness Commissioner. *Entry-to-practice requirements for five professions in five Canadian provinces: Physicians & Surgeons*. Toronto, ON; 2010. Available: http://www.fairnesscommissioner.ca/index_en.php?page=publications/entry-to-practice_requirements/physicians (accessed Oct. 1, 2018).
47. College of Nurses of Ontario. *Competencies for entry-level registered nurse practice*. Toronto, ON; 2014.
48. Association of Faculties of Pharmacy of Canada. *Educational outcomes for first professional degree programs in pharmacy (Entry-to-Practice Pharmacy Programs) in Canada*. Vancouver, BC; 2010.
49. Hepp S, Suter E, Jackson K, et al. Using an interprofessional competency framework to examine collaborative practice. *J Interprof Care* 2015;29(2):131-7.
50. Feldman K, Berall A, Karuza J, et al. Knowledge translation: an interprofessional approach to integrating a pain consult team within an acute care unit. *J Interprof Care* 2016;24:1-3.
51. Skulmoski GJ, Hartman FT. The Delphi method for graduate research. *J Inf Technol Educ* 2007;6:1-21.
52. Zwarenstein M, Reeves S. Knowledge translation and interprofessional collaboration: where the rubber of evidence-based care hits the road of teamwork. *J Contin Educ Health Prof* 2006;26(1):46-54.