A prototype for evidence-based pharmaceutical opinions to promote physician-pharmacist communication around deprescribing

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ABSTRACT

Context: Interprofessional communication is an effective mechanism for reducing inappropriate prescriptions among older adults. Physicians' views about which elements are essential for pharmacists to include in an evidence-based pharmaceutical opinion for deprescribing remain unknown.

Objective: To develop a prototype for an evidence-based pharmaceutical opinion that promotes physician-pharmacist communication around deprescribing.

Methods: A standardized template for an evidence-based pharmaceutical opinion was developed with input from a convenience sample of 32 primary care physicians and 61 primary care pharmacists, recruited from conferences and community settings in Montreal, Canada. Participants were asked to comment on the need for clarifying treatment goals, including personalized patient data and biomarkers, highlighting evidence about drug harms, listing the credibility and source of the recommendations, providing

therapeutic alternatives and formalizing official documentation of decision making. The content and format of the prototype underwent revision by community physicians and pharmacists until consensus was reached on a final recommended template.

Results: The majority of physicians (84%-97%) requested that the source of the deprescribing recommendations be cited, that alternative management options be provided and that the information be tailored to the patient. Sixteen percent of physicians expressed concern about the information in the opinions being too dense. Pharmacists also questioned the length of the opinion and asked that additional space be provided for the physician's response. A statement was added making the opinion a valid prescription upon receipt of a signature from physicians. Compared to a nonstandardized opinion, the majority of pharmacists believed the template was easier to use, more evidence based, more time efficient and more likely to lead to deprescribing.

Conclusion: Physicians and pharmacists endorsed a standardized template that promotes interprofessional communication for deprescribing (available at <https://www.deprescribingnetwork.ca/pharmaceutical-opinions>). The outcome of the D-Prescribe trial will determine the effectiveness of these evidence-based pharmaceutical opinions on deprescribing processes and outcomes. *Can Pharm J (Ott)* 2018;151:133-141.

Interprofessional communication is often cited as a barrier to sustained deprescribing of inappropriate medications among older adults. We sought to determine the acceptability of a communication template for packaging evidence-based deprescribing information from pharmacists to physicians. This novel method of communicating drug-related harms and viable substitutes via use of a pharmaceutical opinion could help establish pharmacists as leaders in the deprescribing movement to reduce polypharmacy among older adults.

La communication interprofessionnelle est souvent citée comme un obstacle dans la déprescription durable des médicaments inappropriés chez les patients âgés. Nous avons cherché à déterminer l'acceptabilité d'un modèle de communication pour la présentation de renseignements d'ordonnance fondés sur des données probantes entre les pharmaciens et les médecins. Cette nouvelle méthode de communication des préjugés liés aux médicaments et des substituts viables par recours à une opinion pharmaceutique pourrait aider à confirmer le rôle des pharmaciens comme leaders dans le mouvement de déprescription en vue de réduire la polypharmacie chez les personnes âgées.

Introduction

Each province and territory in Canada takes a different approach to expanding the scope

of pharmacists' services.¹ Alberta and British Columbia, among others, permit pharmacists to change drug doses and formulations and

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KNOWLEDGE INTO PRACTICE

- Very little information exists on the development and standardization of pharmaceutical opinions in Canada.
- This study describes physicians' and pharmacists' input on the development of a standardized template for evidence-based pharmaceutical opinions aimed at promoting deprescribing.
- Both physicians and pharmacists endorsed the final prototype, which incorporates essential elements to facilitate communication for deprescribing.

make therapeutic substitutions. Pharmacists in Saskatchewan and Nova Scotia, but not British Columbia or Ontario, can additionally prescribe for common ambulatory conditions. In Quebec and Ontario, pharmacists can send pharmaceutical opinions to physicians to facilitate communication around the quality use of medicines.²

The pharmaceutical opinion program has been around for decades in Quebec³ but was only implemented in Ontario in 2011.⁴ A pharmaceutical opinion is a document sent from a pharmacist to the prescriber detailing a problem with a patient's pharmacotherapy and recommending a management strategy to address the drug-related problem.⁵ Pharmaceutical opinions can cover a broad range of issues, from sub-optimal prescribing and potential drug-drug interactions to adverse drug reactions and non-adherence. A study of over 700,000 pharmaceutical opinions indicated that 68% of opinions resulted in a change in prescription.⁴

One of the anticipated goals of the pharmaceutical opinion is to reduce the use of inappropriate prescriptions.^{1,5} Prescriptions are deemed inappropriate when their risks outweigh their benefits and when safer therapeutic alternatives exist that have similar or superior efficacy.⁶⁻⁸ In Canada, inappropriate prescribing is estimated to occur for 42% of women and 31% of men aged 65 years and older, with rates up to 47% among women aged 85 and older.⁹ A survey distributed in 2013 to 3927 pharmacists across Quebec revealed that fewer than 50% of respondents were aware of the prevalence of polypharmacy, inappropriate prescribing or drug-related hospitalizations in the geriatric population.¹⁰ Furthermore, approximately 50% of Quebec participants in the EMPOWER randomized trial who initiated a conversation about deprescribing benzodiazepines with their pharmacist and/or physician

reported that their pharmacist and/or physician discouraged discontinuation.¹¹ These findings align with other reports that physicians and pharmacists sometimes block attempts at deprescribing.¹² Based on the 2013 Quebec pharmacist survey, we hypothesized that a lack of evidence-based knowledge about drug harms in older adults could be an impediment to deprescribing. To raise awareness of inappropriate prescriptions and to increase receptivity and capacity for deprescribing among physicians and pharmacists, we sought to develop a model for communication using pharmaceutical opinions that would effectively convey information between physicians and pharmacists about drug harms and potential solutions. Standardized clinical documentation exists for pharmacists to draft pharmaceutical opinions in Ontario,¹³ but no such guidance is available in Quebec, and to our knowledge, none includes referenced evidence-based information about inappropriate prescribing.

Objective

The objective was to develop a prototype for pharmaceutical opinions that would effectively convey information about drug harms and potential solutions, with the aim of increasing interprofessional knowledge and communication around deprescribing.

Methods

Theory behind the development of the prototype for the evidence-based pharmaceutical opinion

The first step towards developing a standardized template for an evidence-based pharmaceutical opinion about inappropriate prescriptions was to explore the barriers and facilitators behind the process of deprescribing from the physicians' perspective. Based on published reports in the literature, physicians identify 3 important predictors of engaging in the deprescribing process: agreement or disagreement with the appropriateness of drug cessation, confidence and skills for implementing a deprescribing protocol and positive or negative extrinsic pressures to cease medication use.¹² We hypothesized that if the pharmacist transmitted a pharmaceutical opinion that provided solid evidence for the inappropriateness of certain drug classes and clear direction on how to discontinue medications, physicians might be more likely to engage in interprofessional deprescribing efforts.

We also sought to understand the enablers and challenges of using pharmaceutical opinions from the pharmacists' perspective. Pharmacists report several problems with the use of pharmaceutical opinions. Some of these barriers include workflow interruptions, physician resistance, documentation, unclear program criteria and a lack of time.⁴ Advanced training and access to an automated system facilitate use.⁴ We hypothesized that a prestructured model for a pharmaceutical opinion, designed by physicians and pharmacists, with the information formatted in such a way that compels physicians to adhere to the pharmacist's evidence-based recommendations, might be helpful. This type of opinion should leave no doubt as to the credibility of the information and should greatly reduce the time and documentation required by pharmacists for drafting and sending the opinion. In addition, this type of pharmaceutical opinion, if based on published consensus guidance for deprescribing inappropriate prescriptions, could eventually be implemented as an automatic alert leading to a prefilled opinion where only patient details would need to be entered.

With these considerations in mind, we developed an initial prototype for a pharmaceutical opinion partly based on Ontario's standard format¹³ with lessons learned from evidence-based trials testing different ways of presenting the relative benefits and harms of competing therapeutic approaches.^{14,15}

Components of the prototype for the evidence-based pharmaceutical opinion

The initial evidence-based pharmaceutical opinion consisted of several elements. To illustrate content, we use the example of the oral sulfonylurea hypoglycemic agent glyburide, used to treat type 2 diabetes.

Personalized patient information and biomarkers.

The pharmaceutical opinion contains personalized information, including the patient's name, date of birth, drug targeted by the opinion, the indication for the prescription and the rationale behind the pharmaceutical opinion. Relevant clinical and laboratory parameters are added as appropriate. In the case of glyburide, spaces are provided for the pharmacist to insert information, if available, on patients' creatinine clearance, recent hypoglycemic episodes, their latest blood glucose and HbA1c.

MISE EN PRATIQUE DES CONNAISSANCES

- Il existe très peu de données sur l'élaboration et la standardisation des opinions pharmaceutiques au Canada.
- Cette étude décrit l'opinion des médecins et des pharmaciens sur l'élaboration d'un modèle standardisé d'opinions pharmaceutiques fondées sur des données probantes destinées à promouvoir la déprescription.
- Les médecins comme les pharmaciens ont approuvé le prototype final, qui contient les éléments essentiels visant à faciliter la communication pour la déprescription.

Credibility and source of the recommendations.

This section outlines the source of the consensus guidance or clinical practice guideline that recommends which drugs to avoid or deprescribe in older adults. In the case of medium- to long-acting sulfonylurea drugs, we cited the American Geriatrics Society Beers List rating, with the additional endorsement of clinical practice guidelines released by Diabetes Canada.¹⁶

Evidence-based information about drug harms.

In this section, evidence is cited about specific drug harms, with peer-reviewed references to back up each claim. For glyburide, the opinion stated that glyburide increases the risk of severe hypoglycemia by 50% compared to other sulfonylurea agents¹⁷⁻¹⁹ and that hypoglycemia may worsen physical and cognitive functioning in the frail elderly or in those with cognitive impairment.²⁰ Furthermore, hypoglycemia increases the risk of fall-related fractures by 70% in older adults, and glyburide is not recommended in patients with a creatinine clearance less than 60 mL/min.^{6,16}

Recommended alternatives.

Alternative evidence-based pharmacological and nonpharmacological treatment options are listed next to checkboxes that allow prescribers to endorse a given course of action. For instance, Diabetes Canada recommends several safer agents to treat diabetes in the elderly in lieu of glyburide, including metformin and dipeptidyl peptidase-4 inhibitors (DPP4).¹⁶ Starting doses and the schedule of dose escalation are provided. There is also the option to cease glyburide and reassess the HbA1c at the next follow-up visit. As the DPP4 class of drugs requires restricted-access reimbursement

for seniors in Quebec, the formulary code and cost are indicated on the opinion. A table on the flipside of the pharmaceutical opinion compares the cost, relative harms and contraindications of each alternative, available formulations and the anticipated reduction in HbA1c.

Age-appropriate treatment goals. Prescribing for older adults needs to consider treatment goals as a function of symptom reduction, long-term health outcomes and avoidance of harm.²¹⁻²³

For glyburide, the opinion reminds prescribers that the usual HbA1c target in older adults is less than 7%, that frail older adults can tolerate a target of 7% to 8.5% and that the priority in older adults with cognitive impairment is to avoid hypoglycemia <4.0 mmol/L at all times.¹⁶

Signature. This section allows physicians to sign or initial the pharmaceutical opinion and endorse a given course of action for pharmacists to follow upon receipt of the returned document.

Input and feedback from physicians

The initial prototype for the pharmaceutical opinion was distributed to 60 primary care physicians from diverse geographic settings attending a symposium for continued professional development credits. The course coordinators agreed to let us distribute the prototype and feedback questionnaire in the course package along with other course material. The feedback questionnaire for the prototype consisted of 12 five-point Likert-scale questions on the different elements of the prototype, 1 multiple-choice question on the preferred method of receiving pharmaceutical opinions, 5 open-ended questions and a section for comments. Twelve questions queried physicians' degree of agreement with statements about the usability of the pharmaceutical opinion, such as the tool's appearance, design, layout, quality and content of the information, clarity of the recommendations, appropriateness of the references, relevance to decision making, feasibility of use in multiple contexts and anticipated impact on prescribing practices. Open-ended questions queried what physicians liked and disliked about the different elements of the prototype and asked for suggestions for improvement. Participation in the feedback session was completely voluntary. Time was used during breaks to fill out the questionnaire. Consent to participate was provided by returning the anonymous

questionnaire at the end of the conference. Thirty-two physicians provided feedback and returned the questionnaires.

Input and feedback from pharmacists

Sixty-one community pharmacists provided input on the prototype for the evidence-based pharmaceutical opinion during participation in the D-PRESCRIBE trial.²⁴ Briefly, the D-PRESCRIBE trial enrolled a random sample of community pharmacists who dispensed 4 classes of inappropriate prescriptions to adults aged 65 years and older: benzodiazepines and Z-drugs, long-acting sulfonylureas, first-generation antihistamines and nonsteroidal anti-inflammatory drugs (NSAIDs).⁶ The initial prototypes were shown to each pharmacist individually during the pre-enrolment phase of the trial, and each pharmacist was invited to respond to semi-structured interview questions. The feedback questionnaire for the prototype consisted of 9 five-point Likert-scale statements querying agreement on the prototype's content and usability and 4 open-ended questions on whether the pharmacist would distribute the prototype "as is" or with modifications. The study was approved by the Institut Universitaire de Gériatrie de Montréal on September 17, 2013.

Analysis

Analyses proceeded sequentially. First, physicians provided input on the initial template, and then pharmacists suggested changes to the physicians' edits to optimize usability. The results are presented in aggregate format for the purposes of this report. Specifically, feedback from physicians was analyzed by categorizing endorsement for each of the prototype elements by predefining agreement as "strongly agree" or "agree" with the usefulness and desirability of inclusion of each element. Proportions are reported with 95% confidence intervals. The frequency of preferred methods for communicating with pharmacists was calculated. Pharmacists' feedback from the questionnaires was summarized using the same methods as for physicians.

Open-ended questions from physicians and pharmacists were analyzed using thematic content analysis.²⁵ Responses were categorized using a first-order thematic code developed collaboratively by the 2 researchers. Themes were supported by quotes from at least 2 respondents in

TABLE 1 Physician feedback on the deprescribing prototype for the pharmaceutical opinion ($n = 32$)

Statement	Agree, % (95% confidence interval)
1. The prototype is simple and easy to use	96.9 (84.3-99.5)
2. The information is organized efficiently	93.8 (79.9-98.3)
3. The quality of the information is adequate	96.9 (84.3-99.5)
4. The information is relevant to decision making	96.9 (84.3-99.5)
5. Certain pieces of information were new to me	87.5 (71.9-95.0)
6. Suggestions and recommendations are clear	96.9 (84.3-99.5)
7. References and citations are useful and easily identifiable	90.6 (75.8-96.8)
8. The time required to read and use the tool was acceptable	84.4 (68.3-93.1)
9. I would use this pharmaceutical opinion to guide my practice	93.8 (79.9-98.3)
10. I believe this prototype would be useful in other clinical contexts	96.9 (84.3-99.5)
11. I would appreciate receiving a pharmaceutical opinion like this one from a pharmacist	90.6 (75.8-96.8)
12. I would modify my prescription following receipt of this information	93.8 (79.9-98.3)

the open-ended questions. Themes were used to guide modifications to the template.

Results

Thirty-two physicians and 61 pharmacists provided feedback on the pharmaceutical opinion prototype. Physician responses to the 12 questions on the usability of the pharmaceutical opinion are summarized in Table 1. Overall, there was endorsement of the prototype on all aspects of appearance, layout, design and the quality of the content, with agreement ratings for each item ranging from 84% to 97%. Sixteen percent of respondents expressed concern about the length of the opinion and the time required to read it. Twelve percent reported learning no new information. The majority of physicians stated a preference for receiving the pharmaceutical opinion by facsimile ($n = 24$, 75%), with the remainder requesting contact by phone ($n = 9$, 28%) or via email ($n = 5$, 16%).

Pharmacist responses to the 9 questions on the usability of the pharmaceutical opinion are reported in Table 2. Overall, pharmacists endorsed the evidence-based recommendations for the 4 classes of inappropriate prescriptions, with agreement ratings ranging from 93% to 98%. Compared to pharmaceutical opinions currently being used in their practice, pharmacists

reported that the standardized template was quicker and easier to fill out, was more evidence based and had a higher probability of leading to prescription change, with agreement rates ranging from 72% to 100% for each of these questions. When pharmacists were asked if they would send out the prototype “as is” without changes, 66% indicated that they would for the benzodiazepine prototype, 79% for the first-generation antihistamine prototype, 72% for long-acting sulfonylureas and 69% for the NSAID prototype.

What physicians and pharmacists liked about the deprescribing prototype

The main themes identified included 1) the choice of therapeutic alternatives, 2) clear and concise formatting of the information and 3) documentation of the source and content of the evidence-based information. Physicians appreciated the fact that multiple alternatives were listed as substitution possibilities and that each option was accompanied by available information on cost, dose and restricted reimbursement access information. Physicians mentioned that they liked being reminded of the patient's clinical and laboratory parameters, when available, and the principles of treatment goals, as it requires extra time to look up this information from their patient file.

TABLE 2 Pharmacist feedback on a standardized template for the pharmaceutical opinion ($n = 61$)

Statement	% (95% confidence interval) ($n = 61$)
1. I agree with the recommendations in the benzodiazepine and sedative hypnotics pharmaceutical opinion	93.4 (84.1-98.2)
2. I agree with the recommendations in the first-generation antihistamines pharmaceutical opinion	98.4 (91.2-100)
3. I agree with the recommendations in the long-acting sulfonylurea pharmaceutical opinion	98.4 (91.2-100)
4. I agree with the recommendations in the NSAID pharmaceutical opinion	96.7 (88.7-99.6)
When compared to my regular pharmaceutical opinion, the prototype:	
1. Takes less time to fill out	88.5 (77.8-95.3)
2. Is easier to use	95.1 (86.3-99.0)
3. Is more complete/evidence based	98.4 (91.2-100)
4. Is more likely to be sent out than regular opinions	77.0 (64.5-86.8)
5. Has a greater chance of having an impact on prescription change	80.3 (68.2-89.4)

NSAID, nonsteroidal anti-inflammatory drug.

What physicians did not like about the deprescribing prototype

Physicians indicated that 1) there was insufficient space to provide comments and explanations for their decisions to deprescribe or substitute therapy, 2) the information was too dense and 3) the prototype did not allow official authorization for a change in prescription. Leaving space for physicians to sign and write down their license number does not make the opinion an official prescription.

What pharmacists did not like about the deprescribing prototype

Similar to physicians, some pharmacists ($n = 12$) indicated that too much information was provided in the prototype and that it was too long. The second major concern was disagreement with some of the alternatives presented. Specifically, a few pharmacists ($n = 10$) were uncomfortable about suggesting alternatives that were not covered by public drug coverage programs, as these options might be unfeasible for some of their patients. Pharmacists also suggested that a statement be added to make the opinion official.

Recommendations for improvement

The main recommendations for improving the design and layout of the prototype were to 1) make the content shorter (1 page if possible) and 2) add

space for the physician to write comments and instructions to the pharmacist. With respect to the content, physicians asked that information be provided on how to classify older adults in terms of individual risk (i.e., how to discriminate between frail and nonfrail older adults). A few physicians requested information on medication adherence. Both physicians and pharmacists asked that evidence-based pharmaceutical opinions be developed for other medication classes to assist in decision making around appropriate prescribing.

Modifications to the deprescribing pharmaceutical opinion

The final, revised versions of pharmaceutical opinions for sedative-hypnotics, first-generation antihistamines and oral sulfonylurea agents are available online at <https://www.deprescribing-network.ca/pharmaceutical-opinions>. A box for comments was inserted. We also added the following statement for physicians to sign: "I certify that this prescription is an original prescription, that the identified pharmacist is the intended sole recipient and that this original prescription will not be re-used" to make the prescription official in Quebec. All critical information, including the signature and comment box was placed on the first page. The flipside includes additional information only, making the pharmaceutical opinion functional as a 1-page document.

Discussion

The purpose of the evidence-based pharmaceutical opinion is to educate and empower pharmacists and physicians with the same information to promote interprofessional collaboration around deprescribing inappropriate drugs for older adults. Obtaining physicians' and pharmacists' input on the content and format of the evidence-based pharmaceutical opinion led to the development of a standardized template that resonated with both professions' needs. Major issues around knowledge sharing and licensing to deprescribe were addressed, which may serve to overcome barriers to interprofessional collaboration.²⁶

Physicians endorsed the majority of items in the initial prototype, but there was still variability in preference about the length and content of the standardized template. The diversity in responses likely represents the heterogeneous composition of our convenience sample of respondents. Physicians who provided feedback were from different geographic locations in Quebec. The pharmacists we surveyed also reflect a convenience sample of community pharmacists who agreed to meet with the research team during enrolment in the subsequent D-PRESCRIBE trial, aimed at testing the effectiveness of the deprescribing opinion on medication discontinuation in older adults.²⁴ Interestingly, 3 pharmacists were surprised by the amount of information on the first page of the pharmaceutical opinion. These 3 pharmacists reported learning in school that "physicians wanted very short opinions, not more than a sentence or 2." A small group of physicians ($n = 3$) confirmed that shorter opinions were preferred in their comments on our survey, but most physicians appreciated the detailed information provided by the evidence-based clinical practice guidelines and consensus statements. Another source of variability was the choice of recommended alternatives. Some pharmacists endorsed the options that were provided; others disagreed or requested that additional alternatives be added to the list of options. Individual practice patterns are well recognized in the literature, indicated by differences in physicians' and pharmacists' behaviour patterns around accepting or dismissing automated drug alerts.²⁷

Limitations

The physicians and pharmacists who agreed to participate in this study may represent a biased

group with interest in interprofessional collaboration and/or deprescribing. As interviews were conducted in person with the pharmacists, social desirability bias may have coloured their responses. The denseness of the material in the prototype and unfamiliarity with the form may have elicited initial resistance, which may be overcome over time. In addition, as we only used the sulfonylurea prototype to obtain initial physician feedback it is possible that different suggestions may have arisen from pharmaceutical opinions on other types of medications. Furthermore, an electronic prescribing system and eHealth record were not available to all community pharmacists in Quebec in 2014, at the time of this study. Perhaps these methods of communication would be preferred over the more traditional facsimile. Automated and semi-automated approaches to improve prescribing patterns among physicians yield a 56% response rate from physicians.²⁸

Further research is needed to test the effectiveness of the evidence-based pharmaceutical opinion for deprescribing inappropriate medications in older adults in a randomized trial. The D-PRESCRIBE cluster randomized trial aims to achieve this goal and is currently under way.²⁴ The trial will study the processes and outcomes surrounding the distribution of the evidence-based pharmaceutical opinion, such as the rate of use, return rate and deprescribing endorsement options. Should the evidence-based pharmaceutical opinion prove beneficial for reducing inappropriate prescriptions among older adults, it could be added to the armamentarium of tools designed to promote deprescribing, including the evidence-based deprescribing algorithms developed by the OPEN group²⁹ or the EMPOWER brochures distributed by the Canadian Deprescribing Network.³⁰ The evidence-based pharmaceutical opinion template could then be integrated into pharmacy software in the form of automated alerts. It remains to be established whether it would fall within the mandate of the Canadian Pharmacists Association or each individual provincial professional association to develop and update the templates for each potentially inappropriate drug class.

Conclusion

Both physicians and pharmacists endorse the use of a standardized format for evidence-based pharmaceutical opinions that promote interprofessional communication for deprescribing. The

outcomes of the D-PRESCRIBE trial will determine the effectiveness of the evidence-based

pharmaceutical opinion on deprescribing processes and outcomes. ■

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