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We wanted to create a process that used existing resources, required minimal adaptations in our workflow and also enhanced relationships with community partners. This study was undertaken as a pharmacy residency research project and complements Dr. McCarthy's program of research exploring best practices for medication reconciliation in ambulatory care.

Notre but était de créer un processus basé sur des ressources existantes, qui nécessite des adaptations minimales au déroulement de nos activités et qui permette de renforcer les relations avec les partenaires communautaires.

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MedIntegrate: Incorporating provincially funded community pharmacist services into an ambulatory internal medicine clinic to enhance medication reconciliation

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ABSTRACT

Background: Medication reconciliation (MR) is associated with reduced discrepancies and adverse events within institutions. In ambulatory care, MR is often considered more challenging due to periodic, brief patient encounters and the involvement of multiple prescribers who lack shared records. MedsCheck, a community pharmacy program in Ontario for patients with diabetes or those taking 3 or more medications, generates a best possible medication history (BPMH) that can serve as a starting point for MR. Our objectives were to develop and evaluate a program to integrate MedsCheck into the workflow of an ambulatory clinic.

Methods: An initiative was implemented within the Complex Care Clinic (CCC), an academic internal medicine clinic at Women's College Hospital (WCH). During booking of their first appointment, patients were encouraged to

receive a MedsCheck. A letter was faxed to the patient's preferred community pharmacy with a request to conduct a MedsCheck and send documentation to the clinic. Evaluation included patient and health care provider questionnaires and chart review.

Results: Fifty-five of 86 new patients referred to the CCC were eligible for a MedsCheck. Fifty-four patients consented to having their community pharmacy contacted, and documentation was received for 21 (39%) of these reviews. Chart review was conducted for patients who completed the patient feedback questionnaire ($n = 32$). Community pharmacists reported at least 1 drug therapy problem for 12 (57%) patients with a mean of 2.6 (SD 1.5) per patient. Medical residents reported an estimated mean appointment time savings of 7.9 minutes (SD 2.4).

Conclusion: The program was feasibly integrated into clinic workflow and shortened the time spent creating BPMHs. This approach could be adopted by other ambulatory care clinics. *Can Pharm J (Ott)* 2014;147:300-306.

Introduction

Medication reconciliation is a process whereby health care providers work with patients, families and other care providers to ensure that accurate and complete medication information is communicated during care transitions.¹ It is

a 3-step process that begins with a comprehensive review of all medications that a patient is currently taking, identifies and resolves any discrepancies and communicates intentional changes to the patient, caregivers and other health care providers.

Research within institutional settings has shown that medication reconciliation at the time of admission reduces medication discrepancies and adverse drug events.² Evidence for the benefit of medication reconciliation is also available in the preadmission setting. Interprofessional medication reconciliation involving nurses, physicians and pharmacists reduced medication discrepancies by 50%.³ Similar findings have been established in the long-term care and home care settings.⁴

There is an absence of research examining the impact of medication reconciliation in the ambulatory care setting. Medication reconciliation may be more challenging to accomplish in an ambulatory setting due to increased patient responsibility for medication management, periodic prescriber contact and breakdowns in communication between care providers.⁵ Additional barriers that have been identified include lack of time to complete medication reconciliation and unreliable sources of medication information.^{6,7}

MedsCheck is an Ontario community pharmacy-based program funded by the Ministry of Health and Long-Term Care. Through the program, patients with diabetes or those taking 3 or more chronic medications qualify for a medication review with a pharmacist. The visit includes a review of prescription and nonprescription medications, along with medication-taking behaviour. At the completion of the visit, patients are provided with an up-to-date list of medications. A MedsCheck can be conducted yearly or more frequently if requested by a prescriber.⁸

The objective of this study was to evaluate the feasibility of integrating community pharmacy-generated MedsCheck documentation into an ambulatory clinic patient care process.

Methods

We developed the MedIntegrate program to serve as a starting point for medication reconciliation within the Centre for Ambulatory Care Education Complex Care Clinic (CCC), an ambulatory internal medicine clinic based at Women's College Hospital in Toronto, Ontario. Patients referred to the CCC are assigned to third-year internal medicine resident physicians who are supervised by general internal medicine attending physicians. The clinic is supported by an interprofessional team that includes pharmacists, nurses, social workers, physiotherapists, occupational

KNOWLEDGE INTO PRACTICE

- Medication reconciliation is a required organizational practice set out by Accreditation Canada and is associated with reduced discrepancies and adverse effects within institutions.
- In ambulatory care, medication reconciliation may be considered more challenging due to periodic and brief patient encounters, involvement of multiple prescribers and incomplete sources of medication information.
- Integrating Ontario's MedsCheck program documentation into an ambulatory clinic can serve as a starting point for medication reconciliation and add value to the patient care process.
- Possible barriers to implementation include low patient familiarity with MedsCheck, clerical workload and a lower-than-expected response from community pharmacies.

therapists, respiratory therapists and home care coordinators. The MedIntegrate program was implemented in January 2013. The evaluation of this program was approved by the Women's College Hospital Research Ethics Board.

Program overview

All new patients referred to the clinic between January and May 2013 were included in the MedIntegrate program (Figure 1). Two outreach strategies—patient and community pharmacy contact—were used.

During telephone booking of each patient's initial clinic appointment, administrative staff provided information about the MedsCheck program to patients taking 3 or more medications and requested that patients obtain a MedsCheck prior to their clinic visit. Patients were also asked for the contact information of their preferred community pharmacy. This was done through the use of a standardized script.

Using contact information provided by the patients, pharmacy staff then faxed a letter to each community pharmacy requesting that a MedsCheck be provided to the patient and the resulting documentation be forwarded to the clinic. The letter also requested that any suggestions or concerns regarding drug therapy problems (DTPs) be forwarded to the clinic, and it invited community pharmacists to contact clinic pharmacists. On receipt of MedsCheck documentation from a community pharmacy, the clinic nurse placed it in the patient's medical chart to ensure availability for consultation by all health care providers. MedsCheck documentation was

FIGURE 1 Program overview

also flagged to alert clinic pharmacists of the potential need to follow up on DTPs identified in the community.

Program evaluation

The MedIntegrate program was evaluated through the use of a patient questionnaire, chart review, medical resident questionnaire and program uptake statistics.

Patients, who had provided community pharmacy contact information as part of the booking process, were approached to complete a questionnaire and consent to a review of their medical chart during check-in for their clinic appointment by research assistants. The survey, created for this evaluation, explored patient satisfaction with the program, barriers to obtaining a MedsCheck review and attitudes toward medication information. No incentive was provided for participation.

Medical resident questionnaires were administered after completion of the program. The survey, created for this evaluation, explored medical resident impressions of the program, outcomes and support for program continuation. No incentive was provided for participation.

Face validity of the patient and medical resident surveys was established through pilot testing of the questionnaire with 3 patients, 5 department pharmacists and 2 internal medicine

residents who would have been eligible but were not directly involved with MedIntegrate.

Results

Program uptake

Of 86 patients contacted for an initial clinic appointment, 55 (64%) were eligible for the MedsCheck program (see Figure 2). Twenty-two of those patients (40%) indicated they were familiar with the MedsCheck program and were not provided information about the process from the booking clerks. Fifty-four of the eligible patients (98%) consented to having their community pharmacy contacted and agreed to obtain a MedsCheck prior to their clinic appointment. All pharmacies were successfully contacted. Twenty-one MedsCheck reviews (39%) were received by the clinic, and 12 of those (57%) identified a DTP in addition to providing a best possible medication history. Five additional replies (9%) indicated that patients were unwilling or unable to participate in the MedsCheck program despite their prior consent to do so. A response was not received from the pharmacies contacted for the additional 28 patients who consented. For the 12 patients with an identified DTP, the mean number of DTPs per patient was 2.6 (SD 1.5). The mean response time between faxing of a request from the clinic to receiving MedsCheck documentation was 7.6 days (SD 4.2).

FIGURE 2 Program uptake **TABLE 1** Patient questionnaire results ($n = 32$)

Question	Median (min, max)
During the MedsCheck, I learned something new about my medications that I did not know before.*	4 (2, 4)
Having an up-to-date list of medications is important to me.*	5 (2, 5)
Booking a MedsCheck appointment with my pharmacy was ... [†]	4 (3, 5)
Finding time to attend a MedsCheck appointment was ... [†]	4.5 (2, 5)

*Rated on a 5-point scale of 1 = *strongly disagree* and 5 = *strongly agree*.

[†]Rated on a 5-point scale where 1 = *very hard* and 5 = *very easy*.

Patient questionnaire

Thirty-two of 40 patients (80%) who attended their initial clinic appointment consented to complete the evaluation questionnaire (see Table 1). Reasons for declining to participate included the desire to avoid further paperwork, privacy concerns and discomfort with the English language. Characteristics of patients who agreed to chart review are listed in Table 2. The mean age was 69.2 years (SD 15), the average number of medical conditions was 3.9 (SD 1.8) and the average number of prescription medications was 7.5 (SD 3.7).

Twelve of 32 patients (38%) who answered the questionnaire reported obtaining a MedsCheck prior to the initial clinic visit, and for 6 of

these patients (50%) it was the first time they had received a MedsCheck. Patients agreed with the statement that they learned something new as a result of the review and that having an up-to-date medication list was important to them. Overall, patients also reported that MedsCheck appointments were easy to book and accommodate in their schedules. Patients who were unable to get a MedsCheck reported individual reasons including “forgot” (reported 3 times), “lack of time” (reported twice) and “didn’t know how it would benefit me” (reported once).

Medical resident questionnaire

Fifteen of 19 medical residents (79%) providing care to patients in the clinic completed the survey

TABLE 2 Characteristics of patient survey respondents ($n = 32$)

Gender, n (%)	
Male	20 (63)
Female	12 (37)
Age (years), mean (SD)	69.2 (15.0)
Medical conditions, mean (SD)	
Total	3.9 (1.8)
Ambulatory care sensitive conditions*	1.5 (0.9)
Medications, mean (SD)	
Prescription	7.5 (3.7)
Nonprescription	1.8 (1.9)
Total	9.3 (4.7)

*Conditions for which appropriate ambulatory care prevents or reduces the need for admission to hospital.¹⁰

TABLE 3 Medical resident questionnaire results ($n = 15$)

Saw MedsCheck documentation in charts, n (%)	8 (53)
MedsCheck availability saved time gathering medication history, $n/8$ (%)	6 (75)
Support program continuation, n (%)	14 (93)
Estimated number of minutes saved gathering medication history, mean (SD)	7.9 (2.4)
I consult the patient's medication list (if available) when making treatment decisions, median (min, max)*	5 (4, 5)
Having an up-to-date list of medications allows me to provide better care to patients, median (min, max)*	5 (4, 5)

*Agreement was rated on a 5-point scale where 1 = *strongly disagree* and 5 = *strongly agree*.

(see Table 3). Eight residents (53%) reported they had encountered a patient with MedsCheck documentation present in the chart at the initial clinic visit. Six of these 8 residents (75%) who encountered the documentation reported that the program saved an estimated mean 7.9 minutes (SD 2.4) when performing medication reconciliation. Fourteen residents (93%) expressed a desire for continuation of the program.

Discussion

When developing MedIntegrate, we sought to integrate an existing community-based resource

(MedsCheck) into our care process. Further, we aimed to enhance our relationships with community partners while implementing minimal adaptations in our workflow. This evaluation demonstrates that integrating MedsCheck (and similar community pharmacy-based programs) into the workflow of an ambulatory clinic is feasible. As well, MedsCheck documentation provided a starting point for gathering patients' best possible medication history, thereby facilitating medication reconciliation, a key patient safety priority.

There has been 1 previous report of integrating MedsCheck into the workflow of an ambulatory clinic: Leung and colleagues⁹ demonstrated feasibility in the perioperative setting. Our program was implemented in a unique setting with a different patient population: an ambulatory internal medicine clinic that specifically seeks referrals for complex patients. Similar to Leung and colleagues, we have shown that the availability of MedsCheck documentation for new clinic patients decreased the estimated amount of time required for medication history gathering.

Our analysis shows that over half of CCC patients were eligible for a MedsCheck; however, fewer than half of those patients who were eligible were aware of the existence of the program. This has important implications for future programs and broader rollout to other clinical areas. Ensuring that patients are informed about the MedsCheck program and the benefits associated with having an up-to-date medication list is paramount for the success of any program looking to integrate community-based medication reviews.

Compared with the program evaluated by Leung and colleagues,⁹ our response rates were low. We received MedsCheck documentation for only 38% of the patients who consented to have their pharmacy contacted. When planning our evaluation, we sought to implement a program with limited impact on workload. As such, we felt that the resources required to follow up with nonresponding pharmacies exceeded those available to us. This poor response rate represents an important area for further study. At this time we cannot say whether this finding arose from the MedIntegrate program delivery or was more deeply founded in issues regarding the delivery and availability of the MedsCheck service. One possible explanation for the low uptake is that in the CCC, urgent referrals can be booked within 1 week of the initial telephone contact with the

patient. This short turnaround time from booking to initial appointment (<1 week) may not be conducive to completing a community-based MedsCheck prior to the first visit. This possibility is supported by comments made by patients on the questionnaire.

Medical residents had an overall positive impression of the program. About half of the residents encountered patients with MedsCheck documentation present in the chart prior to the first clinic visit. Residents reported that the program saved time during patient visits, and even those who did not encounter documentation expressed their interest in having the program continued. Although this study was completed with third-year internal medicine residents, the findings are applicable to nonteaching facilities, because the residents are eligible for licensure as independent physicians after completion of their rotation with the CCC. Our findings are important because the incorporation of MedsCheck documentation served as a readily available source for verification of the medication list. Residents placed high importance on having an up-to-date medication list to facilitate patient care, and the incorporation of MedsCheck documentation into patient charts assisted in this.

Limitations and future research

The most significant limitation in our study is the smaller-than-anticipated number of participants. The original intent was to incorporate new patients as well as those with follow-up appointments into the program. Due to differences in booking procedures for follow-up appointments, we ultimately opted not to introduce MedsCheck into this process in order to minimize the burden for clerical staff. A second limitation was patients' lack of familiarity with the MedsCheck program. Feedback from booking clerks identified that promotion of the MedsCheck program over the telephone was more labor intensive than expected and that patients frequently required significant explanation of the rationale behind the program as well as the process required. Third, we received MedsCheck documentation for only 39% of the patients for whom we requested it. This response was far less than anticipated and is a critical issue for additional research.

Opportunities for future research include expanding on this proof-of-concept study. Larger

MISE EN PRATIQUE DES CONNAISSANCES

- Le bilan comparatif des médicaments est une pratique organisationnelle obligatoire établie par Agrément Canada qui permet de réduire les discordances et les effets indésirables au sein des institutions.
- Dans un contexte ambulatoire, le bilan comparatif des médicaments est parfois jugé plus difficile en raison du caractère bref et périodique des rencontres avec les patients, de l'implication de plusieurs médecins prescripteurs et de la nature incomplète des sources d'information sur les médicaments.
- L'intégration de la documentation du programme MedsCheck de l'Ontario au sein d'une clinique ambulatoire peut servir de point de départ au bilan comparatif des médicaments et enrichir le processus de prestation de soins.
- Certains obstacles pourraient cependant nuire à la mise en œuvre de ce processus, comme le manque de connaissance de MedsCheck chez les patients, la charge de travail administrative et une réponse plus faible que prévue de la part des pharmacies communautaires.

numbers of patients are needed to fully evaluate the impact of the incorporation of MedsCheck documentation into clinic flow. Future interventions could include an increased amount of MedsCheck promotion and more lead time between pharmacy contact and appointments. Possible strategies to achieve this include posters in waiting rooms, reminder telephone calls or a focus on all patients (i.e., new and follow-up) with nonurgent referrals. Patients who are not able to obtain a MedsCheck prior to their first visit could be advised by clinicians to complete one prior to their first follow-up visit. For example, clinicians could issue MedsCheck referrals for patients in the same way that laboratory testing is requested. An additional strategy that could be piloted in settings where the patient receives a preappointment package in the mail is the distribution of written promotional materials as a component of those packages.

Conclusion

This evaluation of the MedIntegrate program demonstrates that the incorporation of community pharmacy-generated best possible medication histories was well received by patients and providers and shortens the amount of time spent gathering medication information. A similar approach could be adopted to serve other ambulatory care clinics. ■

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