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RESEARCH NOTES

Evaluation of a refill synchronization program in two community pharmacies

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ABSTRACT

Objectives: To describe medication adherence by the proportion of days covered before and after enrollment in a refill synchronization program.

Methods: We conducted a retrospective analysis of medication adherence in 2 pharmacies offering a refill synchronization program. The study population consisted of individuals who received 2 or more medications from any of 15 predefined medication classes within 6 months of enrollment in the synchronization program. Medication adherence and refill consolidation were measured over 6 months before and after enrollment. Optimal adherence was defined as proportion of days covered ≥80%.

Results: Among 109 patients who enrolled in the program between 2009 and 2014, 68 were included in a pre-post analysis of medication adherence. In the preenrollment period, optimal adherence was observed in 85% (217/254) of the medications taken by the 68 patients, increasing to 93% (237/254) in the postenrollment period (P <0.01). In addition, the percentage maintaining optimal adherence to all of their medications increased significantly from 60% (n = 41) to 83% (n = 57; P <0.01).

Conclusion: Among a small group of patients who voluntarily participated in refill synchronization programs, high levels of medication adherence were observed in the preenrollment period. These results combined with previous studies suggest that voluntary participants of these programs are at a low risk for nonadherence; therefore, current estimates of benefit from refill synchronization programs may be overestimated.

Poor medication adherence is a serious threat to the successful management of patients with chronic diseases.[1] Although many risk factors for poor adherence have been identified, low refill consolidation may represent an important factor that can be addressed at the community pharmacy level.[2,3] Refill consolidation reflects the extent to which patients collect all of their prescription medications during a single visit to a pharmacy (i.e., high consolidation) versus returning to the pharmacy to obtain individual refills on multiple occasions (i.e., low consolidation). A refill consolidation score can be calculated by subtracting from 1 the quotient of the number of distinct dates the pharmacy was visited divided by the total number of medications filled during the observation period.[2] For example, a patient taking 4 chronic medications may visit their pharmacy twice over 200 days, each time receiving 100-day supplies of all 4 medications (refill consolidation score = [1 − (2/8)] = 0.75). A low consolidation score would result if the same patient visited the pharmacy 8 times over 200 days, obtaining only 1 of their medications at each visit (refill consolidation score = [1 − (8/8)] = 0). The values of refill consolidation range between 0 and 1, with higher values representing higher consolidation. In a large observational study that analyzed risk factors such as age, sex, income, type of insurance plan, and copayment, a high refill consolidation was found to be the strongest predictor of adherence among patients taking statins.[2]

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Refill synchronization programs are increasingly being offered by community pharmacies to improve consolidation and increase adherence.[4,5] Although the literature pertaining to the impact of these programs has been positive, available studies might have had important limitations.[3,5-10] For example, astonishing increases in adherence were reported in 1 study using a nonrandomized design.[6] Optimal adherence to ACE inhibitors or angiotensin receptor blockers was observed in 80% of program participants versus 41% of controls. Granted, the patients in this study received individualized pharmacist assessments in addition to the synchronization of all refills (i.e., appointment-based medication synchronization).[6] However, in the context of adherence interventions, this magnitude of improvement is exceedingly high,[11] and it could represent an overestimate of benefit. The only known randomized trial failed to show any impact on self-reported adherence among patients with hypertension receiving medication synchronization, education, or usual care.[12]

Between 2009 and 2014, 2 community pharmacies from 1 Canadian company offered a refill synchronization program to any patient taking chronic medications. After 2 years' experience with the refill synchronization program, our research group was asked by the company to retrospectively evaluate whether medication adherence had been improved among participants.

Objectives

The purpose of this study was to describe medication adherence by the proportion of days covered (PDC) before and after enrollment in a refill synchronization program.

Methods

Dispensing records for participants of a refill synchronization program were obtained directly from 2 community pharmacies. Patients were eligible for the analysis if they had voluntarily enrolled in the synchronization program and received at least 2 medications from any of 15 predefined chronic medication classes following the program enrollment date. Patients with only 1 medication who enrolled in the program received automated refills of that medication, but were not included in the synchronization analysis. The chronic medication classes represented treatments for common conditions expected in community settings, such as cardiovascular disease (including primary prevention), diabetes, hypothyroidism, epilepsy, dyspepsia, depression, anxiety, and pain. Identification and categorization of these medications from the refill database was performed using the Anatomical Therapeutic Chemical classification index.[13]

Following enrollment in the refill synchronization program, patients with multiple chronic medications were contacted before every medication refill (usually at 30-day intervals) to establish the next pick-up date. Once the pick-up date was established based on the patient's preference, pharmacy staff members would prepare all chronic medications with an identical days' supply so that the medications would be depleted at the same time. If necessary, medication supplies would be adjusted to achieve synchronization. Pharmacists were not required to perform individual patient assessments of drug therapy as part of the intervention nor meet face-to-face with the patients. If patients did not pick up their prescriptions, the pharmacy contacted them with a reminder.

Medication adherence over 6 months (i.e., 180 days) following program enrollment was calculated separately for each eligible medication using the PDC.[13] The PDC was defined as the sum of days during the observation period when at least 1 medication from a given class was available, divided by 180 days. When a new refill was obtained before the previous supply should have been depleted, the start date of the new refill was adjusted to begin on the day after the previous supply was exhausted. Accumulated supplies were excluded from the numerator. Enrolled patients were included in the analysis if they satisfied 2 criteria: (1) received at least 2 eligible medications after program enrollment; and (2) received any type of prescription from the pharmacy more than 180 days later (i.e., to prevent misclassification of nonadherence because of patients changing pharmacies). The primary endpoint was the percentage of individuals who achieved optimal adherence, defined as a PDC of at least 80%.

Medication adherence was also assessed before enrollment in the refill synchronization program. To calculate preenrollment adherence, all study patients were assigned a “pseudo” enrollment date corresponding to their actual enrollment date minus 730 days (i.e., 2 years earlier). Next, 6-month adherence was estimated for patients receiving any of the 15 drug classes starting from the first medication fill after this date. To examine the impact of the program, we compared adherence using the McNemar's chi-square test among individuals receiving medications from the same class in both the preenrollment and postenrollment periods. In addition, a refill consolidation score was calculated for every participant included in the before-and-after analysis.[2] Before-and-after differences in the refill consolidation score were compared using the Wilcoxon signed rank test.

Results

Between May 2009 and August 2014, 109 patients enrolled in the refill synchronization programs offered in the 2 pharmacy locations. Of these, 72 patients were included in the adherence analysis; 9 patients were excluded because no medications were received after program enrollment, 6 patients were excluded because all prescription refill records stopped before 180 days after the first eligible medication was dispensed, and 22 patients were excluded because only 1 chronic medication was received after program enrollment. The percentage of male patients was 43% (31/72), and the average age was 62 years (median, 65.5 years) with a wide age range between youngest to oldest (range, 17-96 years; Table 1). Patients were receiving an average of 4.7 concurrent medications in the preenrollment period and 4.8 medications during the postenrollment period.

Of the 72 patients receiving eligible medications after program enrollment, high medication adherence was consistently observed during the 6 months following program enrollment. A before-and-after analysis was performed on 68 of 72 patients who received the same class of medications in the preenrollment and postenrollment periods. Overall, adherence was calculated for 254 medications taken by the 68 patients.