

The impact of a nationally coordinated pharmacy-based asthma education intervention

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OBJECTIVE: To assess the impact of a nationally coordinated pharmacy-based educational intervention on self-management behaviour and markers of asthma control in self-referred patients with asthma.

DESIGN: An asthma clinic day was set up by a national chain of community pharmacies whereby pharmacists used a structured questionnaire to assess asthma control and self-care among self-referred patients with doctor-diagnosed asthma. In a one-on-one counselling session, each patient's educational needs were identified and the appropriate education offered. A telephone follow-up 30 days later assessed the impact of teaching.

SETTING: Community pharmacies across Canada.

OUTCOME MEASURES: The follow-up questionnaire quantified the number of wheezing episodes or other symptoms per week, the number of night-time awakenings per week, and the frequency of use of reliever and preventive medications.

RESULTS: Of 4080 patients assessed, 22.2% used an inadequate inhaler technique, 16.4% used a short acting beta₂-agonist excessively and 21.0% were not using an inhaled corticosteroid daily despite a frequency of symptoms that would suggest that it was needed. Common educational interventions included a review of inhaler technique (41.9%), a recommendation for regular inhaled corticosteroids (31.5%) and a referral to the primary care physician (21.0%). Thirty days after the educational intervention, patients reported significant decreases in the frequency of daytime asthma symptoms, the frequency of nocturnal symptoms and the frequency with which short acting beta₂-agonists were used, while reporting significant increases in their use of preventive medication.

CONCLUSIONS: A brief assessment and an educational intervention in the community pharmacy can produce significant short term improvements in patient-reported symptom control and appropriate self-management behaviour.

Key Words: *Asthma control; Asthma education; Self-management*

Pour le résumé, voir page suivante

Programme national d'enseignement sur l'asthme dans les pharmacies

OBJECTIF : Évaluer l'impact d'un programme national d'enseignement dans les pharmacies sur l'auto-traitement et les marqueurs du contrôle de l'asthme chez les patients asthmatiques se présentant spontanément.

MODÈLE : Une journée de clinique sur l'asthme a été organisée par une chaîne nationale de pharmacies communautaires au cours de laquelle les pharmaciens ont utilisé un questionnaire structuré pour évaluer le contrôle de l'asthme et l'auto-traitement chez des patients se présentant spontanément et dont le diagnostic d'asthme avait été posé par un médecin. Lors d'une entrevue individuelle, les besoins de chaque patient en matière d'éducation ont été identifiés et l'enseignement approprié leur a été offert. Un suivi téléphonique a été effectué 30 jours plus tard pour évaluer l'impact de l'enseignement.

CONTEXTE : Pharmacies communautaires des quatre coins du Canada.

MESURES PARAMÉTRIQUES : Le questionnaire de suivi a

permis de dénombrer les épisodes hebdomadaires de sibilances ou autres symptômes, les réveils nocturnes et la fréquence d'utilisation des médicaments pour soulager ou prévenir les symptômes.

RÉSULTATS : Parmi les 4 080 patients évalués, 22,2 % utilisaient une mauvaise technique d'inhalation, 16,4 % utilisaient trop de bêta-agonistes à action brève et 21,0 % n'utilisaient pas quotidiennement leur corticothérapie par inhalation malgré une fréquence de symptômes le justifiant. Les interventions les plus courantes en matière d'enseignement ont été une revue de la technique d'inhalation (41,9 %), la recommandation d'utiliser régulièrement la corticothérapie par inhalation (31,5 %) et de consulter un omnipraticien (21,0 %). Trente jours après la séance d'enseignement, les patients ont déclaré manifester moins de symptômes d'asthme le jour et la nuit, utiliser moins de bêta₂-agonistes à action brève et significativement plus de médicaments préventifs.

CONCLUSION : Une brève évaluation et une séance d'enseignement adapté offertes à la pharmacie locale peuvent, à court terme, entraîner des améliorations significatives du contrôle de l'asthme par les patients et leur faire adopter des mesures d'auto-traitement appropriées.

Asthma is a common disorder, occurring in 6% of adults and 12% of children in Canada (1). Effective education of patients with asthma has been shown to be cost effective and to reduce morbidity (2-6). Many patients receive prescriptions for asthma medication, but comparatively few patients receive effective asthma education in centres designed for that purpose, resulting in suboptimal care (7-9).

Pharmacists are in a unique position to counsel patients with asthma because these patients return to the pharmacy frequently for medication refills. Also, the pharmacist may detect problems of poor inhaler technique and patterns of inappropriate medication use, such as overuse of beta₂-agonists or underuse of inhaled corticosteroids (10,11). Only a handful of studies have examined asthma education in the pharmacy setting (12-14), and none have examined the impact of a nationally coordinated education program in the community setting. The present study was undertaken to assess the prevalence of suboptimal asthma management and asthma control among self-referred patients with asthma who were seeking education during a nationally advertised education campaign. The study also aimed to assess the change in asthma self-management behaviour resulting from a single one-on-one counselling session with a trained community pharmacist.

PATIENTS AND METHODS

The asthma educator program: An educator training program for pharmacists was developed over four months to allow a cohort of interested pharmacists to act as regional trainers for their colleagues. The program was based on the Canadian Asthma Consensus Conference summary of recommendations (15), and was reviewed and endorsed by the Asthma Society of Canada. The program consisted of a home study booklet and video to be completed on an individual basis before attending a practical training session. Fifty-five pharmacists from across Canada were provided with a one-day training session to prepare them to train other pharma-

cists from their region. This one-day seminar included a brief overview of asthma, hands-on demonstrations of asthma devices, case studies and tips on how to be an effective facilitator. Subsequently, these asthma 'trainers' were responsible for training pharmacists in their area over a three-month period.

Several patient handouts were developed. The first, entitled *The Asthma Plan*, was a personalized guide to a patient's medications. The pharmacist was required to write the names of the reliever and preventive medications, and to list the names of any additional asthma medications that the patient was taking. The handout also included sections defining asthma, describing the recognition of worsening asthma, and listing common asthma triggers and strategies for avoidance. Every patient with asthma was also to be provided with an appropriate instruction sheet pertaining to his or her inhalation device(s). The device sheets were developed in a reader-friendly format with simple instructions and large diagrams for each step of device use. A separate device sheet was developed for a metered-dose inhaler (Turbuhaler, AstraZeneca Inc, Canada), a peak flow meter and several types of spacing devices.

Pharmacists implemented asthma education in their day-to-day practices for several months before the nationally advertised asthma clinic day. The goal of this focused day was to allow uninterrupted counselling time for patients during a scheduled appointment with a trained pharmacist educator freed from the routine tasks of pharmacy operation.

The clinic day: The national asthma clinic day took place on March 5, 1997, at 536 pharmacies (Shoppers Drug Mart Ltd) across Canada. The pharmacists used a standard questionnaire to guide a 20 min discussion and to gather data. Patients were asked to bring their medications and devices so that the patients could be trained in their appropriate use. A standardized step-by-step device checklist was used to assess technique. Pharmacists highlighted problems identified by the

TABLE 1
Demographic characteristics of 4080 patients who attended counselling sessions in nine provinces and the Northwest Territories on a national asthma clinic day

Demographic	Number	Percentage
Age (years)		
0 to 2	79	1.9
3 to 5	176	4.3
6 to 12	334	8.1
13 to 18	121	2.9
19 to 40	516	12.6
41 to 64	808	19.8
65	946	23.2
NR	1100	27
Sex		
Male	1356	33.2
Female	2382	58.4
NR	341	8.4
Province/territory		
British Columbia	283	6.9
Alberta	537	13.2
Saskatchewan	225	5.52
Manitoba	146	3.60
Ontario	1868	45.8
Quebec	112	2.75
New Brunswick	144	3.53
Nova Scotia	184	4.51
Prince Edward Island	23	0.56
Northwest Territories	5	0.12
NR	551	13.5

NR No response or not recorded

questionnaire and suggested individual solutions to each patient where necessary, often including the recommendation that the patient return to the physician who was responsible for the treatment of the patient's asthma. The criteria of poor asthma control was based on the 1996 Canadian Asthma Consensus Guidelines (15). Arrangements were made for telephone follow-up by the original pharmacist approximately 30 days after the educational encounter. During the telephone follow-up, an abbreviated, standardized questionnaire was administered.

Statistical analysis: Questionnaire data were collected in a blinded, confidential fashion by the national office, and the results were tabulated. Changes in proportions of asthma symptoms (nocturnal awakenings), and frequency of use of reliever and preventive medications, before and after the intervention were compared using the χ^2 test, with results considered significant at the $P < 0.05$ level.

RESULTS

Baseline patient characteristics: On the clinic day, 4080 patients attended counselling sessions in nine provinces and in the Northwest Territories (Table 1).

Pharmacists identified four common problems during the counselling session: the inhaler technique was suboptimal in 22.2% of patients; beta₂-agonists were self-administered

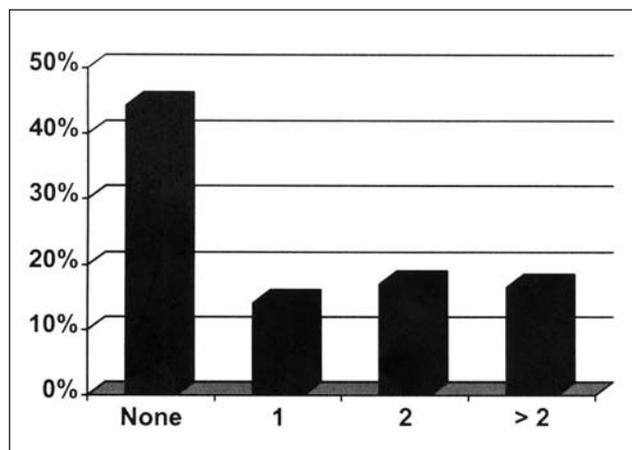


Figure 1) Proportion of patients who had sought urgent asthma care once, twice, more than twice or not at all in the preceding year

more frequently than three times weekly by 16.4% of patients; inhaled steroids were not being used regularly by 21.0% of patients with symptoms of poorly controlled asthma; and 18.0% of patients had one or more manifestation of suboptimal asthma control beyond frequent beta₂-agonist use (such as frequent nocturnal awakenings). Not surprisingly, among these patients with poorly controlled disease, approximately one-half had sought medical care (in the emergency department or physician's office) for an asthma exacerbation in the preceding year (Figure 1). Infrequent problems that were identified by the pharmacist included one or more side effects attributable to antiasthma medication (5.2% of patients) or other unclassified problems.

Recommendations: The most frequent intervention arising from the assessment was a review and/or correction of inhaler technique (41.9% of patients). Pharmacists recommended the regular use of inhaled steroids to 31.5% of patients, while 21.0% of patients were advised to see their physicians for a reassessment of their asthma and its management (ie, introduction or increase of maintenance medication). The use of peak flow monitoring was recommended to 17.2% of patients and spacing chambers to 15.9% of patients. A miscellany of unclassified recommendations was made to 3.8% of patients.

Outcomes: Of the 4080 patients seen, 2434 (59.7%) were deemed to need follow-up. Of the patients advised to see their physicians for reassessment, 72% did. The frequency of reliever medication use fell significantly in the month after the counselling session ($P < 0.05$, Figure 2). Similarly, the frequency of nocturnal awakenings fell significantly after the intervention ($P < 0.05$, Figure 3). The percentage of patients who described using preventive medication daily rose slightly but significantly, while the percentages of patients not using preventive medication, or using it on an as-needed basis, fell slightly but significantly ($P < 0.05$, Figure 4).

DISCUSSION

Our data show that a nationally coordinated program of focused asthma education in the community pharmacy can identify many asthma patients with poor disease control and

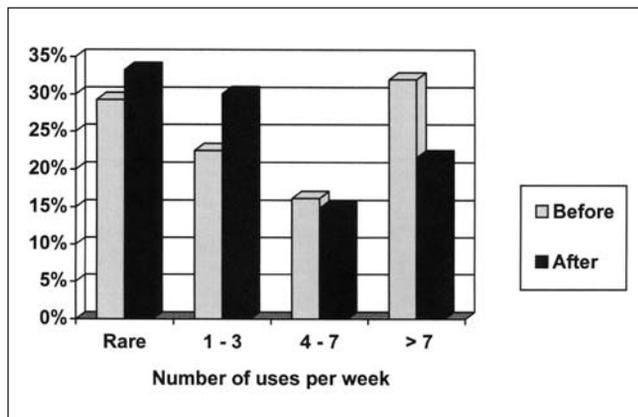


Figure 2) Weekly frequency of short acting beta₂-agonist use before and after the educational intervention (expressed as number of uses per week, not as number of puffs per week) ($P < 0.05$)

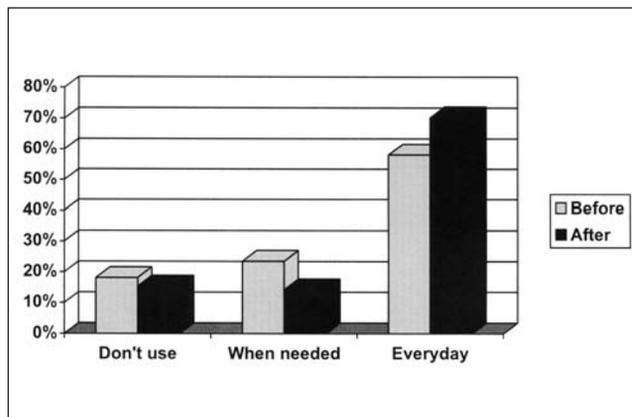


Figure 4) Number of times that preventive medication was used each week in the month before and after the educational intervention ($P < 0.05$)

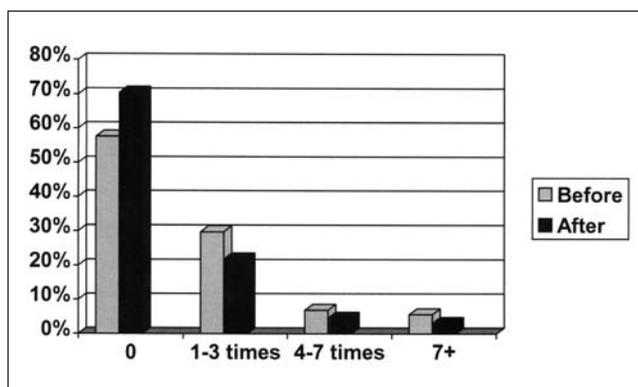


Figure 3) Number of nocturnal awakenings each week in the month before and after the educational intervention ($P < 0.05$)

suboptimal management skills. Moreover, an educational intervention during the same brief encounter can produce significant short term improvements in asthma control outcomes and self-management behaviours. These findings should encourage further such interventions and research in this area. We believe that the success of our program highlights many potential advantages of pharmacist-driven asthma education. The pharmacist, as the dispenser of asthma medications, is much more likely than the physician to have an accurate view of the patient's actual compliance with antiasthma medications. Given the high prevalence of suboptimal compliance with maintenance asthma medication, this perspective is essential (16).

Typically, encounters in the primary care setting are brief, and must address diagnosis, assessment of severity, physical examination and prescribing before matters of patient education are raised. Although our scheduled appointments of 20 min were brief, this may have been much more time devoted to education than patients had previously experienced. The pharmacy-based asthma education interventions can also offer convenient locations and hours of operation.

The costs in providing this type of program are extensive. They include the cost of development of training materials,

pharmacist facilitator time and travel expenses, and patient materials. The actual clinic day requires an extra pharmacist available for 8 h, and educational and advertising costs. A significant cost of the educational program was the development of a training program 'in-house' for pharmacist asthma educators. In the future, this cost may be reduced, and the quality of training may be maintained or enhanced, by the use of various regional asthma educator training programs approved by the Canadian Network for Asthma Care, and leading to the national certification examination for asthma educators (17).

There are several potential disadvantages to the provision of asthma education in the pharmacy setting. For example, pharmacists do not have access to physicians' diagnoses. It is entirely possible that elderly patients presenting for asthma management advice actually suffer from chronic obstructive pulmonary disease.

It is not immediately clear how effective communication can be established between the physician and the pharmacist. A frequent recommendation of our intervention was that patients review their asthma management with the treating physician. However, we provided no written note or other specific communication tool to ensure that messages were transmitted accurately. Two-way communication between physicians and pharmacists (and multiparty communication among all health care providers) will be important to ensure that there is consistency in the messages provided by the health care team.

Practical limitations included the lack of individual placebo devices necessary for effectively training each patient with asthma on the correct technique. The clinic day was designed to provide an uninterrupted educational session. In day-to-day practice in a busy community setting, this amount of time may not be feasible, and explains the need for the designated educational session.

Finally, we note that the pharmacy intervention was naturally focused on the appropriate use of antiasthma medications. The intervention was not comprehensive because it did not deal with potential issues of great importance in obtaining control of difficult asthma: there was no effective envi-

ronmental assessment, tobacco smoking was not addressed at length and possible occupational exposures were not sought. However, the brief asthma education intervention was not intended to provide comprehensive care of all aspects of this complex respiratory disease.

Some other limitations to our study must be noted. Our study was, of necessity, a simple pre- and postintervention design. In any such trial, it is possible that the observed changes were not the consequence of the intervention. It could be argued, for example, that some of our patients sought additional counselling in the pharmacy at a time of particularly troublesome asthma, and that the subsequent improvement represented 'regression toward the mean'. However, this would be an unlikely explanation for the increased use of inhaled corticosteroids. Although we found significant improvements in asthma control end points and self-management behaviour, the study was short term. We do not know whether the recorded changes were sustained for longer periods of time. We may also have underestimated the impact of the educational intervention. Our patient population included many individuals with excessive health care use for asthma control (such as frequent emergency room visits). It is possible that our intervention reduced such inappropriate health care use, but we did not obtain data to confirm or refute this hypothesis.

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CONCLUSIONS

A nationally coordinated program of focused asthma education in the community pharmacy setting can produce significant short term improvements in patient-reported symptom control and self-management behaviours.

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