



# The Coulee Region Community Pharmacy Asthma Intervention Study

Erika Laufenberg-Horstmann, Elizabeth DeVore, and Kristy Bassuener

## ABSTRACT

**Objective:** To determine whether community pharmacist-initiated interventions containing a recommendation to adjust prescribed asthma therapy are more helpful to prescribers than similar communications without such a recommendation.

**Design:** Prospective, multicenter, quasi-experimental design with posttest.

**Setting:** Wisconsin and Minnesota.

**Patients and Participants:** 33 community and clinic pharmacies throughout the Coulee Region of Wisconsin and Minnesota enrolled eligible patients from October 1, 2004, to January 31, 2005. Patients were between 12 and 60 years of age, had used three or more short-acting beta-agonist (SABA) canisters within the previous 90 days, and did not meet any exclusion criteria.

**Interventions:** Based on an evaluation of each patient's inhaler technique and adherence to controller medications, pharmacists sent to the prescriber a fax containing a recommendation (for patients with proper technique and appropriate adherence to prescribed controller medications) or information (for those who had any combination of inappropriate inhaler technique or inappropriate adherence).

**Main Outcome Measure:** Health care professionals' yes-or-no response to the question, "Do you find this form helpful for making clinical decisions?"

**Results:** Pharmacists offered to enroll 235 patients who were identified as meeting preliminary inclusion criteria. Of those, 112 people met exclusion criteria, 28 were not interested in their pharmacists' involvement, 13 stated that they did not have time to participate, 11 took the forms home but did not return them, and 11 other patients were excluded by the pharmacists for other reasons. The remaining 60 patients were enrolled in the study, 60 faxes were sent from 16 pharmacies, and 40 of those were analyzed further. For 24 recommendation faxes sent, prescribers rated 15 as helpful (62.5%) and 4 as not helpful (16.7%). Of 16 informational faxes sent, 10 were marked helpful (62.5%) and 2 were marked not helpful (12.5%).

**Conclusion:** Recommendation and informational faxes were overall helpful to health care professionals in making clinical decisions. Respondents found the two types of faxed interventions as equally helpful, suggesting that pharmaceutical care initiated by community pharmacists is helpful to prescribers.

**Keywords:** Asthma, community and ambulatory pharmacy, prescribers, communications, technology, adherence, patient education.

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**A**sthma, an inflammatory airway disease, ranks among the most common chronic medical conditions in the United States, one that has created significant public health concern over the past two decades. In the United States, 7.7% of the total adult population had asthma in 2003.<sup>1</sup> In that same year, the prevalence of asthma in adults living in Wisconsin totaled 7.5%, slightly lower than the national rate but higher than many other states.<sup>1</sup>

In 1998, the National Heart, Lung, and Blood Institute estimated indirect and direct monetary costs for asthma totaling \$11.3 billion. Indirect costs, estimated at \$3.8 billion, accounted for costs related to morbidity and mortality. The national mortality rate in 2002 was 1.5 per 100,000 people; this compares with a slightly

higher rate of 1.85 per 100,000 people in the state of Wisconsin.<sup>2</sup> Estimated direct costs total \$7.5 billion, with one half of costs generated by emergency department visits and hospitalizations. According to the Centers for Disease Control and Prevention, in 2004 asthma contributed to 1.8 million emergency department visits, 1 million hospital outpatient department visits, 13.6 million visits to office-based physicians, and 3,780 deaths. The financial burden of asthma management in Wisconsin is estimated to be roughly \$209 million annually, with \$90 million accounting for indirect expenditures and \$119 million accounting for direct medical expenditures.<sup>2</sup>

To combat the increasing financial and public health burden attributable to asthma, the National Asthma Education and Prevention Program (NAEPP) has called on pharmacists to assist with helping patients gain control of their asthma symptoms. NAEPP has released specific recommendations for community pharmacists in an effort to provide direction for pharmacy practices<sup>3</sup>: patient education about asthma medications; instruction about proper technique for inhaling medications; monitoring medication use and refill intervals to identify patients with poorly controlled asthma; deterrence from purchasing nonprescription inhalers and instead encouraging such patients to seek medical care; appropriate peak flow meter use; and increasing patient comprehension and use of asthma management plans.<sup>3</sup>

Considering the significant burden of asthma in Wisconsin and the call from the NAEPP for community pharmacist assistance in controlling this burden, we designed a study to examine the utility of telefacsimile communication between community pharmacists and health care professionals regarding excessive use of short-acting beta agonists (SABAs).

## Objective

The purpose of this study was to determine whether community pharmacist-initiated interventions containing a recommendation to adjust prescribed asthma therapy are more helpful to prescribers than similar communications without such a recommendation.

## Methods

### Design/Setting

The Coulee Region Community Pharmacy Asthma Intervention Study was conducted as a prospective, multicenter, quasi-experimental study with a posttest design. The study, approved by two local institutional review boards, was conducted over a 4-month period from October 1, 2004, to January 31, 2005, in the Coulee Region of Wisconsin and Minnesota. Of 48 community and clinic pharmacies located in this area, 33 agreed to participate in the study.

### AT A GLANCE

**Synopsis:** Information and therapeutic recommendations about asthma care provided by pharmacists to prescribers via telefacsimile were helpful overall in clinical decision making, according to this study of 60 patients with poorly controlled asthma residing in Wisconsin and Minnesota. At 16 community and clinic pharmacies in the Coulee Region, pharmacists identified target patients by inspecting medication profiles for excessive use of short-acting beta-agonists or medication nonadherence and through direct observation of patients' inhaler technique. Recommendations to step up drug therapy were faxed to prescribers for patients who exhibited proper inhaler techniques and were adherent. Informational faxes were sent to professionals for patients who either demonstrated improper technique or were not adherent. Among responding health care professionals, 62.5% found each of the two types of communications to be helpful.

**Analysis:** *The National Asthma Education and Prevention Program (NAEPP) recommends that pharmacists identify patients with poorly controlled asthma by monitoring patient medication use and refill intervals. Furthermore, pharmacists should assist patients with this common disease in gaining control of their symptoms through interventions including patient education on inhaler technique, medication and peak flow meter use, and asthma management plans. Pharmacist-initiated communication with patients' health care professionals by fax is a convenient means of communicating useful information in the busy community pharmacy settings, and results of this study indicate that the intervention was helpful to prescribers. The authors challenge colleagues nationwide to implement meaningful pharmaceutical care to help raise patients' and health care professionals' expectations regarding pharmacists' roles in health promotion.*

### Pharmacist Training

Before the study began, pharmacists and pharmacy technicians who agreed to participate attended a training session during which they were introduced to the study protocol. Discussions centered on the latest guidelines in asthma treatment, including new concepts in asthma treatment and how community pharmacists can assist in controlling the asthma burden. A refresher demonstration on proper technique of inhaler devices was performed to ensure everyone was up to date. Most of the training session focused on how to properly incorporate study interventions into daily practice.

### Pharmaceutical Care Interventions

Patients who refilled their SABAs three or more times within the previous 90 days were identified through drug use reviews by participating pharmacists. Each patient's prescription profile was examined for patients' age, use of oral steroids, and refills for SABAs. If a patient had refilled their SABAs three or more times in the previous 90 days, was between 12 and 60 years of age, and was not taking oral steroids regularly (daily or every other day), the community pharmacist offered to enroll the patient in the study.

Patients who agreed to participate were given a description of the study and methods, two copies of an informed consent document (one signed copy for the pharmacist's records and one copy for the patient), and a demographic survey. Upon completion of the informed consent and demographic survey, the pharmacist verified that the patient did not meet any of the remaining exclusion criteria, including needing an inhaler refill because of loss or need for a back-up, or presence of one or more of several lung abnormalities (chronic obstructive pulmonary disease [COPD], emphysema, bronchitis, bronchiolitis, upper airway obstruction/foreign body, pneumonia, tumor/neoplasm, pulmonary embolism, vocal cord dysfunction, lower respiratory tract viral infection, congestive heart failure, pulmonary fibrosis, cystic fibrosis, or structural lung conditions [one lung, pneumonectomy, lobectomy, partial lobectomy]).

If none of the exclusion criteria applied, the pharmacist evaluated the patient's inhaler technique. If the inhaler was not used correctly, the pharmacist counseled the patient on optimal technique.

In addition to observing inhaler technique, the pharmacist reviewed the patient's prescription profile to determine whether the patient was adherent to prescribed controller medications. The patient was considered adherent if two or more 30-day supply refills of at least one controller medication had been received within the past 90 days and nonadherent if fewer than two 30-day supply refills had been received within the preceding 90 days. Regardless of the predetermined definition of adherence, the pharmacist had the authority to classify the patient as adherent or non-adherent based on additional information (i.e., patient had been taking samples or doses had changed). Identification of nonadherent patients provided an opportunity to counsel on the importance of adherence to prescribed controller therapy. If the patient was not prescribed any controller medications, a classification of appropriate adherence was made.

### Interventions

Pharmacists sent either a recommendation or informational fax to the patient's health provider, as outlined below.

#### Recommendation Faxes

The pharmacist recommended that the prescriber step up patients' scheduled drug therapy if these frequent users of SABAs exhibited proper technique of their SABA inhaler while their refill record indicated appropriate adherence to prescribed controller medication. Such recommendations were made using a fax form (Figure 1) customized to each pharmacy that named the specific SABA involved and listed the patient's refill rate during the preceding 90 days for that medication. The form provided information on whether the patient had or had not been available for such a demonstration of inhaler technique, and if so, whether the patient had demonstrated proper or improper technique. The pharmacist was also able to provide information on appropriate or inappropriate adherence to prescribed controller medications and whether patients had received their prescriptions from multiple pharmacies.

As shown in Figure 1, the recommendation fax also included a snapshot of the current asthma guidelines and a listing of the preferred treatment based on the patient's asthma severity. A list of asthma medications the patient was currently taking was written in before the pharmacist signed the recommendation. The fax included a space for the health care provider to respond to the recommendation and indicated whether the form was deemed helpful or not.

**Coulee Region Pharmacy Asthma Study**  
 Funded by The Wisconsin Asthma Coalition  
 The Medicine Shoppe, 525 Kauai St, Eau Claire, WI 54601  
 Phone: 608-784-9922 • Fax: 608-784-2212

Attention: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Healthcare Provider Month Day Year

Patient: \_\_\_\_\_ DOB: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Last Name, First Name Month Day Year

Based on my evaluation of the above patient, I have noticed an overuse of the following beta<sub>2</sub>-agonists) \_\_\_\_\_ at a rate of \_\_\_\_\_ (inhaler/s) per 90 days. Upon the patient's visit to the pharmacy I evaluated his/her inhaler technique and adherence to prescribed controller medication regimen.

Proper Technique: Appropriate Adherence (to Controller Medications) Patient not available for evaluation - Please consider review at next visit.	Improper Technique: Inappropriate Adherence (to Controller Medication/s) Patient gets Rx's at multiple pharmacies
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**National Asthma Guidelines:**

	Days with Symptoms	Nights with Symptoms	Medications Required to Maintain Long-Term Control (Preferred Treatment)
<b>Severe Persistent</b>	Continuous	Frequent	High-dose inhaled corticosteroids & Long-acting inhaled beta <sub>2</sub> -agonists
<b>Moderate Persistent</b>	Daily	≥ 5 per month	Low to Medium dose inhaled corticosteroid & long acting inhaled beta <sub>2</sub> -agonist
<b>Mild Persistent</b>	>2 per week but <1x per day	≥ 2 per month	Low-dose inhaled corticosteroid
<b>Mild Intermittent</b>	≤ 2 per week	≤ 2 per month	No daily medication needed

Source: National Institutes of Health, 2002

Based on guidelines from the National Institute of Health (NIH), I recommend that a step up in asthma therapy be implemented.  
 Patient is currently taking: \_\_\_\_\_  
(RPh Signature)

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**Healthcare Provider Response:** Please choose one the following and fax back to 608-784-2212

Recommendation accepted — staff will contact pharmacy with new Rx \_\_\_\_\_  
 Recommendation not accepted — Reason: \_\_\_\_\_  
 I will have staff call and schedule an appointment with patient \_\_\_\_\_  
 I will address your concerns at the patients next scheduled visit on: \_\_\_\_\_  
 Thank you for your input, but no change in therapy at this time \_\_\_\_\_  
 Comments: \_\_\_\_\_  
(Provider Signature)

Do you find this form helpful for making clinical decisions?      Yes      No

Thank you for your time and participation in this study!

Figure 1. Recommendation Fax Form

**Informational Faxes**

The pharmacist sent an alternative informational fax (Figure 2) to the patient’s health care provider for patients who exhibited any combination of inappropriate inhaler technique or adherence. This fax was similar to the recommendation fax mentioned above, the primary difference being that the pharmacist no longer recommended a step up in asthma therapy. Instead, this fax stated, “I recognize that the patient’s inhaler technique and/or adherence to controller medication(s) may be contributing to excessive use of SABA. Therefore, no recommendations at this time—information provided for your reference.”

The form solicited health care provider feedback using the same questions as with the recommendation fax.

**Documentation of Interventions**

Pharmacists were required to document specific aspects of each intervention they performed. All patients who either declined to participate or met exclusion criteria were recorded on a log form. The pharmacist also recorded whether the patient exhibited proper inhaler technique and was adherent to prescribed controller medication(s), along with whether counseling was provided on optimal technique and importance of adherence to controller medication(s). Finally, a fax log recorded the date the original fax was sent to the health care provider, names of the patient and the recipient of the fax, the type of fax (either recommendation or informational), the initials of the pharmacist performing the intervention, and the date a response was received.

**Measures**

Data measuring the utility of pharmacists’ interventions were collected from recommendation fax and informational fax responses (Figures 1 and 2). Results were tallied to fill in a distribution table comparing helpful versus not helpful for recommendation and informational faxes. Fisher’s exact test calculated a probability value.

In addition, demographic information was obtained from completed surveys and from the pharmacist’s evaluation of each intervention. Information concerning provider type and pharmacy characteristics was collected as needed throughout the study.

**Results**

Pharmacists in 16 pharmacies offered to enroll 235 patients who were identified as meeting preliminary inclusion criteria (no patients were recruited in the other pharmacies). Of those, a total of 112 people met exclusion criteria: 61 were older than 60 years of age, 28 had COPD, and 23 potential enrollees did not meet other study criteria. Even though many of the remaining patients were willing to cooperate, 28 were not interested in their pharmacists’ involvement, 13 stated that they did not have time to participate, and 11 took the forms home, stating they would return them at their next visit to the pharmacy, but none did. The pharmacist used professional discretion and excluded 11 other patients who they believed were not mentally capable of filling out the required survey.

For the remaining 60 patients, pharmacists acted on their assessments and the patient-supplied information by sending either recommendation or informational faxes to health care professionals.

**Recommendation and Informational Faxes**

Of the 24 recommendation faxes sent, 19 were returned and included in the probability calculation, with 15 (62.5%) prescribers coding the faxes as helpful and 4 (16.7%) as not helpful. The 5 other faxes were excluded from probability value calculation, specifically 2 (8.3%) faxes that were never returned and 3 (12.5%) faxes that had no indication of the helpfulness of the recommendation.

Of the 16 recommendation faxes sent, 12 were returned and included in the probability calculation, with 10 (62.5%) prescribers coding the faxes as helpful and 2 (12.5%) as not helpful. The 4 other faxes were excluded from probability value calculation, specifically 3 (18.8%) faxes that were never returned and 1 (6.3%) fax that was without an indication of the helpfulness of the recommendation.

Combining the recommendation and informational faxes, 31 faxed interventions were analyzed further. Respondents indicated that 80.6% (n = 25) of these faxes were helpful.

**Coulee Region Pharmacy Asthma Study**  
 Funded by The Wisconsin Asthma Coalition  
 The Medicines Shoppe, 228 East 38<sup>th</sup> La Crosse, WI 54601  
 Phone 608-784-9922 • Fax 608-784-2212

Attention: \_\_\_\_\_ Date: \_\_\_\_\_  
 Healthcare Provider Month / Day / Year

Patient: \_\_\_\_\_ DOB: \_\_\_\_\_  
 Last Name, First Name Month / Day / Year

Based on my evaluation of the above patient, I have noticed an overuse of the following beta<sub>2</sub>-agonist(s) \_\_\_\_\_ at a rate of \_\_\_\_\_ inhaler(s) per 90 days. Upon the patient’s visit to the pharmacy I evaluated his/her inhaler technique and adherence to prescribed controller medication regimen.

Proper Technique	Improper Technique
Appropriate Adherence to Controller Medication(s)	Inappropriate Adherence to Controller Medication(s)
Patient not available for evaluation - Please consider review at next visit	Patient gets Rx’s at multiple pharmacies

**National Asthma Guidelines:**

	Days with Symptoms	Nights with Symptoms	Medications Required to Maintain Long-Term Care (Preferred Treatment)
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<b>Moderate/Persistent</b>	Daily	≥ 5 per month	Low to Medium dose inhaled corticosteroid & long-acting inhaled beta <sub>2</sub> -agonist
<b>Mild/Persistent</b>	> 2 per week but < 1x per day	> 2 per month	Low-dose inhaled corticosteroid
<b>Mild/Intermittent</b>	≤ 2 per week	≤ 2 per month	No daily medication needed

Source: (National Institutes of Health, 2002)

I recognize that the patient’s inhaler technique and/or adherence to controller medication(s) may be contributing to excessive use of short-acting beta<sub>2</sub>-agonists. Therefore, no recommendations at this time – information provided for your reference.

\_\_\_\_\_  
(RP) Signature

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**Healthcare Provider Response:** Please choose one the following and fax back to 608-784-2212

The patient’s next appointment is scheduled for \_\_\_\_\_

The patient does not have an appointment scheduled at this time. Thank you for the information.

I will have staff call and schedule an appointment with the patient.

Comments: \_\_\_\_\_

\_\_\_\_\_  
(Provider Signature)

Do you find this form helpful for making clinical decisions? Yes No

Thank you for your time and participation in this study!

**Figure 2. Informational Fax Form**

### No Response Rate

Pharmacists were encouraged to send second fax requests throughout the study as they felt necessary. However, even after two faxes, some health care professionals still did not respond. Overall, the study had a 12.5% nonresponse rate. The informational faxes were more likely to attract no response (18.8%) than were recommendation faxes (8.3%). The mean number of days required for health care professionals to respond to recommendation faxes was 7.94 days, compared with 12.16 days for informational faxes.

The utility of recommendation faxes was compared with the utility of informational faxes. Results showed 62.5% of recommendation faxes and 62.5% of informational faxes were helpful ( $P = .57$ , left-sided Fisher's exact test.)

### Patient Factors

Of the 60 faxes sent to health care professionals, 24 (40.0%) provided recommendations for step-up therapy of asthma, and 16 (26.7%) were informational. Pharmacists sent the incorrect type of fax (i.e., recommendation instead of informational and vice versa) 8 times (13.3%) and sent faxes in error for 12 patients who met exclusion criteria (20%). These 20 incorrect faxes were excluded from final analysis (Figure 3).

Table 1 lists the demographics of 31 patients for whom faxes were sent during the 4-month study period and analyzed here. Most patients were white, but otherwise the patients represented a broad swath of ages, education levels, smoking histories, and SABA refill rates, and the final sample was nearly evenly split along gender lines.

According to information provided on patient questionnaires

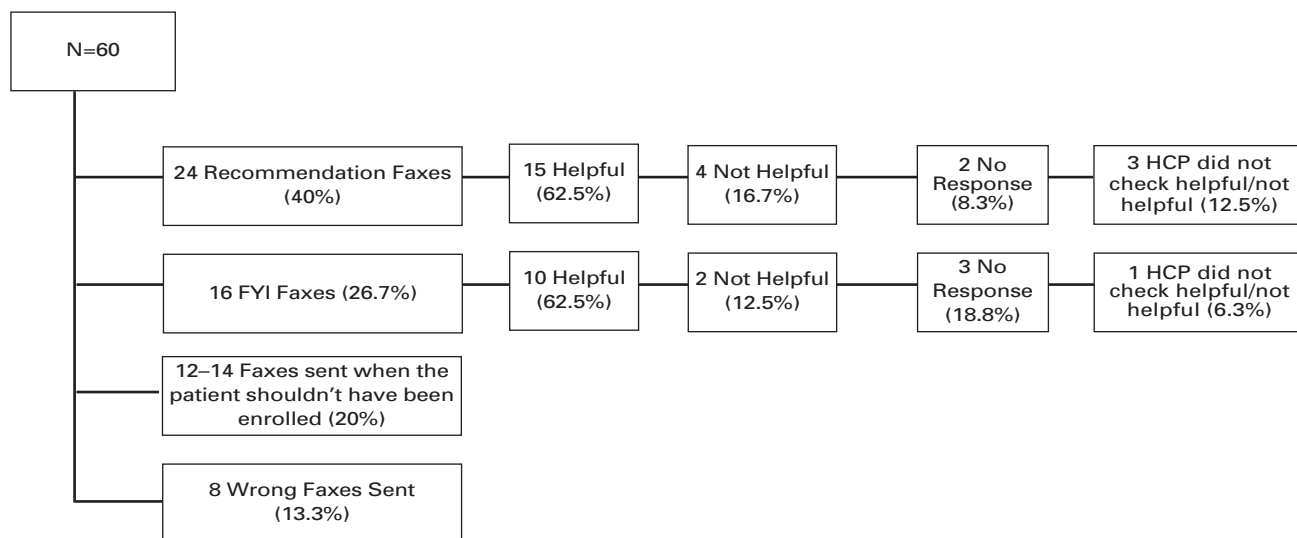
and obtained in pharmacist assessments, 97% of patients stated that they knew how to use their inhaler properly (Table 2), and the pharmacist concurred for 84% of patients after they demonstrated their techniques. All but one patient stated that they had a good understanding of how their medications worked. Interestingly, 71% of these patients exhibited appropriate adherence to controller medications.

Pharmacists provided counseling about inhaler technique for 29% of the 31 patients. However, when the patient demonstrated improper technique, pharmacist counseling frequency increased to 75%. Likewise, counseling on the importance of adherence to prescribed controller medication(s) occurred 45% of the time. However, when the patient exhibited poor adherence, pharmacist counseling increased to 60%.

### Health Care Professionals' Responses

The majority of the 31 analyzed faxes were sent to nonspecialty physicians, as shown in Table 1, but small numbers of faxes also went to nurse practitioners and specialty physicians (i.e., pulmonologists and allergists). There was no statistical trend between the nature of the fax sent to each type of health care professional.

According to the patient survey, specialty physicians were more likely to review the patient's inhaler technique (80%) than were nonspecialty physicians (35%) and nurse practitioners (20%). Collectively, 75% of health care professionals who reviewed inhaler technique at the patient's last visit marked either the recommendation or informational fax helpful. Regardless of the type of fax, specialty physicians rated the fax form as helpful 100% of the time,



**Figure 3. Results of Recommendation and Informational Faxes Sent to Prescribers**

Abbreviations used: HCP, health care professional; FYI, for your information (informational fax).

**Table 1. Demographic Characteristics of Patients**

<i>No. Patients</i>	31
<i>Gender, no. (%)</i>	
Men	15 (48)
Women	16 (52)
<i>Age in years, mean (range)</i>	39.83 (17–58)
<i>Educational level, no. (%)</i>	
Some high school	3 (10)
High school graduate	12 (39)
More than high school	14 (45)
No response	2 (6)
<i>Race/ethnicity</i>	
White	24 (78)
African American	1 (3)
Asian	1 (3)
No response	5 (16)
<i>Smoking status</i>	
Smoker	11 (35)
Nonsmoker	20 (65)
Nonsmoker who previously smoked	5 (25)
<i>Albuterol refills per 90 days, mean (range)</i>	4.19 (3–11)
3 inhalers, no. (%)	13 (43)
4 inhalers, no. (%)	11 (36)
5 inhalers, no. (%)	2 (6)
6 inhalers, no. (%)	2 (6)
7 inhalers, no. (%)	2 (6)
11 inhalers, no. (%)	1 (3)
<i>Patients who have had an appointment with their health care professional, no. (%)</i>	
In the last 6 months	13 (42)
In the last year	20 (65)
<i>Top reasons patients were not enrolled, no. (%)</i>	
Met exclusion criteria	112 (59)
Not interested in pharmacist involvement	28 (14)
Did not have time	13 (7)
Took forms and did not bring them back	11 (6)
Low mental capacity	11 (6)
Other	16 (8)
<i>Top exclusion criteria met, no. (%)</i>	
Age greater than 60	61 (53)
Chronic obstructive pulmonary disease	28 (24)
Other	25 (23)
<i>Uncontrolled patients,<sup>a</sup> no. (%)</i>	31 (100)
<i>Type of health care provider, no. (%)</i>	
Nurse practitioner	16 (5)
Nonspecialty physicians	21 (68)
Specialty physicians <sup>b</sup>	5 (16)

<sup>a</sup>Determined from Asthma Control Test.<sup>4</sup>

<sup>b</sup>Pulmonologist or allergist.

as did 86% of nonspecialty physicians and 40% of nurse practitioners.

Throughout the study, second fax requests sent by the community pharmacists were encouraged. None of these went to nurse practitioners, while 83% were directed to nonspecialty physicians, and 17% to specialty physicians. All responses received from second fax requests were marked as helpful.

## Discussion

This study was designed to identify patients who were using SABAs excessively and help them gain control of their asthma symptoms through pharmacist-initiated collaboration with the prescribing health professional. All patients enrolled were using their SABAs in excess, according to national asthma guidelines. Focus was placed on the most severely affected asthma patients, specifically those obtaining three or more canisters of SABAs per 90 days.

Information about the number of inhalers a patient uses per 90 days alone may not be an accurate representation of the need to contact the patient's health care provider with a recommendation to adjust existing drug therapy. We looked at two additional parameters before deciding to send either a recommendation or an informational fax: the patient's inhaler technique and the patient's adherence to prescribed controller medication. These additional parameters allowed a quick glimpse at the patient's asthma control. Nevertheless, the pharmacist may have benefited from looking at other information, such as the patient's Asthma Control Test score, before forming a decision about what type of intervention to perform.

The newest version of the Asthma Control Test states that a patient with a score of 19 points or less may have asthma that is not under control and recommends that the patient make an appointment to discuss the results with his/her health care professional. If a patient scores 20 points or more, asthma is considered well controlled. Alone, the Asthma Control Test may not prompt pharmacist-initiated interventions. However, combined with an evaluation of the amount of SABA used, the patient's inhaler technique, and the patient's adherence to controller medications, one can obtain a more complete picture of the patient's asthma control. Information about oral steroid usage, hospitalizations, emergency department visits, and missed days of work and/or school, or other activities in the past year because of breathing difficulties may also be beneficial. The community pharmacist should consider asking more questions to gain more insight before making a recommendation to change drug therapy.

When designing the study, we predicted that many patients could benefit from the selected interventions. Patients who refill one to two inhalers every month or sooner are not uncommon. Study criteria eliminated a large number of these patients who were excessively using SABAs because of their age or a comorbid lung condition. Even so, our enrollment was not what we had anticipated. Perhaps the largest contributing factor to the lack of enrollment was that just 33 of the potential 48 pharmacies chose to participate in the study. Of those 33 pharmacies, only 16 performed at least one fax intervention.

We believe these disappointing results speak to the difficult process of changing the direction of a profession. As long as patient and provider expectations of community pharmacists remain stagnant, there really is no forthright reason to change our existing practices/behavior. However, as professionals we should constantly be searching for ways to improve our services and utility

**Table 2. Survey of Patients' Asthmatic Conditions**

Items	Alternatives	No. (%)
In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work or home?	None of the time	8 (26)
	A little of the time	10 (32)
	Some of the time	7 (23)
	Most of the time	4 (13)
	All of the time	2 (6)
During the past 4 weeks, how often have you had shortness of breath?	None of the time	12 (39)
	A little of the time	12 (39)
	Some of the time	6 (19)
	Most of the time	1 (3)
	All of the time	0 (0)
During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness, or pain) wake you up at night or earlier than usual in the morning?	Not at all	5 (16)
	Once or twice	7 (23)
	Once a week	4 (13)
	2 to 3 nights a week	6 (19)
	4 or more nights a week	9 (29)
During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?	Not at all	2 (6)
	Once a week or less	3 (10)
	A few times a week	12 (39)
	1 or 2 times per day	14 (45)
	3 or more times per day	0 (0)
How would you rate your asthma control during the past 4 weeks?	Completely controlled	2 (6)
	Well controlled	9 (29)
	Somewhat controlled	13 (43)
	Poorly controlled	6 (19)
	Not controlled at all	1 (3)
Are you requesting a refill because you are close to being out of medication?	Yes	28 (91)
	No	2 (6)
	Not Sure	1 (3)
Are you requesting a refill because you have lost your medication?	Yes	1 (3)
	No	30 (97)
Are you requesting a refill because you want to have a back-up inhaler?	Yes	7 (23)
	No	23 (74)
	Not sure	1 (3)
Do you get any of your asthma medications filled at more than one pharmacy?	Yes	2 (6)
	No	29 (94)
At your last health care visit, did your health care professional review your inhaler technique?	Yes	12 (39)
	No	18 (58)
	Not sure	1 (3)
Do you think you have a good understanding of what your medications do?	Yes	30 (97)
	Not Sure	1 (3)
Have you been to the emergency department in the past year because of breathing difficulties?	Yes	8 (26)
	No	22 (71)
	Not sure	1 (3)
Have you been hospitalized in the past year because of breathing difficulties?	Yes	3 (10)
	No	28 (90)
Have you missed days of work or school in the past year because of breathing difficulties?	Yes	13 (42)
	No	18 (58)
Have you taken prednisone or other oral steroids in the past year because of breathing difficulties?	Yes	17 (55)
	No	12 (39)
	Not sure	2 (6)
Do you feel like you know how to use your inhaler(s) properly?	Yes	30 (97)
	Not sure	1(3)
Do you feel like your pharmacist has done a good job explaining your asthma medications?	Yes	31 (100)

beyond dispensing. Without further motivation to change, pharmacy practice will likely continue to focus on volume and dispensing. We challenge our colleagues in the Coulee Region and throughout the nation to use opportunities such as Medicare Part D's medication therapy management services and projects of the American Pharmacists Association Foundation to help raise the expectations patients and health care professionals place on community pharmacists by implementing worthwhile pharmaceutical care into daily practice.

In today's busy practice setting, communication via telefacsimile is ideal. Considering the study's low no-response rate and the ease of communication, we recommend making pharmaceutical care interventions via fax. Not only is sending a fax convenient for the pharmacist to make the recommendation at his or her own pace, but the receiving health care professionals can view them at their convenience. One potential limitation to sending interventions via facsimile is the length of time it takes to receive a response. This study had a mean response time of 8 to 12 days; a rather slow response time.

The recommendation and informational fax forms used in this study can be downloaded as a single document and used by pharmacists wishing to implement this intervention. The combined *Asthma Care Fax* as well as instructions for use can be accessed at the following Web sites: [www.chawisconsin.org/asthmaresources.htm](http://www.chawisconsin.org/asthmaresources.htm) and [www.pswi.org](http://www.pswi.org).

Results showed specialty physicians found the faxed interventions to be most helpful, followed by nonspecialty physicians and then nurse practitioners. However, one important consideration that one should keep in mind is that specialty physicians and nurse practitioners were poorly represented, and the results could easily have been influenced by one individual's opinion. For the most part, the trend from all health care professionals determined that both fax interventions were helpful in making clinical decisions.

The design of the study required the pharmacist to observe and evaluate the patient's inhaler technique. However, subsequent pharmacist counseling on technique was optional. Likewise with regard to adherence, the pharmacist was advised to review the patient's prescription profile to determine adherence to prescribed controller medication(s). However, the pharmacist was not obligated to counsel on the importance of adherence to controller medication. This study showed that pharmacist-initiated directions on inhaler technique was not always performed. However, when the pharmacist observed improper technique, counseling rates were higher. With regard to adherence, counseling was slightly more frequent than instruction on inhaler technique and markedly improved when poor adherence was observed.

Even with the improvement in counseling rates for adherence, the results were less than impressive. Counseling with regard to inhaler technique and the importance of adherence to controller medications should be provided at every visit based on the patient's individual needs to reinforce how to maintain asthma control.

According to the demographic survey, 100% of patients stated that they thought their pharmacist did a good job explaining their medications. Despite this, pharmacies still have nonadherent patients. Patients may think that pharmacists are doing a good job, when in reality this may not be the case. Explaining the use of medications well does not necessarily have a direct influence on motivating a patient to be adherent. Perhaps the results of this study can be viewed as an opportunity to refine counseling goals based on the patient's individual needs.

## Limitations

Perhaps the most unfortunate limitation of this study is its small sample size. We had a difficult time convincing pharmacies to participate. Furthermore, in the pharmacies that did participate, most pharmacists had a difficult time enrolling patients. The most common excuse noted by both pharmacies and prospective participants was that they were too busy to participate. Because the study involved only voluntary participation, one issue that could be raised is potential selection bias.

When making their recommendation to step up drug therapy, participating pharmacists were not required to consider that patients might be taking nonselective beta-blockers, nonsteroidal antiinflammatory drugs, or other medications that could potentially nullify the effect of the SABA. We encourage anyone wanting to model a pharmaceutical care intervention after this study to consider the impact of concomitant drug therapy.

Also, this study did not monitor nebulizer use of SABAs. Generally, nebulizers are used for the young or for the elderly who struggle with coordination, and our study population was restricted to ages 12 to 60. Furthermore, recent data suggest that metered-dose inhalers may be as effective, if not more effective, as nebulizer machines.<sup>5,6</sup>

Finally, this study had a very lenient definition of appropriate adherence. Anyone who had refilled at least two 30-day supplies of their controller medications in the past 90 days was categorized as adherent. We recognize that this definition of appropriate adherence is not very specific. The intention was for the pharmacist making the intervention to use his or her professional discretion in determining whether the patient was adherent. Every professional has an opinion of appropriate adherence and that could produce some variability among decisions about which intervention fax to send.

## Conclusion

Faxed recommendation and informational forms were viewed overall as helpful in making clinical decisions by a group of health professionals. The two forms were equally helpful to the physicians and nurse practitioners who received them, and our results

suggest that community pharmacist-initiated pharmaceutical care may be helpful to these colleagues in providing care to patients with asthma.

**References**

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**Learning Objectives**

After reading this continuing education article, the pharmacist should be able to:

- Describe the methods and results of the Coulee Region Community Pharmacy Asthma Intervention Study.
- Name the interventions used with patients in this study that provided information for sharing with prescribers of antiasthmatic medications.
- List at least three challenges or obstacles encountered by the investigators in this real-world study.

**Assessment Questions**

**Instructions:** You may take the assessment test for this program on paper or online. For each question, circle the letter on the answer sheet corresponding to the answer you select as being the correct one. There is only one correct answer to each question. **Please review all your answers to be sure that you have circled the proper letters.** To take the CE test for this article online, go to [www.pharmacist.com/education.cfm](http://www.pharmacist.com/education.cfm), and click on the "Get CE Now" box. Once you are on the CE welcome page, enter a keyword that describes this article in search box, and select this article from the list that appears. Follow the online instructions to take and submit the assessment test.

- The National Asthma Education and Prevention Program has released specific recommendations for community pharmacists in an effort to provide direction for their practices. Which of the following statements is *not* one of these recommendations?
  - Recommend spirometry measurements be taken before therapy is started.
  - Instruct patients about proper technique for inhaling medications.
  - Monitor medication use and refill intervals to help identify patients with poorly controlled asthma.
  - Deter patients from purchasing nonprescription inhalers.
- In the Coulee Region Community Pharmacy Asthma Intervention Study, the pharmacist needed to assess which of the following before sending a fax to the patient's physician or nurse practitioner?
  - Inhaler technique
  - Peak flow readings
  - Adherence to prescribed controller medications
  - Alternatives a and c are both correct.
- In this study, when patients were frequent users of short-acting beta agonists but had *not* been prescribed any controller medications for asthma treatment, they were classified as:
  - Nonadherent
  - Adherent
  - Not eligible
  - Adequate

**CE Credit**

**CE Credit**

To obtain 1.5 contact hours of continuing education credit (0.15 CEUs) for completing "The Coulee Region Community Pharmacy Asthma Intervention Study," complete the assessment exercise and CE registration form and return them to APhA. A statement of credit will be awarded to respondents achieving a grade of 70% or better. APhA continuing education policy provides you with two opportunities to successfully complete this continuing education examination. Please note that you will not be permitted to submit the examination a third time. Individuals completing this exercise successfully by November 6, 2009, can receive credit.



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The ACPE Universal Program Number assigned to this program by the accredited provider is 202-000-06-249-H04.

4. In this Coulee study, the pharmacist made a faxed recommendation to *step up existing therapy* if the patient exhibited which of the following?
- Proper inhaler technique and inappropriate adherence to prescribed controller medication
  - Proper inhaler technique and appropriate adherence to prescribed controller medication
  - Improper inhaler technique and inappropriate adherence to prescribed controller medication
  - Improper inhaler technique and appropriate adherence to prescribed controller medication
- I and II
  - II and IV
  - I only
  - II only
  - IV only
5. In this Coulee study, the pharmacist sent an *informational fax* to the patient's health care professional if the patient exhibited which of the following?
- Proper inhaler technique and inappropriate adherence to prescribed controller medication.
  - Proper inhaler technique and appropriate adherence to prescribed controller medication.
  - Improper inhaler technique and inappropriate adherence to prescribed controller medication.
  - Improper inhaler technique and appropriate adherence to prescribed controller medication.
- I, II, and III
  - I, II, and IV
  - I, III, and IV
  - II, III, and IV
  - All of the above alternatives are correct.
6. The primary outcome measure for evaluating the usefulness of the faxed interventions was obtained by asking which of the following question of health care providers?
- Do you agree that your patient needs an inhaled corticosteroid?
  - Do you find this form helpful for making clinical decisions?
  - Are you aware of the current national asthma guidelines?
  - Do you agree with our recommendation?
7. Which of the following items will help community pharmacists make more informed recommendations concerning their patient's asthma status?
- Observation of the patient's inhaler technique
  - The patient's adherence to prescribed controller medications
  - The patient's answers to The Asthma Control Test
  - The patient's most recent peak flow trends
  - All of the above alternatives are correct.
8. The average number of days it took health care professionals to respond to *recommendation faxes* was approximately:
- 1 day
  - 4 days
  - 8 days
  - 15 days
9. Combined, the *helpful* response for both recommendation and informational faxes was approximately:
- 60%
  - 70%
  - 80%
  - 90%
10. When community pharmacists perform the intervention outlined in this article, there is an excellent opportunity to provide counseling on which of the following items?
- The importance of adherence to prescribed controller medications
  - The importance of regular spirometry measurements
  - The importance of refilling two short-acting beta agonists at a time to get the most out of patients' prescription copayments
  - None of the above alternatives is correct.
11. Which of the following questions could a community pharmacist ask to gain more insight into how well controlled the patient's asthma is?
- Do you use nonprescription inhalers to help with your breathing?
  - Have you had spirometry measurements taken recently?
  - Have you missed any days of work or school in the past month because of your breathing?
  - All of the above alternatives are correct.
12. The number 1 reason patients who had asthma and refilled their short-acting beta agonist three or more times in the previous 90 days were *not* enrolled in this study was:
- They were older than 60 years of age.
  - They had human immunodeficiency virus.
  - They had congestive heart failure.
  - They had lung cancer.
13. The separate fax forms used in this study, the recommendation fax and the informational fax, have been combined into a single document for community pharmacists across the nation to download and use in their practices. This document is titled:
- All About Asthma
  - Asthma Somebody Who Cares
  - The Asthma Care Fax
  - Recommendations and Information
14. In today's community pharmacy practice setting, communication via telefacsimile:
- Allows pharmacists to document their interventions and potential recommendations at their convenience
  - Allows health care professionals to review the recommendations at their convenience
  - Can serve as documentation for cognitive service billing
  - All of the above alternatives are correct.
15. The results of this study may suggest that community pharmacist-initiated pharmaceutical care:
- Is rarely done
  - Is helpful to prescribers for making clinical decisions
  - Cannot occur without telefacsimile capabilities
  - Requires at least 10 minutes per patient

# C.E. EXAMINATION FORM

## The Coulee Region Community Pharmacy Asthma Intervention Study

To receive **1.5** contact hours of continuing education credit (**0.15 CEUs**), please provide the following information:

- Type or print your name and address in the spaces provided.
- Mail this completed form for scoring to:  
American Pharmacists Association—CE Exam  
P.O. Box 791082  
Baltimore, MD 21279-1082
- CE processing is free for APHA members. If you are not an APHA member, enclose a \$15.00 handling fee for grading the assessment instrument and issuing the Statement of Credit.

A Statement of Credit will be awarded for a passing grade of 70% or better. If you fail the exam, you may retake the exam once. If you do not pass the second time, you may no longer participate in this continuing pharmacy education program. Please allow 6 weeks for processing. Pharmacists who complete this exercise successfully before **November 6, 2009**, can receive credit.



The American Pharmacists Association is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education. The ACPE Universal Program Number assigned to the program by the accredited provider is: **202-000-06-249-H04.**

### PARTICIPANT INFORMATION

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

E-MAIL \_\_\_\_\_

WORK PHONE \_\_\_\_\_

HOME PHONE \_\_\_\_\_

How long did it take you to read the continuing education program and complete this test?  
\_\_\_\_\_ Hours \_\_\_\_\_ Minutes

My signature certifies that I have independently taken this C.E. Examination:  
\_\_\_\_\_

### C.E. ASSESSMENT QUESTIONS—ANSWERS

Please circle your answers (one answer per question).

- |              |              |             |             |
|--------------|--------------|-------------|-------------|
| 1. a b c d   | 5. a b c d e | 9. a b c d  | 13. a b c d |
| 2. a b c d   | 6. a b c d   | 10. a b c d | 14. a b c d |
| 3. a b c d   | 7. a b c d   | 11. a b c d | 15. a b c d |
| 4. a b c d e | 8. a b c d   | 12. a b c d |             |

### PROGRAM EVALUATION

#### PLEASE ANSWER EACH QUESTION.

	EXCELLENT				POOR
1. Overall quality of the program	5	4	3	2	1
2. The program was relevant to pharmacy practice	5	4	3	2	1
3. Value of the content	5	4	3	2	1

#### PLEASE ANSWER EACH QUESTION MARKING WHETHER YOU AGREE OR DISAGREE.

	Agree	Disagree
4. The program met the stated learning objectives:		
1. Describe the methods and results of the Coulee Region Community Pharmacy Asthma Intervention Study.	<input type="checkbox"/>	<input type="checkbox"/>
2. Name the interventions used with patients in this study that provided information for sharing with prescribers of antiasthmatic medications.	<input type="checkbox"/>	<input type="checkbox"/>
3. List at least three challenges or obstacles encountered by the investigators in this real-world study.	<input type="checkbox"/>	<input type="checkbox"/>

#### Impact of the Activity

The information presented (check all that apply):

7.  Reinforced my current practice/treatment habits     Will improve my practice/patient outcomes     Provided new ideas or information I expect to use     Enhances my current knowledge base
8. Will the information presented cause you to make any changes in your practice?     Yes     No
9. How committed are you to making these changes?    (Very committed) 5   4   3   2   1 (Not at all committed)
10. Do you feel future activities on this subject matter are necessary and/or important to your practice?     Yes     No

### Follow Up

As part of our ongoing quality-improvement effort, we would like to be able to contact you in the event we conduct a follow-up survey to assess the impact of our educational interventions on professional practice. Please indicate your willingness to participate in such a survey.

- Yes, I am interested in participating in a follow-up survey.     No, I am not interested in participating in a follow-up survey.

**You also can go to <http://www.pharmacist.com> and take your test online for instant credit.**