Pharmacy-Based Evaluation and Treatment of Minor Illnesses in a Culturally Diverse Pediatric Clinic

Heidi Kalister, PharmD; Robert D. Newman, MD, MPH; Laura Read, RPh; Cyndy Walters, RPh; Jennifer Hrachovec, RPh; Elinor A. Graham, MD, MPH

**Background:** Among medically underserved immigrant parents, access to nonprescription medicines for home treatment of minor childhood illnesses may be limited by scarce financial resources or language barriers.

**Objectives:** To design and implement a new clinical service for an urban ambulatory pediatric clinic with a large immigrant population that allows pharmacists to evaluate and to treat children and adolescents aged 6 months to 19 years with minor acute illnesses and to provide bilingual patient education materials.

**Methods:** We developed protocols and encounter forms for pharmacist evaluation of 5 pediatric conditions: cough/cold, fever, diaper rash, vomiting/diarrhea, and head lice. We published bilingual patient education materials for these conditions in 8 commonly spoken languages. We assessed safety by thoroughly reviewing the medical records of all patients who returned within 1 week of a pharmacy encounter and by asking parents in a telephone survey to compare services received through the pharmacy and the acute care clinic for treatment of the common cold.

**Results:** During the first year of this pilot program, 191 patients were evaluated and treated, 145 (76%) for cough/cold. Seventy percent of the patients were immigrants. No unexpected or adverse outcomes were detected, although occasional deviations from established protocols were noted. Parent satisfaction with the pharmacy service was high, and similar to that received through the standard acute care clinic. Patients evaluated by pharmacists were more likely to be attended to promptly (<15-minute wait) and were more likely to receive written information than patients evaluated by physicians for similar conditions.

**Conclusions:** Pharmacist evaluation and treatment of minor pediatric illnesses seems to be both safe and well accepted. Further studies are needed to evaluate the cost-effectiveness of this service in diverse settings. In states that allow pharmacists to have prescriptive authority, pharmacy-based evaluation and treatment may improve access to care for children with minor illnesses.

Arch Pediatr Adolesc Med. 1999;153:731-735

Editor's Note: I grew up in a small town where “Doc ___” (the pharmacist) was the first stop for what we now call primary care. A visit to the physician was reserved for very serious illnesses or when “Doc ___” told us to go there. But life was much simpler then, and we had only 1 lawyer in town.

Catherine D. DeAngelis, MD

Many acute care visits to pediatric clinics are for minor self-limited conditions such as the common cold, vomiting/diarrhea, or diaper rash. Some of these conditions probably could be managed by parents with home remedies or nonprescription medicines without a clinic visit. Among medically underserved populations, however, the option to purchase nonprescription medicines and treat minor illnesses in the home may be limited by scarce financial resources or language barriers.

Because physicians can prescribe nonprescription medicines to provide them without charge to the Medicaid patient, parents may seek physician care to obtain these medicines for children with minor acute illnesses. The message implicit in this system is that parents are incapable of judging illness severity, and that formal medical care should be sought for all illnesses. This system may also increase the patient care burden in ambulatory settings.

In 9 states, pharmacists have the authority to manage certain clinical conditions and to prescribe the necessary medicines to treat them. A well-described model is in anticoagulation clinics, where pharmacists use laboratory information to titrate anticoagulant dosages and schedules for patients receiving long-term treatment.
PARTICIPANTS, MATERIALS, AND METHODS

We conducted focus group discussions to prospectively identify cultural issues surrounding the use of pharmaceuticals for self-limited illnesses that might affect the pharmacist service and the creation of bilingual patient education materials. We addressed concepts such as medical care in the patient’s country of origin, traditional remedies for minor illnesses, and attitudes toward pharmacist evaluation. We noted concepts and vocabulary commonly used by each group to increase the cultural relevancy of the educational materials. We conducted focus group discussions in 8 languages: Somali, Vietnamese, Spanish, Tigrinya, Oromiffa, Amharic, Cambodian, and Russian. In order, these are the languages most commonly spoken in the clinic after English.

We wrote protocols to aid the pediatric pharmacists in evaluating children with a limited number of minor acute conditions: cough/cold, fever, diaper rash, vomiting/diarrhea, and head lice. Protocols were written to help differentiate these minor conditions from more serious illnesses and to prescribe suitable treatments. Treatment and referral options accounted for age of the child, symptom history, preexisting medical conditions, and current therapy. Protocols provided a generous safety margin erring toward physician referral if there were any indications of a more serious illness.

We designed pharmacy encounter forms to reflect the protocols, standardize documentation, and allow the inclusion of notes from pharmacist encounters in patient medical records. These pharmacy encounter forms also allowed for rapid entry of encounter information in a computer database for further analysis.

We also developed training modules for each condition. The pediatric pharmacists spent 10 half days in the first 6 months of the project working side by side with a pediatrician to broaden and strengthen exposure to clinical pediatrics.

We developed educational materials in English for each condition, as well as for the medicines dispensed. The pamphlets provided a description of symptoms, treatment options in the home both with and without medicine, and guidelines for follow-up. Possible adverse effects of dosing and medication were also discussed. Pamphlets were written at a sixth-grade reading level, and some were illustrated by a local artist. The English pamphlets were then translated and published in a bilingual format. These pamphlets are available on the World Wide Web on Harborview Medical Center’s Ethnomed home page (http://www.hslib.washington.edu/clinical/ethnomed). All protocols, encounter forms, and educational materials may also be obtained from us.

The pharmacist service was evaluated for safety and patient satisfaction. A review of medical records was conducted for all patients returning to the clinic within 1 week of a pharmacist evaluation. Each patient was then classified according to the following scale: 1, no association between pharmacy visit and return visit; 2, no resolution of the problem, treatment appropriate; 3, usual complication, treatment appropriate; 4, unexpected complication, treatment questionable; 5, unexpected complication, treatment error.

To assess the appropriateness of the pharmacy treatment, an additional retrospective review of the medical records was conducted. Every fifth patient encounter form was evaluated regardless of whether the child returned to the clinic within 1 week. These patients were classified according to the following scale: 1, appropriate treatment; 2, appropriate treatment, incomplete documentation; 3, appropriate treatment, protocol deviation; 4, inappropriate treatment, saw physician when not stipulated; 5, inappropriate treatment, not referred to physician when stipulated.

A patient satisfaction survey was performed for patients receiving care for cough/cold symptoms. Parents of 60 children evaluated for cough/cold symptoms were selected for the survey: 30 patients evaluated by pharmacists and 30 patients who received usual care through the pediatric walk-in clinic, where care is provided by pediatric residents on rotation and attending pediatricians. The 30 pharmacy patients were chosen consecutively; the 30 walk-in patients had been evaluated on 1 day each week, randomly chosen each week by the roll of a die. The survey was administered by telephone within 1 to 2 days of the clinic visit, and patient data were collected anonymously. The survey questions were extracted from a standardized data collection tool used to obtain patient satisfaction data throughout the institution.

The study evaluation was approved by the University of Washington Human Subjects Committee, Seattle.

RESULTS

Pharmacists evaluated 191 patients from November 1996 through October 1997. Patients ranged in age from 6 months to 19 years (median age, 3 years). Interpretation was necessary in 67 (35%) of the 191 evaluations. More than two thirds of patients were immigrants (Table 1). Medications were dispensed to 177 (93%) of the patients and 29 (15%) were referred to physicians; 7 (4%) patients received medicines and were simultaneously referred to a physician.

One hundred forty-five patients (75%) were evaluated for cough/cold. Sixty-one (32%) were seen for fever, 13 (7%) for diaper rash, 13 (7%) for vomiting/diarrhea, and 10 (5%) for head lice. Because some patients were evaluated for multiple complaints, the total percentage is greater than 100.

The greatest percentage of patients (35%) were referred to the pharmacy service by clinic staff (front desk or medical assistants). The remaining patients had either used the service previously (17%) or were referred

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by nurses (15%), interpreters (8%), friends (3%), promotional flyers (4%), or others (18%).

The medications most frequently dispensed were acetaminophen (72 doses), guaifenesin (30 doses), and brompheniramine maleate (58 doses). Other medications frequently dispensed included dexamethasone, topical clotrimazole, permethrin, and oral rehydration solution.

Twenty-two children returned to the clinic for an unscheduled acute care visit within 1 week of a pharmacy evaluation. Fourteen of these returned for reasons unrelated to the initial pharmacist encounter. Three patients returned because the condition for which they had been seen had not improved (all upper respiratory tract infections). Four patients returned with usual or expected complications of the initial illness as diagnosed at the pharmacy visit; 3 of these children developed acute otitis media following a cold, and 1 child returned with wheezing also following a cold. In 2 of the 3 children who developed otitis media, the pharmacist suspected this diagnosis at the initial encounter and recommended that each child be seen as soon as possible by a physician. However, in each case the child was not present at the encounter, the pharmacist dispensed acetaminophen for pain control, and the child was not brought to the clinic until 3 days later. Finally, 1 patient who had been seen a total of 3 times by clinic and emergency department physicians for diarrhea during the week prior to the pharmacist encounter requested additional oral rehydration solution, which was dispensed by the pharmacist. While the child was in need of more oral rehydration solution, and the parent reported improvement of the diarrhea, according to our protocol the patient should have been referred to a physician because of the length of the illness.

Detailed retrospective review of 48 medical records revealed minor documentation errors in 12 (25%), major documentation errors in 2 (4%), and failure to refer to a physician when stipulated by protocol in 7 (15%). Minor documentation errors were usually related to a single documentation failure (eg, cough/cold duration not noted or current medications not listed). The 2 medical records with major documentation concerns were so scored for inadequate plan documentation and no documentation of urine output in a child with gastroenteritis. In 7 cases, the reviewer noted that there was a deviation from established protocol in not referring a child to a physician. Of these children, 5 had presented with cough/cold symptoms: 2 children had a cough of more than 2 weeks’ duration, 1 had some wheezing associated with a cough, 1 had a history of green nasal discharge, and 1 had a history of tugging on an ear. Two children had presented with gastroenteritis: 1 had abdominal pain for more than 2 hours and 1 had a history of dry lips. There were no adverse outcomes among these children.

Forty-one parents completed the patient satisfaction survey (Table 2): 20 whose children had been evaluated by a pharmacist and 21 whose children had been evaluated by a physician. An additional 19 parents selected for the survey did not complete it. Seventeen parents had not supplied a current or functioning telephone number, 1 parent refused to be surveyed, and 1 patient had been hospitalized and could not be reached.

Parents were similarly confident in the care that their children received from both pharmacists and physicians. Pharmacist and physician interactions differed most in the wait time and consistency of supplying written information. Pharmacist and physician interactions differed most in the wait time and consistency of supplying written information.
formation. Pharmacists saw patients within 15 minutes in 10 (50%) of the cases, while 4 (19%) of the patients evaluated by a physician received care during the same interval. In addition, 18 (90%) of the patients evaluated by a pharmacist received written information, while 11 (52%) of the patients evaluated by a physician received pamphlets.

Our descriptive study suggests that pharmacist evaluation and treatment offers a viable alternative to the traditional walk-in clinic for minor acute pediatric illnesses. We found that the pharmacist evaluation service provided safe and effective care for patients. In 1 year of service, there have been no notable adverse outcomes and a review of the triage process has revealed only occasional errors. Finally, parents of children reported satisfaction with both the quality and promptness of the pharmacy service.

This study also demonstrates an additional setting in which pharmacist prescriptive authority can be used. By 1995, 9 states had granted prescriptive authority to pharmacists, including Washington state. In all but 1 of these states, pharmacists are required to prescribe within specific protocols approved by a supervising physician. Our pharmacy service is unique in that the pharmacist is involved in symptom evaluation as well as treatment, reflecting the expanding scope of pharmacy practice.

Although we did not document any serious adverse outcomes associated with pharmacy-based care, we did uncover occasional deviations from our protocols and numerous documentation failures. Because we noted several instances in which parents with access to medicines providing symptomatic relief did not return with their children for recommended care, medicines are no longer dispensed to parents or patients if they are referred to a physician. We have also stressed the importance of thorough documentation, especially in the final assessment and plan for each patient. The importance of not deviating from established protocol without first consulting with a physician and documenting the supervisory encounter has been emphasized. If systematic problems with a particular protocol are identified, that problem is now noted and is brought up for review with the project pharmacists and physicians. For instance, we found that the initial protocol for cough/cold, which stipulated physician referral for a child who awoke at night, was unnecessarily conservative, and has since been modified to allow pharmacy-based treatment with cough suppressant.

Although we chose to stress the use of various home remedies in the bilingual patient education materials, particularly for cough/cold, we did dispense brompheniramine, chlorpheniramine maleate, pseudoephedrine hydrochloride, guaifenesin, and dextromethorphan for symptom relief. There are often strong parental desires to relieve the symptoms of a sick child. There is little evidence that the inexpensive over-the-counter medicines that we elected to dispense are harmful when dosed correctly, and they may be effective at symptom relief, particularly among older children. When combined with home remedies, over-the-counter cold medicines may provide parents of children with minor illnesses with an additional treatment option.

If over-the-counter medications are used for treatment of minor childhood illnesses, then it is essential that they be dosed correctly. However, there is recent evidence that physicians often recommend over-the-counter medicines without adequate dosing and usage guidelines. The pharmacy-based service dispensing these medications may actually provide parents with more accurate information. As an increasing variety of medications are made available without a prescription, pharmacists may need to play a more important role in both guiding patients to an appropriate medication and educating them about its use.

In the United Kingdom, most parents surveyed said that they approach a pharmacist first if their child is ill, suggesting that the pharmacist is viewed as an integral part of the health care team. When adults and adolescents do attempt to use over-the-counter medicines without the advice of a professional, they may choose improper medicines or take inappropriate dosages of the correct medicine.

Before this model of pharmacy-based intervention is adopted in other ambulatory clinical settings, it will be important to perform a cost analysis. If parents use the pharmacy as a substitute for physician care of minor illnesses, then this service may result in a net savings to a clinic with capitated reimbursement. If, however, parents use the pharmacy when they would not otherwise have used clinic services, pharmacy-based treatment may prove rather costly to sustain, although the benefits to parents and children may remain substantial. Larger studies with different patient populations should also be undertaken before this model is widely replicated. Expansion to include other common conditions and minor injuries should also be considered.

In summary, this pilot project demonstrates that pharmacist evaluation and treatment of minor pediatric illnesses is well accepted by parents and seems to be safe. In states that allow pharmacists to have prescriptive authority, pharmacy-based evaluation and treatment may allow improved integration of pharmacists into the pediatric health care team and may improve access to care for children with minor illnesses.

Accepted for publication December 18, 1998.

From the School of Pharmacy (Dr Kalister and Mss Read, Walters, and Hrachovec), Division of General Pediatrics, Department of Pediatrics, School of Medicine (Drs Newman and Graham), the International Health Program (Dr Newman), and the Social and Behavioral Science Program (Ms Hrachovec), School of Public Health and Community Medicine, University of Washington, and the Harborview Medical Center (Drs Kalister and Graham and Mss Read, Walters, and Hrachovec), Seattle.

This project was funded in part by grants from the Harborview Development Fund, Seattle, Wash; and the Elmer M. Plein endowed research fund from the University of Washington School of Pharmacy, Seattle, to the Children and Teen Clinic Pharmacy, Seattle; and National Research Service Award 5-T32-PE1002 from the National Institutes of Health, Bethesda, Md (Dr Newman).
Presented in part at the American Society of Health-Systems Pharmacists Midyear Clinical Meeting, Atlanta, Ga, December 3, 1997.

We thank Barbara Moravec, ARNP, for assistance with safety evaluation, Abraham Bergman, MD, for help and encouragement with this project, Cindy Brennan, PharmD, for advice and support, and David Shay, MD, MPH, for thoughtful review of the manuscript.

Corresponding author: Elinor A. Graham, MD, MPH, Department of Pediatrics, Harborview Medical Center, 325 Ninth Ave, Seattle, WA 98118 (e-mail: ellieg@u.washington.edu).

REFERENCES