If We Prescribe It, Will It Come?

Access to Asthma Equipment for Medicaid-Insured Children and Adults in the Bronx, NY

Karen L. Warman, MD; Amanda M. Jacobs, MD; Ellen J. Silver, PhD

**Context:** Asthma is a major cause of morbidity in the United States. Self-management of asthma requires access to appropriate equipment. Clinical experience in an inner-city practice suggests that families encounter difficulties in filling prescriptions for spacers/holding chambers, peak flow (PF) meters, and nebulizer machines.

**Objectives:** To determine whether Bronx, NY, pharmacies (1) carry spacers/holding chambers, PF meters, and nebulizer machines; (2) accept Medicaid insurance for them; and (3) perceive barriers to reimbursement by Medicaid for this equipment.

**Design and Setting:** Structured telephone survey of 100 Bronx pharmacies randomly selected from the 1999 telephone directory.

**Participants:** Ninety-eight pharmacists and 2 pharmacy technicians in 100 different pharmacies.

**Main Outcome Measures:** Pharmacists' reports of equipment availability, Medicaid acceptance, and reasons for not carrying equipment or accepting Medicaid.

**Results:** Overall equipment availability was as follows: spacers (68%), spacers with masks (57%), adult PF meters (40%), child-range PF meters (24%), and nebulizer machines (56%). For Medicaid recipients, equipment was less available: spacers (45%), spacers with masks (35%), adult PF meters (27%), child-range PF meters (17%), and nebulizer machines (33%). Surveyed pharmacists reported misconceptions about requirements for Medicaid reimbursement, which included the following: that Durable Medical Equipment permits are required (64% spacers and 33% PF meters), that special forms are needed (17% PF meters), or that this equipment is not covered by Medicaid (14% spacers and 8% PF meters). Of the 100 surveyed pharmacists, 32 reported difficulties with Medicaid reimbursement and 41 had never tried to receive reimbursement.

**Conclusions:** These results suggest that (1) access to spacers/holding chambers, PF meters, and nebulizers for Medicaid-insured families is severely limited in Bronx pharmacies; (2) misunderstandings regarding Medicaid reimbursement policies are common; and (3) interventions to increase the proportion of pharmacies that dispense equipment are needed.

Arch Pediatr Adolesc Med. 2002;156:673-677
PARTICIPANTS AND METHODS

PARTICIPANTS

All pharmacies listed in the 1999 Bronx telephone directory (Yellow Pages; NYNEX Information Resources) were stratified by zip code. This stratification ensured that the sample selected represented an even geographical distribution of available Bronx pharmacies. Half of the listed pharmacies were randomly selected from within each ZIP code using a coin toss. A total of 110 pharmacies were selected. Of these, 100 pharmacies participated in a 5-minute telephone survey conducted between August 16, 1999, and November 16, 1999. Ten pharmacies were not contacted for the following reasons: 5 were disconnected numbers, 2 were incorrect numbers, 2 did not answer repeated calls, and 1 was listed twice in the directory and already contacted. All of the 100 pharmacies that were reached participated; respondents consisted of 98 pharmacists and 2 pharmacy technicians.

MEASURES

Data were obtained by structured telephone interviews conducted by trained research assistants (A.M.J.). Pharmacists were asked, “Can you tell me if you carry: spacer devices, spacers with masks, adult peak flow meters, child peak flow meters, and nebulizer machines?” Pharmacists who did not carry specific asthma equipment were then asked, “Why is this?” for each specific piece of equipment. Pharmacists who reported carrying equipment were asked, “Do you accept Medicaid for spacer devices, spacers with masks, adult peak flow meters, child peak flow meters, and/or nebulizer machines?” Those who did not accept Medicaid were asked, “Why is this?” Lastly, all pharmacists were read the following statement and asked a follow-up question: “We understand some pharmacists have difficulty getting reimbursed from Medicaid for asthma equipment. Have you found that this is a problem?” Those who responded yes were asked, “What difficulties have you encountered concerning Medicaid reimbursement?” Questions that yielded open-ended responses were coded post hoc by 2 of us (K.L.W. and A.M.J.) independently.

DATA ANALYSIS

The analyses we report are descriptive and include the percentage of pharmacies giving each response. The SEs were calculated using the finite population correction. Data are reported as mean (SE).

Pharmacists who reported carrying equipment were then asked, “If you carry: spacer devices, spacers with masks, adult peak flow meters, child peak flow meters, and nebulizer machines?” Pharmacists who did not carry specific asthma equipment were then asked, “Why is this?” for each specific piece of equipment. Pharmacists who reported carrying equipment were asked, “Do you accept Medicaid for spacer devices, spacers with masks, adult peak flow meters, child peak flow meters, and/or nebulizer machines?” Those who did not accept Medicaid were asked, “Why is this?” Lastly, all pharmacists were read the following statement and asked a follow-up question: “We understand some pharmacists have difficulty getting reimbursed from Medicaid for asthma equipment. Have you found that this is a problem?” Those who responded yes were asked, “What difficulties have you encountered concerning Medicaid reimbursement?” Questions that yielded open-ended responses were coded post hoc by 2 of us (K.L.W. and A.M.J.) independently.

二线 in the 1997 National Asthma Education and Prevention Program’s Expert Panel Report II: Guidelines for the Diagnosis and Management of Asthma.3 Recommendations include use of spacer devices and/or nebulizer machines for the safe and effective delivery of inhaled medications. Inhalation of asthma medications is the preferred route because higher concentrations of drugs are delivered more effectively to the Airways and systemic adverse effects are avoided or minimized.4

Spacers improve deposition of medication into the lungs,3,6 decrease oropharyngeal deposition and colonization with Candida species,7 and reduce the need for coordination thereby allowing infants and young children to effectively receive medication from metered-dose inhalers. Use of spacer devices is particularly important to minimize potential adverse effects of inhaled steroids, the first-line preventive medication for moderate and severe persistent asthma.

Nebulizer machines provide another avenue for delivering inhaled medications. There are, however, only 2 available preventive medications approved for delivery by nebulization—cromolyn sodium that has a well-established safety profile, but is only recommended for mild persistent asthma, and budesonide solution for inhalation, an inhaled steroid, whose safety and efficacy were tested using a specific jet nebulizer8,9 and not the standard aerosolized nebulizers issued to patients in the United States for home use.

The guidelines also recommend that adults and children 5 years and older with moderate to severe persistent asthma should learn how to monitor their peak expiratory flow and have a PF meter at home. Peak flow meters are also recommended for any patient with a history of a severe exacerbation. Interventions using PF meters in conjunction with a comprehensive asthma program have shown significant improvements in lung function, symptoms, and medication use.10,11

Young children and infants with asthma may require special equipment. For example, preschool children usually require spacer devices with masks that fit over their mouth and nose, instead of inside the mouth, to ensure proper drug delivery. Similarly, PF meters need to have readable lower numerical ranges than standard adult ranges to enable proper measurement of children’s smaller lung capacity.

Medicaid, the largest insurer of poor families in New York State, covers the costs of spacer devices, PF meters, and nebulizer machines.12 New York State Medicaid does not consider spacer devices and PF meters durable medical equipment (DME). Prescriptions, without any additional paperwork, are sufficient for pharmacies to dispense spacers and PF meters. Pharmacists obtain approval online through the Electronic Medicaid Eligibility Verification System. Nebulizer machines, however, are considered DME and, therefore, pharmacists must have a DME permit to dispense them and, in addition, must manually apply for reimbursement from the New York State Medicaid office.

Despite insurance coverage of spacers/holding chambers, PF meters, and nebulizer machines, the clinical experience of physicians in a Bronx primary care clinic was that many families encountered difficulties in obtaining prescribed asthma equipment. We hypothesized that (1) families have difficulty accessing asthma equipment because many pharmacies do not carry the equipment, and (2) pharmacies do not carry...
equipment because they perceive or encounter barriers to appropriate reimbursement. The objectives of this study were to determine whether Bronx pharmacies (1) carry spacers/holding chambers, PF meters, and nebulizer machines; (2) accept Medicaid insurance for them; and (3) perceive barriers to reimbursement by Medicaid for this equipment.

**RESULTS**

Of the 100 surveyed pharmacies, the number of pharmacies that reported carrying specific asthma equipment were as follows: spacers, 68 (2.3); spacers with masks, 57 (2.5); adult PF meters, 40 (2.4); child-range PF meters, 24 (2.1); and nebulizer machines, 56 (2.5). Fewer pharmacies both carried equipment and accepted Medicaid for reimbursement: spacers, 45 (2.5); spacers with masks, 35 (2.4); adult PF meters, 27 (2.2); child-range PF meters, 17 (.9); and nebulizer machines, 33 (2.4).

Pharmacists’ reasons given as to why specific equipment was not carried by the pharmacy varied by the type of equipment (Table 1). The most common reasons were equipment was infrequently requested (34% spacers, 60% PF meters, and 39% nebulizer machines); the pharmacy did not accept Medicaid for the equipment (31% spacers, 15% PF meters, and 20% nebulizer machines); and that it was “store policy” (28% spacers, 18% PF meters, and 34% nebulizer machines).

Reported reasons for not accepting Medicaid for equipment varied by type of equipment (Table 2) and revealed misconceptions about procedures for Medicaid reimbursement. For example, pharmacists reported not accepting Medicaid for spacer devices and PF meters because they thought that DME permits were required for reimbursement (64% spacers and 33% PF meters); they thought they needed special forms (17% PF meters), or they thought that they were not covered by Medicaid (14% spacers and 8% PF meters). Insufficient reimbursement was also cited as a reason for not carrying equipment: for spacers (9%), spacers with masks (14%), adult PF meters (33%), child-range PF meters (38%), and nebulizers (13%).

Of the 100 surveyed pharmacists, 32 reported having had difficulties with Medicaid reimbursement, 27 had had no difficulties, and 41 had never tried to receive reimbursement. Of the 32 pharmacies that reported having had difficulties with Medicaid reimbursement, the 3 major reasons given were time consuming (25%), insufficient reimbursement (22%), and denial of previous requests (22%). Other less common reasons were denial of online computer requests (12%), never reimbursed (6%), lacked the proper forms (6%), denied reimbursement owing to time restraints (6%), and unaware of the need for a DME permit (3%).

**COMMENT**

These results suggest that despite the high prevalence of asthma in the Bronx and the borough’s high proportion of Medicaid-insured families, many Bronx pharmacies do not carry spacers/holding chambers, PF meters, and nebulizer machines. Fewer than half of all pharmacies surveyed accept Medicaid for this equipment.

Our survey suggests that a significant barrier to pharmacists accepting Medicaid for spacer devices is misconceptions by pharmacists about the requirements for reimbursement. Although spacer devices are not considered DME by Medicaid and only require a prescription for dispersal, most pharmacists not accepting Medicaid for spacers erroneously thought that they required a DME permit to dispense them. Similarly, some pharmacists thought that DME permits or special forms were required to dispense PF meters.

Most pharmacists reported they did not carry PF meters because they were infrequently requested. In a prior study, we found that only 30% of children aged 5 years or older who had been hospitalized for asthma in the prior 2 years had a PF meter at home. In contrast, most families reported having spacers (75%) or nebulizer machines (74%). This difference most likely reflects the current practice of Bronx hospitals of dispensing spacers and/or arranging for nebulizer machines prior to hospital discharge.

Nebulizer machines are considered DME by Medicaid and do require a DME permit. It seems reasonable that nebulizer machines, which require significant storage space and maintenance, be dispensed by designated supply stores. Spacers and PF meters, in contrast are small, inexpensive devices, that do not require ongoing professional maintenance and may be more readily distributed by pharmacies.

Certain equipment required for young children was less available than adult equipment. Fewer pharmacies that accepted Medicaid for equipment carried spacer devices with masks compared with standard mouthpieces (35% vs 49%); and fewer carried PF meters with child ranges compared with adult ranges (17% vs 27%). Because young children are disproportionately affected by asthma and early treatment may help prevent disease progression increasing availability of appropriate asthma equipment for young children is an important area for intervention.

One third of the pharmacists surveyed reported difficulties with Medicaid reimbursement and another third had never tried to receive reimbursement. In the Bronx, an area with a large population of patients with Medicaid insurance, it is surprising that pharmacists are...
These adjustments were made in part to accommodate reimbursement rates for PF meters were increased to $19.24 and from $23.75 to $27.75 for spacers with masks. Reimbursement rates from $12.50 to $16.50 for spacers without masks were also raised.

In July 2000, Medicaid raised reimbursement rates for asthma equipment to $7.50 for spacers without masks and from $14 to $31.50 for spacer devices with masks. These rate quotes were in effect as of February 2000. In July 2000, Medicaid raised reimbursement rates from $12.50 to $16.50 for spacers without masks and from $23.75 to $27.75 for spacers with masks. Reimbursement rates for PF meters were increased to $19.24. These adjustments were made in part to account for the costs of purchasing items individually instead of in bulk. The effect of these interventions on increasing spacer and/or PF meter availability is not yet known.

Although the participation rate for this survey was high, it was limited by having a single informant at each pharmacy who may not have been completely informed about store policies; however, this may well reflect the experience families have when arriving at pharmacies with prescriptions in hand. Another limitation of this survey is that it only included Bronx pharmacies. If barriers exist in obtaining spacers/holding chambers, PF meters, and nebulizer machines in the Bronx, where the prevalence of asthma is higher than the national average, it may be reasonable to suspect that children and adults in other areas of the country also encounter difficulties obtaining certain asthma equipment. Further research is necessary to evaluate whether barriers to accessing asthma equipment exist in other areas of the United States.

Families in need of spacers/holding chambers, PF meters, and nebulizer machines may encounter difficulties in obtaining them in Bronx pharmacies. Pharmacies

---

**Table 1. Reasons Pharmacists Gave for Not Stocking Various Types of Asthma Equipment**

<table>
<thead>
<tr>
<th>Type of Asthma Equipment</th>
<th>Infrequently Requested</th>
<th>Do Not Accept Medicaid</th>
<th>Store Policy</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spacer devices (n = 32)</td>
<td>11 (2.4) [34]</td>
<td>10 (2.3) [31]</td>
<td>9 (2.2) [28]</td>
<td>2 (1.3) [7]</td>
</tr>
<tr>
<td>Peak flow meters (n = 43)</td>
<td>26 (2.4) [60]</td>
<td>6 (1.8) [15]</td>
<td>8 (1.9) [18]</td>
<td>3 (1.3) [7]</td>
</tr>
<tr>
<td>Nebulizer machines (n = 44)</td>
<td>17 (2.4) [39]</td>
<td>9 (2.0) [20]</td>
<td>15 (2.4) [34]</td>
<td>3 (1.3) [7]</td>
</tr>
</tbody>
</table>

*Data are given as mean (SE) [percentage].

**Table 2. Reasons Pharmacists Gave for Not Accepting Medicaid by Type of Asthma Equipment**

<table>
<thead>
<tr>
<th>Type of Asthma Equipment</th>
<th>Lack DME Permit</th>
<th>Not Covered by Medicaid</th>
<th>Not a Surgical Supply Store</th>
<th>Insufficient Reimbursement</th>
<th>Do Not Know How to Bill</th>
<th>Rejected Claims</th>
<th>Missing the Proper Forms</th>
<th>Too Time Consuming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spacer devices (n = 23)</td>
<td>15 (2.4) [64]</td>
<td>3 (1.7) [14]</td>
<td>2 (1.4) [9]</td>
<td>2 (1.4) [9]</td>
<td>1 (1.0) [4]</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Spacers with mask (n = 21)</td>
<td>12 (2.5) [57]</td>
<td>2 (1.5) [10]</td>
<td>3 (1.7) [14]</td>
<td>3 (1.7) [14]</td>
<td>0</td>
<td>1 (1.1) [5]</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adult-range peak flow meters (n = 12)</td>
<td>4 (2.4) [33]</td>
<td>1 (1.4) [8]</td>
<td>0</td>
<td>4 (1.7) [33]</td>
<td>0</td>
<td>1 (1.4) [8]</td>
<td>2 (1.9) [17]</td>
<td>0</td>
</tr>
<tr>
<td>Child-range peak flow meters (n = 8)</td>
<td>3 (2.4) [38]</td>
<td>0</td>
<td>0</td>
<td>3 (2.8) [38]</td>
<td>0</td>
<td>0</td>
<td>2 (2.2) [25]</td>
<td>0</td>
</tr>
<tr>
<td>Nebulizer machines (n = 23)</td>
<td>12 (2.5) [52]</td>
<td>1 (1.0) [4]</td>
<td>2 (1.4) [9]</td>
<td>3 (1.7) [13]</td>
<td>0</td>
<td>2 (1.4) [9]</td>
<td>2 (1.4) [9]</td>
<td>1 (1.0) [4]</td>
</tr>
</tbody>
</table>

*Data are given as mean (SE) [percentage]. DME indicates durable medical equipment.

---

**What This Study Adds**

The purpose of this study was to investigate the clinical impression that Bronx families encounter difficulties in obtaining prescribed asthma equipment, such as spacers/holding chambers, PF meters, and nebulizer machines. To our knowledge, it is the first study to explore true and/or perceived barriers reported by pharmacists to why they do or do not carry specific equipment and as to whether they accept Medicaid insurance for reimbursement.

This study suggests that clinicians caring for families in the Bronx must be aware of the limited availability of asthma equipment for Medicaid-insured families in local pharmacies and direct families to pharmacies that both carry the equipment and accept Medicaid for it. In addition, targeted interventions that address pharmacists’ reported misconceptions and concerns regarding Medicaid reimbursement for asthma equipment might help increase the proportion of pharmacies that both carry the equipment and accept Medicaid for it.

---

**Conclusions**

Families in need of spacers/holding chambers, PF meters, and nebulizer machines may encounter difficulties in obtaining them in Bronx pharmacies. Pharmacies...
reported reasons for not carrying equipment reveal misunderstandings about Medicaid reimbursement procedures. Interventions are necessary to direct families to pharmacies that carry prescribed equipment and to increase the proportion of pharmacies that do. Strategies may include increasing pharmacists’ awareness regarding Medicaid reimbursement procedures and addressing pharmacists’ concerns about reimbursement rates.

Accepted for publication April 4, 2002.


Corresponding author and reprints: Karen L. Warman, MD, Department of Pediatrics, Children’s Hospital at Montefiore/Albert Einstein College of Medicine, 1621 Eastchester Rd, Bronx, NY 10461 (e-mail: KWarman@Montefiore.org).

REFERENCES