Development of an Adherence Enhancement Program for Patients with Asthma in Community Pharmacy Practice: Instruments and Pharmacists’ Feedback

Tatiana Makhinova, MS, Jamie C. Barner, PhD, Nicole Wilson, PharmD Candidate, J. Nile Barnes, PharmD
The University of Texas at Austin, College of Pharmacy

Disclosures
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The American Pharmacists Association is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Target Audience: Pharmacists
ACPE#: 0202-0000-16-007-L04-P
Activity Type: Knowledge-based

Learning Objectives
• Describe the current landscape of adherence to asthma controller medications, role of pharmacist counseling in asthma adherence, and need for individualized approach
• Identify instruments for adherence assessment and propose modified patient-centered, asthma specific tools for community pharmacy practice
• Describe feedback from community pharmacists regarding the tools and implementation of the program into pharmacy practice

What is the average adherence rate for controller medications in persons with asthma?
A. 20-70%
B. 30-40%
C. 60-80%
D. 10-30%
Which subdomains of nonadherence are included in ASK-12 tool?

A. Inconvenience/forgetfulness  
B. Treatment beliefs  
C. Behavior  
D. All of the above

Overview

- Background  
- Objectives  
- Methods  
- Results  
- Discussion  
- Key Points

Asthma and Adherence to Controller Medications

- US: 24.6 million (8.6% of population)\(^1\)  
- $56 billion of direct and indirect costs (2011)\(^2\)  
- 25% of all ED visits were due to asthma-related events\(^3\)  
- 500,000 hospitalizations per year\(^4\)  
- The estimated avoidable cost of nonadherence in 2012 was $105.4 billion\(^4\)  
- Nonadherence in asthma is associated with higher morbidity\(^5\)-\(^7\)  
  - More symptoms  
  - More hospitalizations/ED visits  
  - Overuse of relievers

Background

Asthma and Adherence to Controller Medications

- Low adherence (~30%-40%) to asthma controller medications among patients with persistent asthma is a well documented problem\(^8\)-\(^14\)  
- Pharmacists can enhance asthma therapy adherence through identifying patients’ barriers and resolving them using patient-focused strategies

Factors Influencing Adherence

**WHO Five-Dimension Model\(^15\)**

- Patient-Related factors  
- Socio-economic factors  
- Therapy-related factors  
- Condition-related factors  
- Health system and health policy factors

<table>
<thead>
<tr>
<th>Adherence</th>
<th>Barriers</th>
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<tbody>
<tr>
<td>Patient-Related factors</td>
<td></td>
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<tr>
<td>Socio-economic factors</td>
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<tr>
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<td>Health system and health policy factors</td>
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</tbody>
</table>
Factors Influencing Adherence

**Patient-specific factors**

- Lack of patient education
  - Inconvenience/difficulty with inhaler technique
  - Perception of intermittent need for controller medication
- Suspicion regarding medication effectiveness
- Anxiety and depression
- Fears (side effects, mistrust of healthcare providers)
- Self-efficacy
- Necessity

**Healthcare and provider-related factors**

- Patient-provider communication
- Cost of the medication

Interventions: Role of Pharmacists

<table>
<thead>
<tr>
<th>Study</th>
<th>IV</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| Giraud et al., 2011 | Inhaler training session | • adherence (Morisky scale): 1.4 vs. 1.1, (p<0.001)  
  • optimal inhaler technique (% of patients): 39% vs. 79% (p<0.001)  
  • asthma control: AUC 1.8 vs. 1.4, (p<0.001) |
| Mehra et al., 2009 | Education on use of inhaler device, understanding asthma, medication and smoking cessation | • adherence (mean rate): 80.3% vs. 74.6% (p=0.019)  
  • inhaler technique: improvement (p<0.001)  
  • asthma control (mean ACT score change): 2.3 vs. 0.3 (p=0.038) |
| Garcés-Cardenas et al., 2013 | Education on individual needs: asthma control, inhaler technique, medication adherence. | • adherence (% of adherent patients): 6 vs. 10%, (p<0.001)  
  • inhaler technique (% of patients): 56.2%, (p<0.001) |

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<th>IV</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| Saini et al., 2011 | Tailored education based on asthma knowledge results | • asthma knowledge: 7.65 vs. 8.78, (p<0.001)  
  • adherence (% of adherent patients): 79% vs. 71%, (p=0.006) |
| Armour et al., 2007 | Pharmacy Asthma Care Program (PACP): cycle of assessment, goal setting, monitoring and review | • adherence (scores on risk of non-adherence): 1 vs. 20.44, (p = 0.04)  
  • severe asthma (% of patients): 88% vs. 53%, (p<0.001)  
  • perceived control of asthma score: improvement (p<0.01) |
| Goeman et al., 2013 | Person-center education: device technique and any patient concern vs. written information only education | • asthma control: improvement (p<0.001)  
  • adherence: 8 vs. 19.3%  
  • exacerbations: 18.3 vs. 43.2%  
  • asthma quality of life: improvement (p<0.01)  
  • Asthma Action Plan ownership: 47.1 vs. 42.4% |

Takeaway Messages

- The interventions were patient-centered and targeted patient-related factors such as disease state and medication knowledge, self-management and medication-related factors (asthma inhaler technique and peak flow meter use)
- Most of the studies were randomized controlled trials
- Results demonstrated that all of the interventions conducted in the pharmacy settings were successful and adherence to the controller therapy significantly improved

Gap in the Literature

- Most of the patient-centered programs were conducted in Europe or Australia, whereas few studies were in the US
- Little is known about effectiveness of the individualized counseling based on the identified barriers to adherence conducted by pharmacists
OBJECTIVES

Study Significance and Long-term Goal

Little is known about effectiveness of the individualized counseling based on the identified barriers to adherence conducted by pharmacists

To develop an effective and efficient component of MTM services provided by pharmacists that will be a standard for counseling patients with asthma

Objectives

1. Develop asthma-specific instruments to aid in identifying and resolving barriers to asthma medication adherence
2. Identify effective methods for patient-centered counseling implementation in pharmacy practice
3. Determine if identification of adherence barriers and patient-centered counseling using the developed asthma-specific instruments leads to improved medication adherence and asthma control

Steps to Developing a Program

• Identify instruments that measure adherence and identify barriers to adherence
• Identify pharmacist counseling tool
• Modify instrument(s) to make them asthma-specific
• Identify outcomes measures
• Propose a tool for pharmacists that will help facilitate counseling based on identified barriers to adherence
• Develop an educational pamphlet for patients which addresses the most common barriers to adherence
• Propose an Asthma Adherence Enhancement Program

METHODS
### Instruments that Assess Adherence and Identify Barriers

<table>
<thead>
<tr>
<th>Instrument Number</th>
<th>Number of items</th>
<th>Measure</th>
<th>Response scale</th>
<th>Type of barriers to adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adherence estimator (AE)</td>
<td>3</td>
<td>Perceived concerns about medications, perceived need for medications, perceived affordability of medications</td>
<td>6-point Likert scale (Agree - Completely Disagree)</td>
<td>Pt: Fears about side effects, HC: Cost of medication, HC: Misperception (no need)</td>
</tr>
<tr>
<td>Adult asthma adherence questionnaire (AAAQ)</td>
<td>5</td>
<td>Following &quot;my medication plan,&quot; forgetting, not &quot;needing&quot; the medications, side effects, cost</td>
<td>6-point Likert scale (I agree completely - I disagree completely)</td>
<td>Pt/HC: Misperception/complexity of regimen, Pt: Forgetfulness, Pt: Fears about side effects, Pt: Misperception (no need)</td>
</tr>
<tr>
<td>Morisky (MMAS-8)</td>
<td>8</td>
<td>Adherence + 3 items: perceived need, difficulties following the regimen, forgetfulness</td>
<td>Items 1-7 (Yes/No), Item 8 (5-point Likert scale Always-Never)</td>
<td>Pt: Misperception (no need), Pt: Forgetfulness, Pt: Fears about side effects, Therapy: Complexity of regimen</td>
</tr>
<tr>
<td>Morisky (MMAS-4)</td>
<td>4</td>
<td>Adherence + 2 items: perceived need</td>
<td>Yes/No</td>
<td>Pt: Misperception (no need), Pt: Forgetfulness, Pt: Fears about side effects</td>
</tr>
<tr>
<td>ASK-12</td>
<td>12</td>
<td>Inconvenience/forgetfulness, treatment beliefs, help from others, collaboration with HC, side effects, cost</td>
<td>5-point Likert scale (Always - Never)</td>
<td>Pt: Fears about side effects, HC: Not working with HC team, HC: Cost of medication, Therapy/HC: Knowing health goals, Therapy: Complexity of regimen/Inconvenience</td>
</tr>
</tbody>
</table>

**Modified ASK-12: Asthma-specific**

<table>
<thead>
<tr>
<th>Item</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>1</td>
<td>I had trouble taking my medications some of the time.</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>I feel confident that each one of my medicines will help me.</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>I don’t know if I am reaching my health goals.</td>
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<tr>
<td>4</td>
<td>I found it hard to keep all my treatments on time.</td>
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<tr>
<td>5</td>
<td>I skipped or stopped taking medicine because I didn’t think I needed it any more.</td>
<td></td>
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<tr>
<td>6</td>
<td>I skipped or stopped taking medicine because it made me feel bad.</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>It’s not easy for me to stay on my medicines.</td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>It’s not easy for me to get all my medicines.</td>
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<tr>
<td>9</td>
<td>It’s not easy for me to get the right amount of medicines.</td>
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<tr>
<td>10</td>
<td>It’s not easy for me to get the right kind of medicines.</td>
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<td>11</td>
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<td>12</td>
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<td>13</td>
<td>I don’t know if I am reaching my health goals.</td>
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<td>It’s not easy for me to keep all my treatments on time.</td>
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<td>16</td>
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<td>17</td>
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### Developed Instruments

<table>
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<tr>
<th><strong>ASK-12</strong></th>
<th><strong>Pharmacist’s booklet “Conversation Starter”</strong></th>
<th><strong>Patient Pamphlet “Breathe Easier”</strong></th>
</tr>
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</table>

### Modified DRAW: Pharmacist’s Booklet “Conversation Starter”

- **Have you...**
  - Used your inhaler more or less often than prescribed?
  - Skipped or stopped using your inhaler because it made you feel bad?
  - Skipped or stopped using your inhaler for other reasons?
  - Not taken care of by your doctor/nurse?
  - Ever used your peak flow meter?

### Outcomes Measures: Adherence

- **Adherence**: 4 items Morisky scale (MMAS-4), Morisky et al. (1986)

1. Do you ever forget to use your controller inhaler?
   - Yes
   - No
2. Are you having problems remembering to take your controller inhaler?
   - Yes
   - No
3. Sometimes if you feel worse when you use the controller inhaler, do you stop using it?
   - Yes
   - No
4. When you feel better, do you sometimes stop using your controller inhaler?
   - Yes
   - No
Outcomes Measures: Asthma Control Test

1. In the past week, how much of the time did you keep your asthma under control as well as you could?
   - None of the time
   - Some of the time
   - Most of the time
   - All of the time

2. During the past week, how often did you have problems sleeping or staying awake due to your asthma?
   - Never
   - 1 to 2 nights
   - 3 to 4 nights
   - 5 nights or more

3. During the past week, how often did you have to make a special effort to control your asthma?
   - Never
   - 1 to 2 days
   - 3 to 4 days
   - 5 days or more

4. During the past week, how often did you have to make a special effort to control your asthma?
   - Never
   - 1 to 2 days
   - 3 to 4 days
   - 5 days or more

Outcomes Measures

- Covariates
  - Gender, age, race/ethnicity, education
  - Chronic condition

A1/A2 Discuss the most suitable items and mark it in the pamphlet

A1/ If you often forget to use your inhaler:
- Use a smartphone app or text message reminder.
- Leave yourself a note on the bathroom mirror.
- Use your daily prevention asthma medication in a place where you will see it every day.

A1/ If you often forget to refill your medication:
- Write “Refill medication” on your calendar about a week before your medication will run out.
- Make sure you have enough refills to last until your provider’s visit.
- Ask your pharmacist to send you refills to refill your prescriptions.

A4 Provide a patient with general understanding of asthma and types of medications: when to take reliever, and how to use a controller (why adherence is important)

A4/ Understanding how your medications work
  - Asthma medicines come in two types: quick-relief ( reliever medicine) and long-term control (controller medicine).
  - Quick-relief medicines control the symptoms of an asthma attack. If you need to use your quick-relief medications more and more, you should visit your healthcare provider to see if you need a different medicine.
  - Long-term control medicines help you have fewer and milder attacks, but they don’t help you if you’re having an asthma attack.

A3 Discuss what a good-partial-poor control is and help to get and use Asthma Action Plan

A2/ Where can I get more tips about:
- How to use my inhaler and spacer
- Sticking with my medicine
- Smartphone applications
- Text Messaging Services
- Adherence tools

sites.utexas.edu/asthma-info
A5 Making sure that a patient knows whom to address questions or concerns

- Ask if there are other providers who can help you make a decision. For example, a nurse, nutritionist, or health coach can help you learn more about each option.
- Think about other people who can help you decide. For example, you may want to talk with a friend or family member.
- If you need more time, schedule a follow-up visit with your provider.

A6 Cost reducing strategies available for patients

Can I get help with cost? Yes!

Ask your pharmacists about assistance programs and visit these websites for more information:

Needymeds.com
Ppax.org

“Developed Instruments”

Asthma-specific ASK-12 with additional items

Pharmacist’s booklet “Conversation Starter”

Patient Pamphlet “Breathe Easier”
Objective 2: Getting Feedback from Pharmacists

Assessment of feasibility and practice implications are strongly recommended30,41

• Develop an interview guide
• Identify and invite pharmacists for an interview
• Record and transcribe data
• Content analyze and identify themes
• Incorporate emerging concepts into the developed instruments if needed

METHODS

Interview Guide

Five interview sessions:
• Advantages/disadvantages of the instruments
• Effectiveness and feasibility of implementation

Interviewing Process

• 5 interviews were held on separate days with 5 community pharmacists in the Austin, TX area
• The primary investigator led these sessions and employed open-ended questions
• The interviews were audio-taped with note-taking and lasted 40-60 min
• The data was transcribed, content analyzed, and coded to facilitate identification of patterns and themes
• Another independent researchers conducted a thematic analysis to describe pharmacists’ feedback

RESULTS
Instruments

- **A patient questionnaire was considered to be user friendly**
- All the interviewees agreed that common adherence barriers were addressed in the instruments, emphasizing the following:
  - high cost
  - lack of knowledge regarding inhaler technique
  - not understanding difference between controller and rescue inhalers
  - not having an asthma action plan
- **Other items for discussion:**
  - Other comorbidities/smoking that may affect asthma management
  - Regular visits to PCP (instead of ER)

**Instruments**

- Helps identify patient’s needs
  - Patients tend to reply positively about overall asthma management (“They don’t want to admit that they are not taking their medications”), having this instrument helps uncover problematic areas
  - “Asthma tends to be overlooked and often they say ‘I know how to use it’, but a lot of the times when you are taking time to investigate why are they escalating the dose, why are they switching inhaler to something stronger, it might be that they are not using it correctly.”

**Instruments**

- Easy to use
  - “With the time constraints you have to prioritize what you can do and can’t do. This <approach> is very easy to understand and go over.”
  - “I like the suggested actions being right here, where I don’t have to go look for them. Because we are not lazy, we are busy.”
  - “I like this transparent thing – it tells you what box to check and what aspects are important for counseling.”

**Instruments**

- Keeps patients informed
  - “...they might forget those questions, and sometimes they are reluctant to call.”
  - “...because we can tell them, but they forget by the time they walk out the door.”
  - “Because it’s going home with a personalized something <pharmacist’s and physician’s names and phone numbers>, and these little things – people are going to read it.”

**Instruments**

- Demonstrates that pharmacists care
  - “You write your name in there and your phone number, I mean that to me is like a personal touch, that you care.”
  - “…someone is caring if they take their medication.”

**Program**

- Instruments can be implemented into counseling
  - “You could ask them these questions when you’re counseling. And it would kind of be a nice counseling tool to start.”
- A technician can be very helpful in identifying patients with asthma and those who are filling controller inhalers
- A need for a dedicated pharmacist for these services
  - “…if it’s based out of a volunteering – it’s something that they would have to be strongly motivated to do.”
Program

- Phone follow-up might be problematic
  - "It's hard to get people on the phone."
- Time and workflow
  - "We are asked to do vaccinations, prior authorizations, insurance issues. I mean we are asked to do an awful lot of stuff."
- Patients lack of understanding of a pharmacist's role
  - "they [people of lower education and socio-economic level] don't call as much. I don't know if they understand that we're there to help them."

Program

- Pharmacists shared a number of suggestions regarding the implementation of the program:
  - Flag filled prescriptions for controller inhalers on the pick-up shelves
  - Make a list of patients with persistent asthma from the prescription database and invite them to participate in the program
  - Display flyers at the intake and pick-up windows
  - Conduct this program as an "add-on" to monthly health clinic/health fair

Flyer

DO YOU HAVE ASTHMA?
LEARN MORE!

Purpose: To help you better manage your asthma through pharmacist's counseling

What to do:
1. Ask the pharmacist for more information and what to do
2. Keep track of medications you take
3. Complete the questionnaire
4. Get your completion certificate (427.50 and 427.51)

Talk to the pharmacist!
Ask questions:
- Tatiana Yakhina
- (512) 985-5426
- tyakhina@texasmed.com

The study has been approved by the University of Texas at Austin Institutional Review Board

Lessons Learned

- Difficulties organizing focus groups
  - Solution: Series of interviews
- Time constraints for the program implementation
  - "Diabetes program launched by the City of Austin & United Healthcare started off very small and turned into very successful program. It used to be where we did it on our own time and didn’t get paid, but it grew so fast and now we have a dedicated pharmacist."
- Patient identification requires prior planning
- Potential for collaborative care with physicians
  - At one of the sites, the pharmacist collaborated with the pulmonologist, and it resulted in supplying patients with Asthma Action Plans and peak flow meters

Discussion

- Providing counseling based on individual needs promotes effective communication
- Pharmacists acknowledged high need in providing care to patients with asthma in community settings
- With the time constraints in the pharmacy, identification of barriers to adherence with a brief tool and provision of targeted counseling may significantly impact patient outcomes
What is the range for the medication adherence rate in persons with asthma?

A. 20-70%
B. 30-40%
C. 60-80%
D. 10-30%

Which subdomains of nonadherence are included in ASK-12 tool?

A. Inconvenience/forgetfulness
B. Treatment beliefs
C. Behavior
D. All of the above

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