

# Evaluation of the Impact of Pharmacist Services on Asthma Medication Ratio in a Community Pharmacy Setting

Katarina Brown<sup>1,2</sup>, Amber Goedken<sup>2</sup>, Rani Shen<sup>1</sup>, Stevie Veach<sup>2</sup>, Matthew Witry<sup>2</sup>  
<sup>1</sup>North Liberty Pharmacy, <sup>2</sup>The University of Iowa College of Pharmacy, Iowa City, IA

## KEY FINDINGS

- At least one drug therapy problem was identified in each patient and prescription counseling was provided to all patients
- The pharmacist delivered services did not show an overall change in asthma medication ratio over a 90-day period

## OBJECTIVES

- Implement a pharmacist delivered service addressing barriers to achieving optimal asthma medication use
- Measure the change in asthma medication ratio before and after pharmacist delivered services
- Identify reasons for under-utilization of controller asthma medication and over-utilization of short acting relief inhalers

## BACKGROUND

- A ratio of asthma controller medication to total asthma medications has been shown to be a predictor of asthma-related patient outcomes, emergency department visits and hospitalizations
- Those with an asthma medication ratio (AMR) of **0.5 or less** have been identified as high risk, leading to higher total and asthma-related healthcare costs

## METHODS

- Design:** Pre-post design
- Setting:** Single site Midwest community pharmacy
- Population:** Adults with asthma, taking at least one prescription controller medication for asthma in the past 1 year and included in a private insurance value-based pharmacy program

### Identification

- Eligible patients determined from list provided by one private insurer

### Pre-intervention measure

- Patient asthma medication ratio calculated for previous 1 year (November 1st 2018 – October 31st 2019)

### Intervention

- Pharmacist provided intervention to patient via phone or face-to-face in November 2019
- Pharmacist utilized a modified DRAW tool to assess barriers to optimal medication use
- Pharmacist utilized modified DRAW tool responses to customize and deliver indicated services to patients

### Post-intervention measure

- Patient asthma medication ratio calculated for previous 1 year (February 1st 2019 – January 31st 2020)

## RESULTS

Table 1. Patient Demographics (n = 8)	
Age Range (years)	27 – 65
Female (%)	5 (62.5%)
Face-to-face Interaction	2
Phone Interaction	6

Table 2. Identified Drug Therapy Problems	
Uses less medication than prescribed (controller)	4
Uses medication more frequently than recommended (relief inhaler)	4
Forgets to take medication (controller)	2
Refuses to take medication (controller)	1
Unable to obtain medication due to cost (controller)	1
Misunderstood instructions (controller)	1

Table 3. Reasons for Controller Medication Under-utilization	
Uses controller on as needed basis	2
Cost	1
Perceived as ineffective	1
Using less frequently than prescribed	1

Table 4. Reasons for Over-utilization of Short Acting Relief Inhaler	
Using daily (prescriber approved regimen)	2
Not using a controller medication (cost)	1
Short term daily use (prescriber approved)	1

Figure 1. Asthma Medication Ratio (AMR) Pre- and Post-Pharmacist Intervention

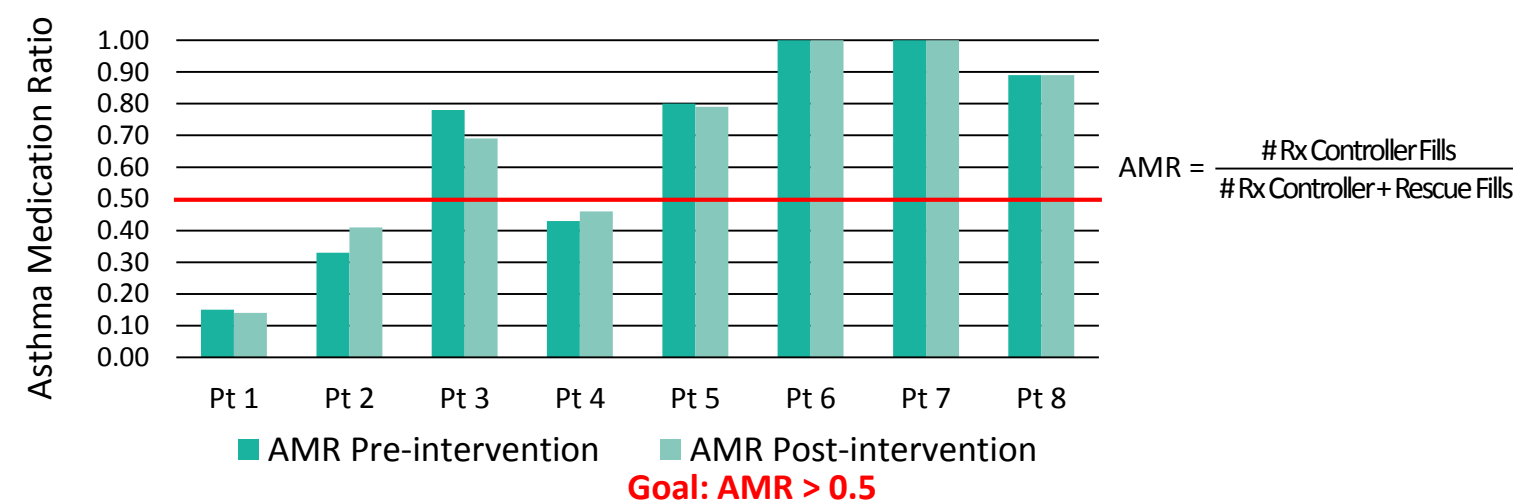
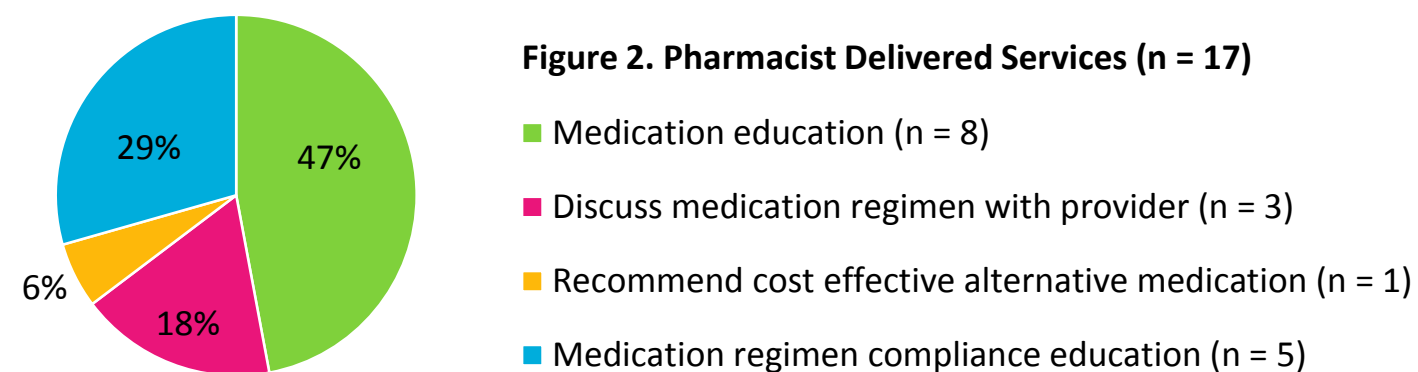


Figure 2. Pharmacist Delivered Services (n = 17)



## DISCUSSION

- A transfer out rate of 25% in the identified population affected sample size
- 3 patients (37.5%) refused prescriber contact by the pharmacist, limiting potential for adjustment to medication regimen
- The providers for 3 of the 4 patients that were identified as over-utilizing a short acting relief inhaler confirmed they were aware of the patient's overuse
- Discussing asthma medication regimens with patients allowed the pharmacy to keep up to date records on prescriber approved over-use or under-use regimens to aid in future compliance interventions
- Analyzing asthma medication ratio after a 90 day period is likely not long enough to evaluate the impact of pharmacist delivered services due to asthma medication ratio being measured over one year

### Limitations

- Calculated asthma medication ratio is based on study pharmacy refill history, therefore if a patient has filled at a different pharmacy the calculated asthma medication ratio will be inaccurate
- Patient list was provided by one private insurer, leaving those covered by other insurers (i.e. government) not represented in this patient population

### Future Research

- Explore the utility of pharmacist delivered services on improving asthma medication ratio over a longer period of time