Department of Family Medicine | Department of Pharmacy

Pharmacist-led Inhaler Education Study (PLIES)

OKLAHOMA STATE UNIVERSITY
CENTER FOR HEALTH SCIENCES

[1]Matthew Priest, DO PGY2; [2]Lyndsay Ryan, PharmD PGY1; [2]Zachary Dunn, PharmD PGY1; [1]Xuyen Ha, DO PGY2; [1]Cody Miller, DO PGY1; [1]Josiah Greer, DO PGY1
Department of Family Medicine[1]; Department of Pharmacy[2]
Faculty Advisor: [1,2]Crystal David, PharmD, BCPS

INTRODUCTION

- Albuterol was first created in 1967 and was available for patients in 1969 (1)
- Since its discovery, the rate of improper technique has remained unchanged from the years 1975 to 2014 (2)
- Improper technique is also one of the leading causes of uncontrolled asthma, exacerbations, and ER visits due to asthma related symptoms (3)
- A study in 2013 (n=450) showed that 45% of patients who presented to an ER for asthma-related concerns demonstrated improper use of their inhaler, with 40% of patients reported having never received any inhaler training (3)
- In the US, asthma related ER visits account for 1.7 million ER visits a year and the average cost of these ER visits is $1502; adding up to $2.55 billion dollars per year in unnecessary medical cost and burden to the patient (4)

OBJECTIVES

Aim Statement: Determine if our clinic patients have ever received formal inhaler training from a trained healthcare professional and to see what their level of confidence is to use their prescribed inhaler properly. This is the first step in a line of potential future studies to determine if inhaler education is a large modifiable risk factor that could decrease emergency room and urgent care visits for inhaler-associated illnesses and exacerbations.

METHODS

- Patients were identified by analyzing their medication lists in the electronic medical record to determine if they were currently being prescribed an inhaler
- Patients were then asked if they were interested in receiving inhaler education by a pharmacist. If they agreed to participate, they were asked several questions by the pharmacist (see “Results”)
- Utilizing demonstration inhalers when available, the pharmacist evaluated if the patient was receiving an adequate dose with their current technique and subsequently counseled on how to use their inhaler properly, making note of any interventions made
- Lastly, the patient filled out a single question questionnaire assessing their ability to use their inhaler(s)
- Survey results were then anonymously collected and organized in an excel sheet
- Inhalers were requested and provided by drug companies for some of the major types of inhalers; metered-dose inhaler, dry-powder inhaler, and Ellipta inhaler
- This was an IRB-exempt study

RESULTS

Table 1: Survey Results
N=15

Patient Questionnaire	N (%)
Who initially educated you on proper inhaler use?	
Self-taught	9 (60)
Physician	5 (33)
Pharmacist	1 (7)
How adherent are you to your current inhaler?	
Always	7 (47)
Sometimes	2 (13)
Rarely	1 (7)
Not applicable	5 (33)
Do you prime your inhaler before using/>14 days?	
Yes	8 (53)
No	3 (20)
Not applicable	4 (27)
Do you use a spacer?	
Yes	0 (0)
No	13 (87)
Not applicable	2 (13)
Do you rinse and spit after each use?	
Yes	0 (0)
No	7 (47)
Not applicable	8 (53)
How confident are you with your inhaler technique after receiving this education?	
More	5
Same	2
Less	0
Not collected	8

Table 2: Assessment and Interventions

Objectives	N (%)
Adequate dose administered with current technique?	
Yes	8 (53)
No	7 (47)
Was an intervention made?	
Yes	12 (80)
No	3 (20)
Type of intervention, n = 26	
Adherence	2
Space out timing between doses	7
Hold breath	3
Rinse and spit (ICS)	7
Deep forceful breath	1
Exhale fully before administering dose	1
Priming	3
Removed albuterol from medication list	2

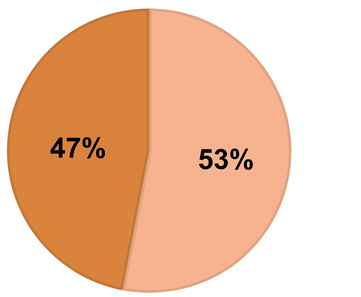

FIGURE 1: ADEQUATE DOSE

- Fifteen patients (n=15) in the Family Medicine clinic were assessed for their asthma and COPD inhaler technique and received inhaler technique education.
- Average time with pharmacist (evaluation and education): 10 minutes
- 40% of patients previously had been shown how to use their inhaler by a health-care professional, most commonly a physician or pharmacist
- 60% reported they were self-taught
- Seven (7) patients reported 100% compliance to their inhalers
- Before the pharmacy training session, only three patients demonstrated optimal technique, and eight patients were receiving an adequate dose with their current technique
- Inhaler training was well accepted by patients.
- The majority of patients (71%) stated that they felt more confident in their ability to use their inhaler correctly, while 29% of patients stated that they felt the same in their ability to use their inhaler correctly
- There were a total of 26 interventions made over 15 billable encounters for a potential billing revenue of $210 with the most common intervention being timing between doses and rinsing mouth after ICS
- Of note, two patients did not have an indication for their inhaler and the inhaler was removed from their medication list.

CONCLUSION

Even though our sample size was limited, it shows that the majority of patients were not using their inhalers properly. We also were able to identify that most patients were never properly educated on inhaler techniques. Inhaler administration is a complex activity that requires key steps and dexterity to ensure patients are receiving adequate doses.

Patients who do not correctly administer doses with their inhalers may remain uncontrolled in their disease state which could lead to incorrectly escalating therapy, such as increasing doses or adding subsequent medications.

This pilot study indicates the need for a pharmacist-physician relationship in the outpatient setting.

We plan to expand the sample size in a following study to more accurately describe the level of adequacy in patient-administered inhaler techniques. We plan to bill and track cost savings and cost generating from these types of interventions utilizing clinical pharmacists.

DISCLOSURE

No authors of this presentation have anything to disclose concerning possible financial or personal relationship with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

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