

# CP-125 - The Effect of a Pharmacist-Led Inhaler Technique assessment, Education & Training Intervention on Asthma Control in a Paediatric Hospital Outpatient Setting

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### Introduction

According to the Asthma Society of Ireland<sup>1</sup>, Ireland has the fourth highest prevalence of asthma in the world with almost one in ten people having the condition (estimated by the Asthma Society that there are almost 470,000 patients with asthma in Ireland). More than one person a week dies due to asthma.<sup>1</sup>

Whilst managing paediatric patients with asthma, it is important to consider a holistic view where multidisciplinary team effort is required.<sup>2</sup> A partnership is needed, not just between the child and the healthcare professional, but parents must also be involved to ensure appropriate education, training and management of the condition and symptoms.<sup>3,4</sup>

It is difficult for children to correctly use their inhaler devices, despite popular belief.<sup>4</sup> Therefore it is important that the children are firstly involved in the choice of the inhaler type and secondly, that repeated instruction for inhaler use is given alongside practical demonstration.<sup>4</sup>

It has also been noted by the Asthma Society of Ireland<sup>5</sup> that low levels of proactive symptom control is an issue with adolescent patients. Older adolescents with asthma have a four to six time greater mortality and morbidity rate than younger children.<sup>6</sup>

## Introduction (2)

Studies have consistently demonstrated that the correct and effective use of inhaler therapy reduces asthma symptoms and thus improves asthma control.

Pharmacists are particularly well positioned to educate and train patients in the correct use of their inhaled therapy.<sup>7</sup> They are often the last healthcare professionals to have contact with patients prior to the use of prescribed inhaled medication.<sup>8</sup> This places pharmacists in an opportune situation for patient counselling with regard to inhaler technique education and training.

An extensive literature search portrayed that inhaler technique assessment, education and follow-up of asthma control using the GINA recommended asthma control test, had not previously been researched by a clinical pharmacist in the paediatric setting.

# Aim/Objective

To determine if pharmacist-led inhaler technique assessment, education and training improves asthma control scores in the paediatric population (4-16years).

# Methodology

Study Design: A prospective single-centre interventional study

**Study Population:** Selected from respiratory outpatient clinics which took place in the hospital setting. Patients with a confirmed diagnosis of asthma (documented in medical notes), that had been prescribed inhaled therapy prior to attendance at clinic, were referred to the investigating pharmacist.

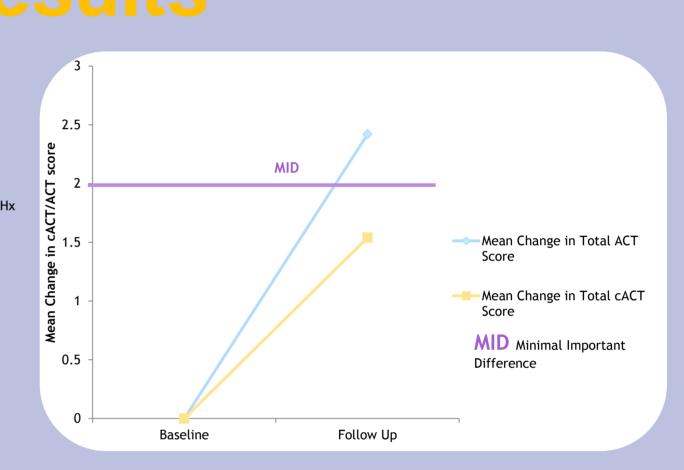
Exclusions: Patients with concurrent respiratory conditions were excluded based on potential conflicting factors. Patients under the age of four were excluded as there is no current validated measure of asthma control in these patients.

Statistical analysis: Data was analysed using paired samples t-tests, independent samples t-tests, analysis of variance (ANOVA) with Tukey's post hoc testing for continuous variables and Pearson product - moment correlation coefficient. (SPSS version 21.0)

Method: The pharmacist delivered structured inhaler technique assessment and practical training with regard to correct inhaler technique. Additional educational advice was provided and patients were referred for review of inhaler therapy where appropriate.

Primary Outcome: The difference between the patient's baseline and follow-up Asthma Control Score as assessed by the relevant Asthma Control Test (ACT >12 years or childhood ACT 4-11 years).

# Previous Hx Previo



52.5% (n=21) of patients experienced an increase in asthma control with a Minimal Important Difference (MID) of two cACT/ACT points, therefore having a clinically meaningful impact for the patient<sup>9</sup>

Level of Asthma Control	Controlled n (%)	Poorly Controlled n (%)	Uncontrolled n (%)
Baseline	24 (60)	7 (17.5)	9 (22.5)
Follow-Up	28 (70)	8 (20)	4 (10)

# Results (2)



Pie chart showing when patients were last trained to use their inhalers

- It is recommended that patients have their inhaler technique assessed on an annual basis or at every clinic attendance<sup>10</sup>
- Only 18% of patients had received inhaler technique training over the previous year

### **Summary of Significant Results** p-Value 95% CI Mean cACT (Baseline) v cACT (Follow-up) 0.023 - 3.049 1.54 0.047 ACT (Baseline) v ACT (Follow-up) 0.126 - 4.707 2.42 Training by Nurses v Training by PFTTs 6.17 - 7.83 0.002 Training by Doctors v Training by PFTTs 4.82 - 6.99 5.9 0.043 Technique Score (Baseline) v Technique 3.198 - 4.579 Score (post training) Technique: Self-administration v Assisted inistration of inhalers 0.409 - 2.736 0.009 1.572

The results of this study show that inhaler technique assessment, education and training in a single session by a hospital based clinical pharmacist significantly improved ACT scores [Baseline Score = 19.33±3.312, Follow-up Score = 21.75±2.701, (p = 0.04)] and cACT scores [Baseline Score = 19.50±4.993, Follow-up Score = 21.04±4.647, (p = 0.047)].

Significant improvements were also noted in the areas of inhaler technique, types of healthcare professionals delivering training to patients, self-administration of inhalers versus assisted administration and variations according to gender.

# 7.19 5.31 Assisted Administration Self Administration ean Technique Scores for Patients <11 years (no

Mean Technique Scores for Patients ≤11 years (p=0.009)

Patients <12years demonstrated better

technique when inhaled therapy was assisted by a parent. For the purpose of this analysis, inhaler technique demonstration of the reliever (salbutamol) inhaler was used as all patients (n = 45) demonstrated use of this inhaler type. All patients >11 years self-administered their own medication.

Attergres	rrequeries	
	n 45	Exercise
		Cold We
Atopic Allergies	19	
House Dust Mite	10	Seasona
Grass/Tree Pollens	16	Chest/V
Glass/ Hee Folleris	10	Atopic T
Animal Dander	9	Atopic i
	4.4	
Food Allergies	14	
N. d	9	4
Nuts	9	
Wheat	3	
- Tricac		Air Pollu
Egg	3	
		Food All
Other	7	
	2	NSAIDs
Medication Allergy	3	

	n 45
Exercise	17
Cold Weather	22
Seasonal Changes	2
Chest/Viral Infections	5
Atopic Trigger Factors	18
HDM	8
Animal Dander	4
Hay fever	11
Air Pollutants	3
Food Allergies	2
NSAIDs	2
Intrinsic (unknown)	5

Frequency

Hall, Maurice: Nothing to disclose

### Conclusion

Results (3)

This study shows feasibility and potential for clinical pharmacists in the hospital healthcare setting to provide inhaler technique assessment, education and training for patients with asthma. Further studies with more robust methodology are necessary to validate outcome measures.

This study also provides a unique insight into a snapshot of the paediatric population with asthma in Ireland.





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