

A Randomized, Cross-Over Study Comparing Critical and Overall Errors, Teaching Time, and Preference of the ELLIPTA versus BREEZHALER Dry Powder Inhalers in Patients with Asthma

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Aims

- Errors in inhaler technique can reduce the amount of medication received and hinder effective asthma management.¹
- It is important that patients can use their inhaler correctly after only reading the patient information leaflet (PIL), as up to 25% of patients with asthma do not receive verbal instruction.²
- Error rates with the ELLIPTA inhaler and BREEZHALER have not yet been compared in patients with asthma.

Methods

- This was a randomized, multi-center, open-label, crossover inhaler-handling study. It assessed critical and overall errors, teaching time, ease-of-use, willingness to continue use, and preference for attributes of the ELLIPTA and BREEZHALER dry powder inhalers.
- Patients read the PIL before attempting inhaler use for the first time (Attempt 1). If the patient made errors, the health care professional (HCP) gave an instruction to show the correct technique.
- The primary endpoint was the number of patients making ≥ 1 critical error after reading the PIL.
- Key secondary endpoints:
 - The number of patients making ≥ 1 critical error after each instruction
 - The number of patients making ≥ 1 overall error after reading the PIL
 - Total amount of time taken to demonstrate correct inhaler use
 - Overall inhaler preference.
- Data were compared using odds ratios (ORs), p-values, interquartile ranges (IQR) and 95% confidence intervals (CIs) or 97.5% CIs where appropriate.

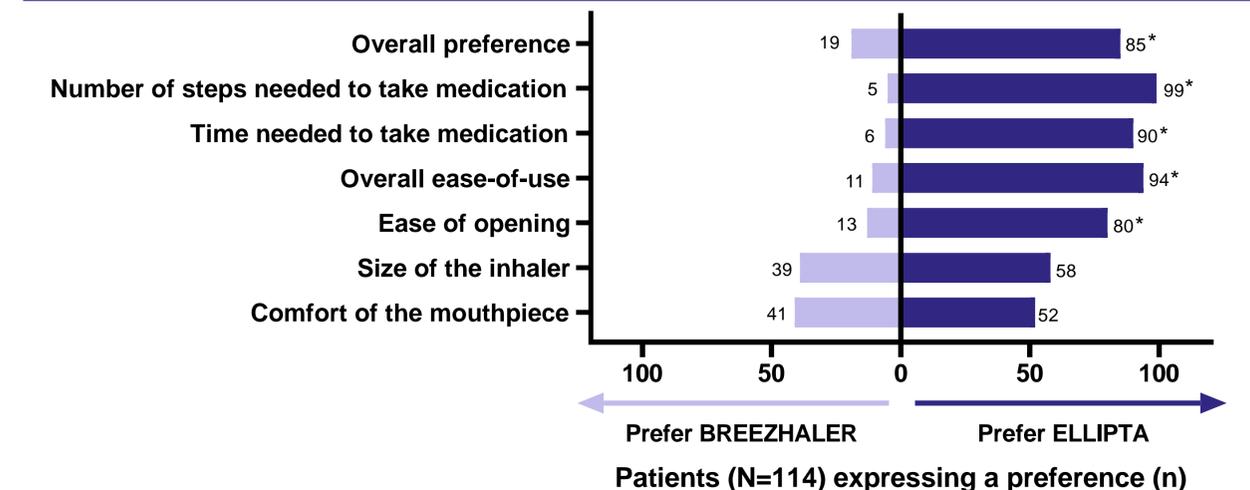
Results

- In total, 114 patients completed the study. Most patients were female (57%), and the mean age was 55.3 years.
- With the ELLIPTA inhaler, 7 patients (6%) made ≥ 1 critical error after reading the PIL, versus 30 patients (26%) with BREEZHALER (OR, 0.11; 95% CI: 0.01–0.40; $p < 0.001$).
- After reading the PIL, 31 patients (27%) made ≥ 1 overall error with the ELLIPTA inhaler, versus 47 patients (41%) with BREEZHALER (OR, 0.25; 95% CI: 0.03–0.74; $p = 0.005$).
- After 1 HCP instruction, 1 patient made ≥ 1 critical error using the ELLIPTA inhaler, versus 5 using BREEZHALER (OR, 0.71; 97.5% CI: 4.42; one-sided $p = 0.33$).
- The **Table** details the rates of critical and overall errors patients made with the ELLIPTA and BREEZHALER inhalers.

Table. Number of patients who made ≥ 1 critical or overall error with the ELLIPTA inhaler and BREEZHALER (N=114)			
	ELLIPTA	BREEZHALER	p-value
After reading the PIL, n (%)			
Number of patients making ≥ 1 critical error	7 (6)	30 (26)	<0.001
Number of patients making ≥ 1 overall error	31 (27)	47 (41)	0.005
After 1st HCP instruction, n (%)			
Number of patients making ≥ 1 critical error	1 (<1)	5 (4)	0.333*
Number of patients making ≥ 1 overall error	3 (3)	10 (9)	0.048*
After 2nd HCP instruction, n (%)			
Number of patients making ≥ 1 critical error	0	0	NA
Number of patients making ≥ 1 overall error	0	1 (<1)	NA
*p-value calculated at the one-sided 2.5% level with an alpha of 0.025. NA, not applicable.			

- The median amount of time taken to demonstrate correct inhaler use for the ELLIPTA inhaler was 1.0 minute (IQR 0.0–1.0), while for BREEZHALER this was 2.0 minutes (IQR 2.0–4.0).
- On a visual analogue scale of 0 (not willing) to 100 (definitely willing), patients were more willing to continue using the ELLIPTA inhaler (79.9) than BREEZHALER (52.3; $p < 0.001$).
- Overall, 85 patients (75%) preferred the ELLIPTA inhaler, 19 patients (17%) preferred BREEZHALER ($p < 0.001$) (**Figure**); 10 patients (9%) had no preference.
- Across most inhaler attributes relevant to inhaler use technique, more patients preferred the ELLIPTA inhaler over BREEZHALER ($p < 0.001$) (**Figure**).

Figure. Patient inhaler preference



- For ease-of-use, 107 patients (94%) rated the ELLIPTA inhaler as 'easy or very easy' to use, versus 59 patients (52%) for BREEZHALER.
- The ELLIPTA inhaler was consistently rated as 'easy' compared with the BREEZHALER across various attributes relevant to learning correct inhaler technique.

Conclusions

- After reading the PIL, fewer patients made errors with the ELLIPTA inhaler compared with BREEZHALER.
- Patients found the ELLIPTA inhaler easier to use across most factors considered.
- Patients were more willing to continue using the ELLIPTA inhaler, and preferred it overall compared with BREEZHALER.
- These data could help HCPs and patients choose an easy to use inhaler device with a lower error rate and higher patient preference to increase medication uptake and improve asthma management.

References

1. The Global Initiative for Asthma, *Global Strategy for Asthma Management and Prevention*, 2021; <https://ginasthma.org/gina-reports/> [Accessed 17/03/22].
2. Lavorini F, et al. *Respir Med* 2008;102:593–604.

Disclosures

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- JvdP has no conflicts to report; DS is an employee of and holds shares in GlaxoSmithKline plc.; MV is an employee of and holds shares in GlaxoSmithKline plc.; MP is an employee of and holds shares in GlaxoSmithKline plc.

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