

## INTRANASAL BUDESONIDE DELIVERED BY NASAL NEBULIZER COMPARED TO A SINUS RINSE BOTTLE

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### INTRODUCTION

Budesonide nasal irrigation is used for the management of patients with chronic rhinosinusitis and the therapeutic effectiveness of this treatment has become an accepted part of standard care.

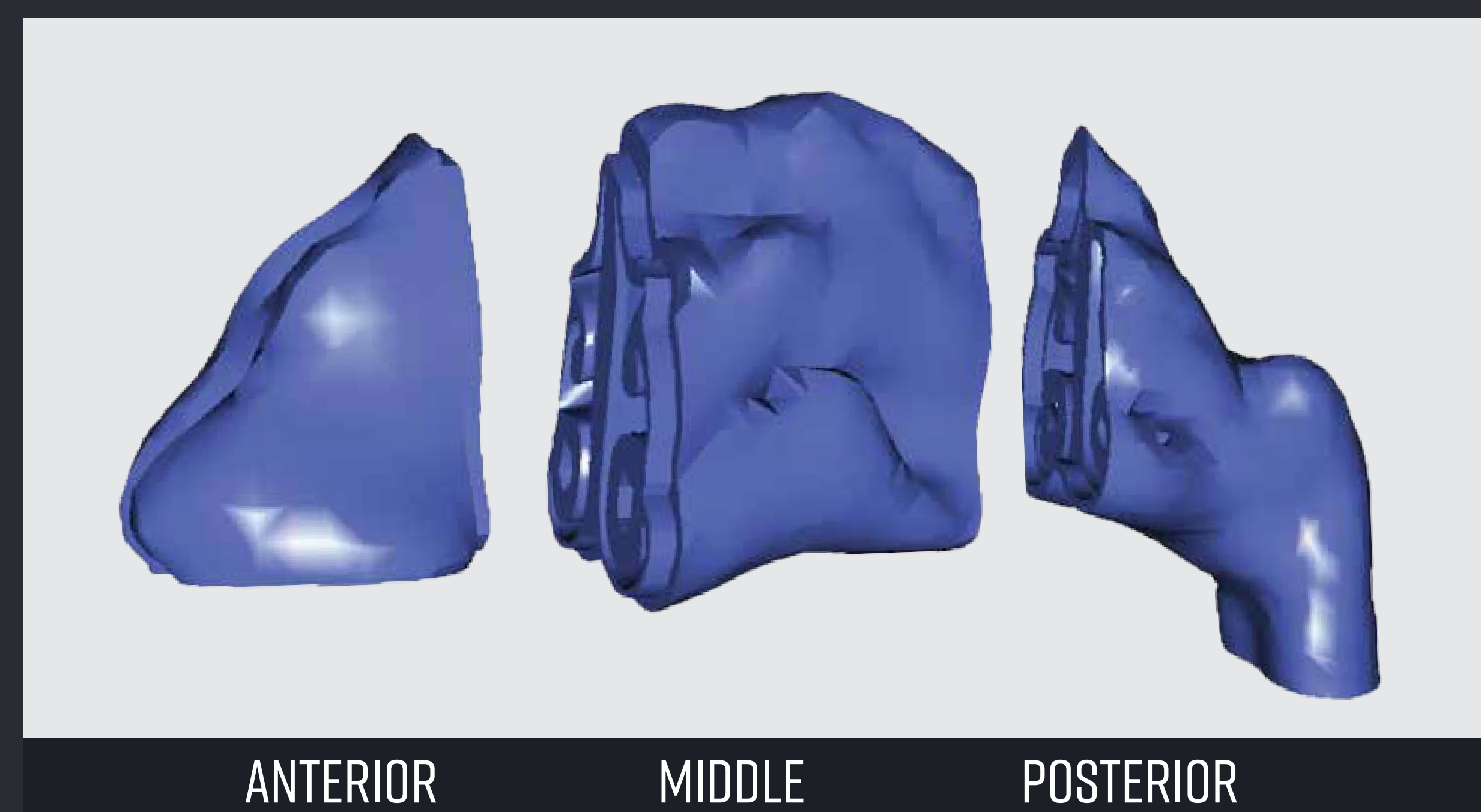
The objective of this study was to compare the mass of budesonide delivered to a 3D model via high-flow irrigation versus nasal nebulizer, in order to determine how much medication actually arrives at the disease-specific nasal sites.

### INTRODUCTION

A nasal replica model based on an MRI dataset (Guilmette) of a healthy male was segmented horizontally into 3 sections for measurement of regional deposition. This model was then used to determine the deposition amounts for the nasal nebulizer (NasoNeb® System) and rinse bottle (NeilMed Sinus Rinse) with a budesonide nebule (Pulmicort Nebuamp, 500µg/2mL).

The ampoule was added directly to the nebulizer but was diluted with 240ml of 0.9% saline for the rinse bottle as directed. Each section of the model was washed with 5ml of methanol and the mass of budesonide was determined by HPLC UV-Vis spectrophotometry.

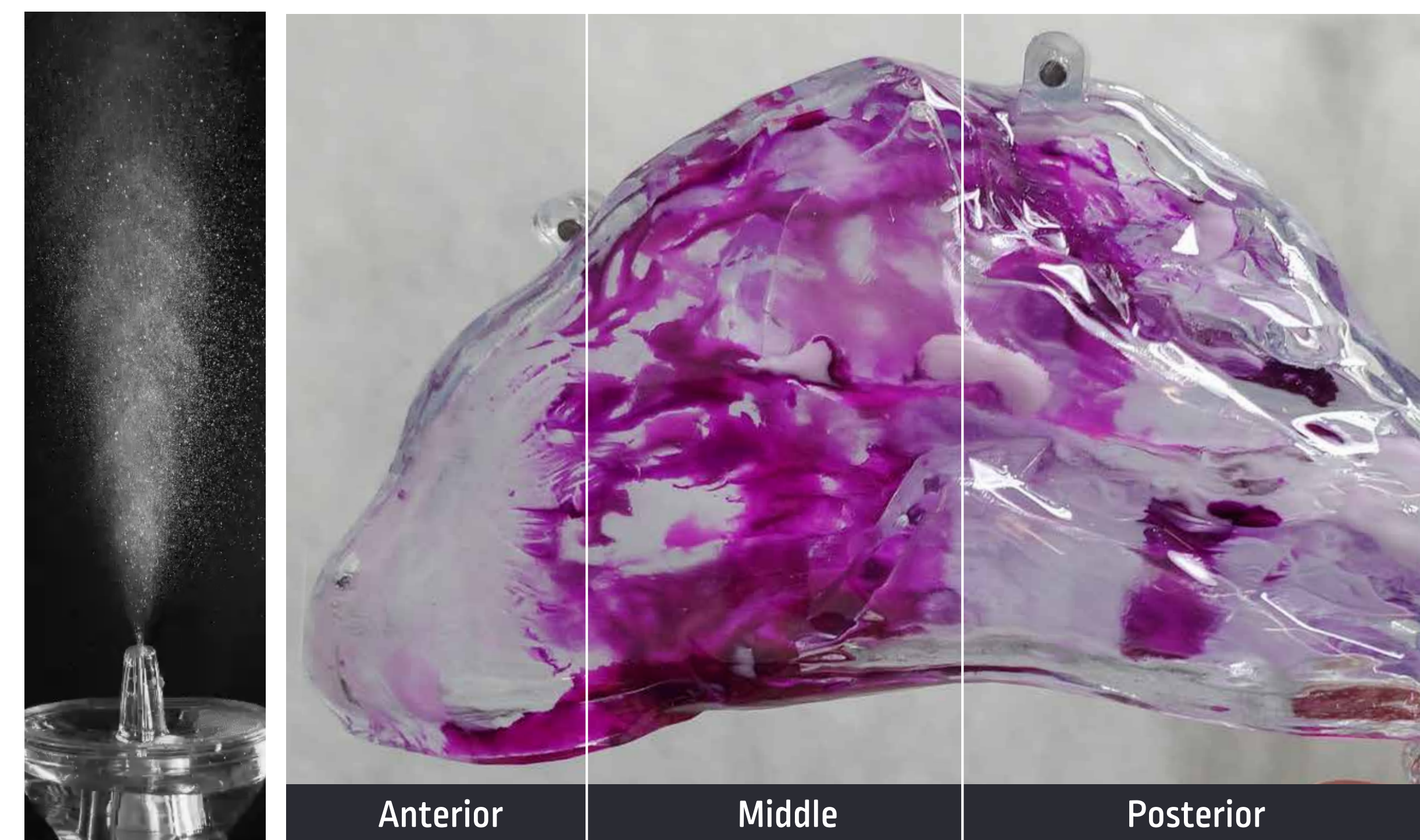
#### Nasal Replica



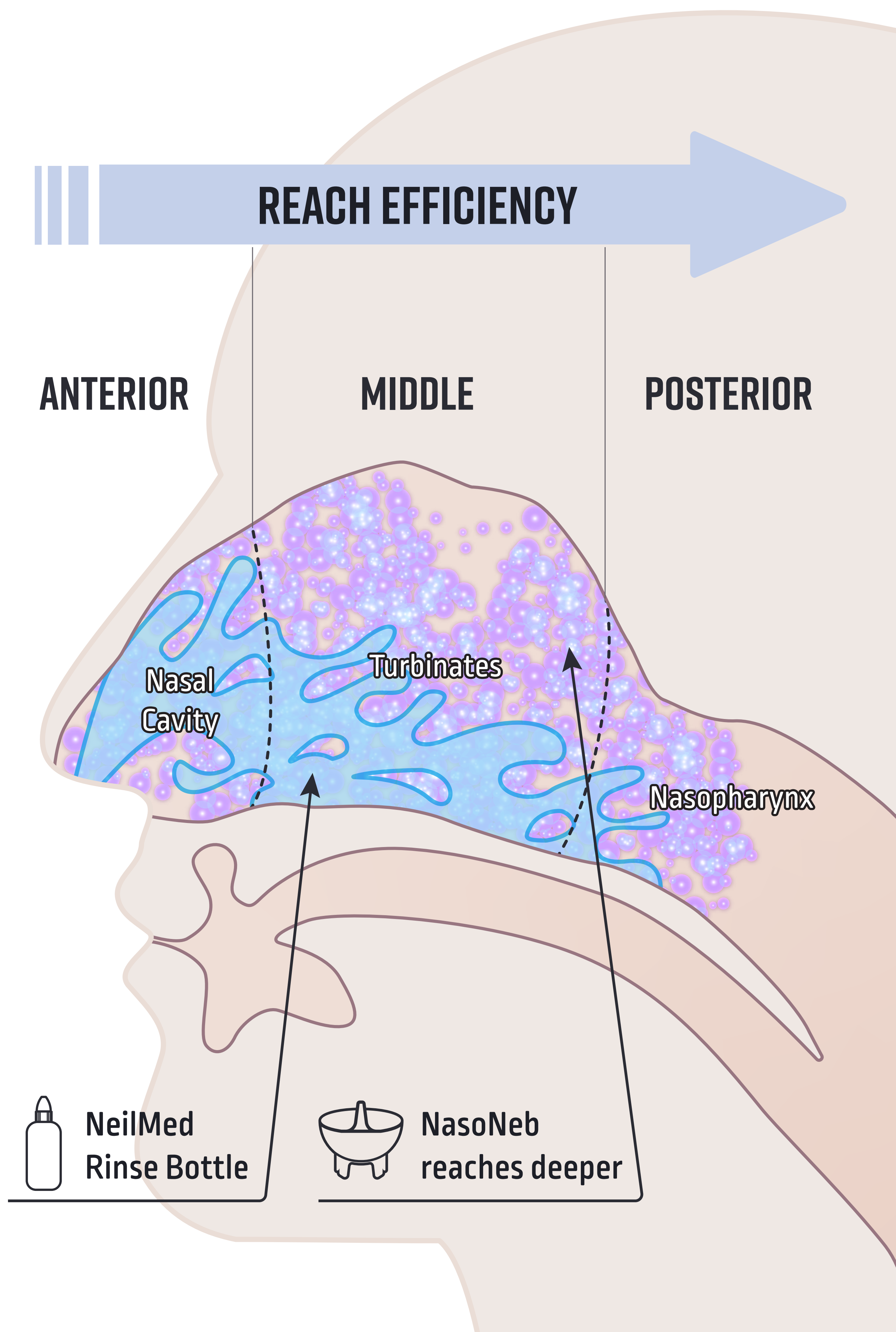
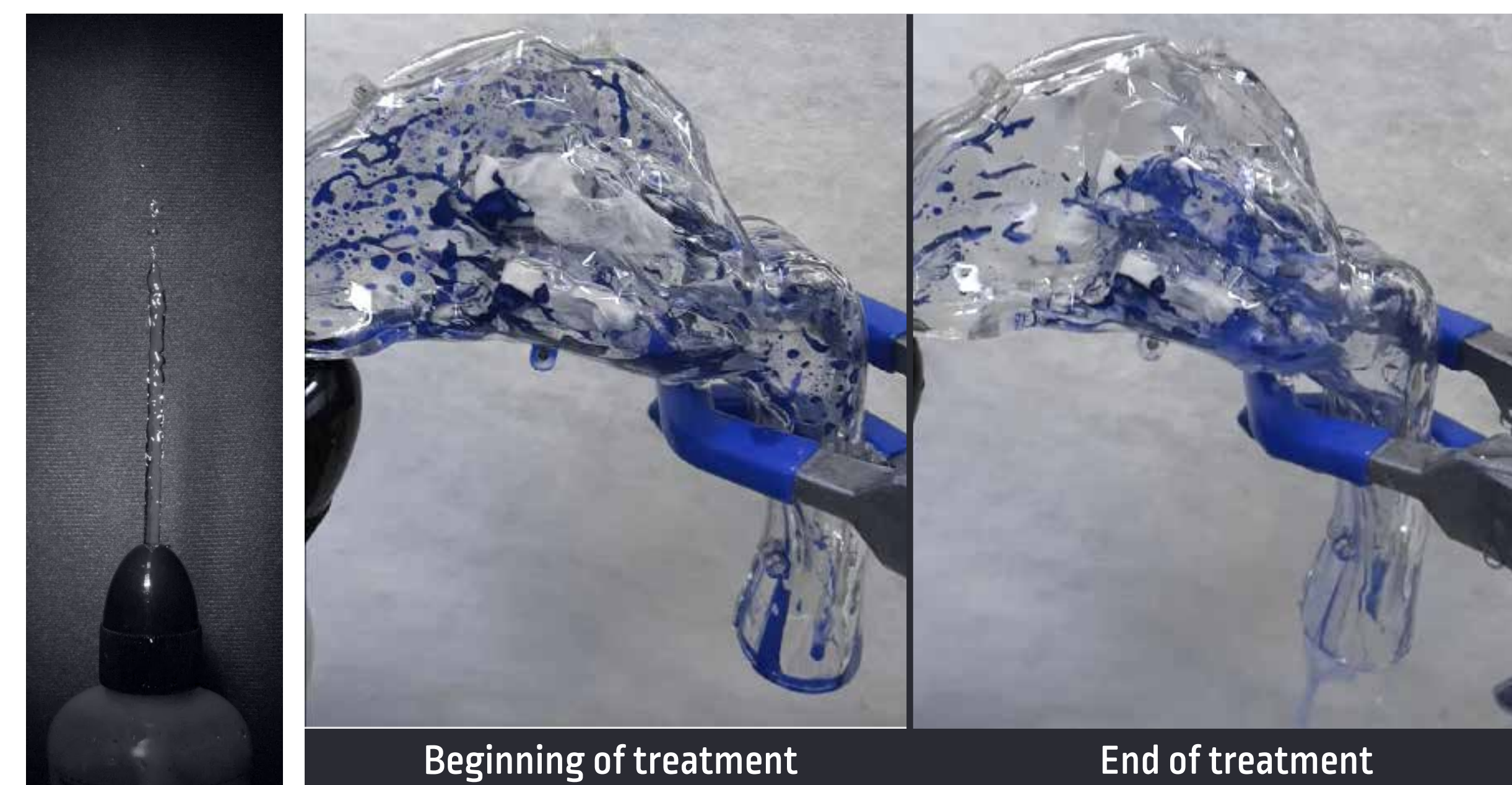
### RESULTS

Budesonide recovery from the 3 model locations (Anterior, Mid-section, Posterior) was significantly higher for the nebulizer (81.4µg, 173.2µg, 39.3µg) compared to the rinse bottle (1.0µg, 2.4µg, 1.1µg).

#### NasoNeb's System



#### NeilMed Rinse Bottle



#### Mass Delivery Compared (µg)

	NASAL SEGMENT		
	ANTERIOR	MIDDLE	POSTERIOR
NasoNeb® nebulizer (500µg/2mL)	39.3	173.2	81.4
NeilMed Sinus Rinse (500µg/2mL)	1.0	2.4	1.1
NasoNeb® nebulizer Additional mass	38.3	171.8	80.3

#### Mass Delivery Compared (%)

	ANTERIOR	MIDDLE	POSTERIOR
NasoNeb® nebulizer Additional mass	97%	98%	98%

### CONCLUSIONS

The use of the nebulizer system offers an alternative therapy for clinicians to deliver a greater and potentially more effective corticosteroid dose to patients who have been unable to achieve relief with other spray devices.

Clinicians should also be aware of the limitations of some commercial nasal irrigation systems to reliably deliver medication to its intended site of action inside the nose.

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