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2021

### Evaluation of Emergency Department Treatment of Pediatric Asthma Exacerbations

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## OBJECTIVES

- Primary: to assess the appropriateness of medications ordered in the emergency department (ED)
- Secondary: to assess the appropriateness of discharge medications and new encounters within 30 days for another asthma-related problem

## BACKGROUND

- Asthma is a chronic inflammatory respiratory disease with episodes of wheezing, breathlessness, coughing, and chest pain (exacerbations)<sup>1</sup>
- Exacerbation treatment recommendations:<sup>2</sup>
  - First-line therapy: short-acting beta-agonist (SABA) plus oral corticosteroid
  - Discharge therapy: continue rescue inhaler and finish 3-5 days of oral corticosteroid
- Pediatric asthma exacerbations account for 767,000 yearly ED visits in the United States and cost upwards of \$270 million per year<sup>5</sup>
  - More than 20% of Americans diagnosed with asthma are children<sup>3,4</sup>
  - Currently every 1 in 12 children is diagnosed with asthma<sup>3,4</sup>
  - Thirty-day readmission rate = 1.9-3.9%<sup>6</sup>

## METHODS

- Patients were included if they were aged 0-17 years plus:
  - Primary diagnosis of asthma, asthma exacerbation, status asthmaticus, or reactive airway disease
  - Treated at Parkview Health ED (9 community ED) from January 1, 2018 to June 30, 2021

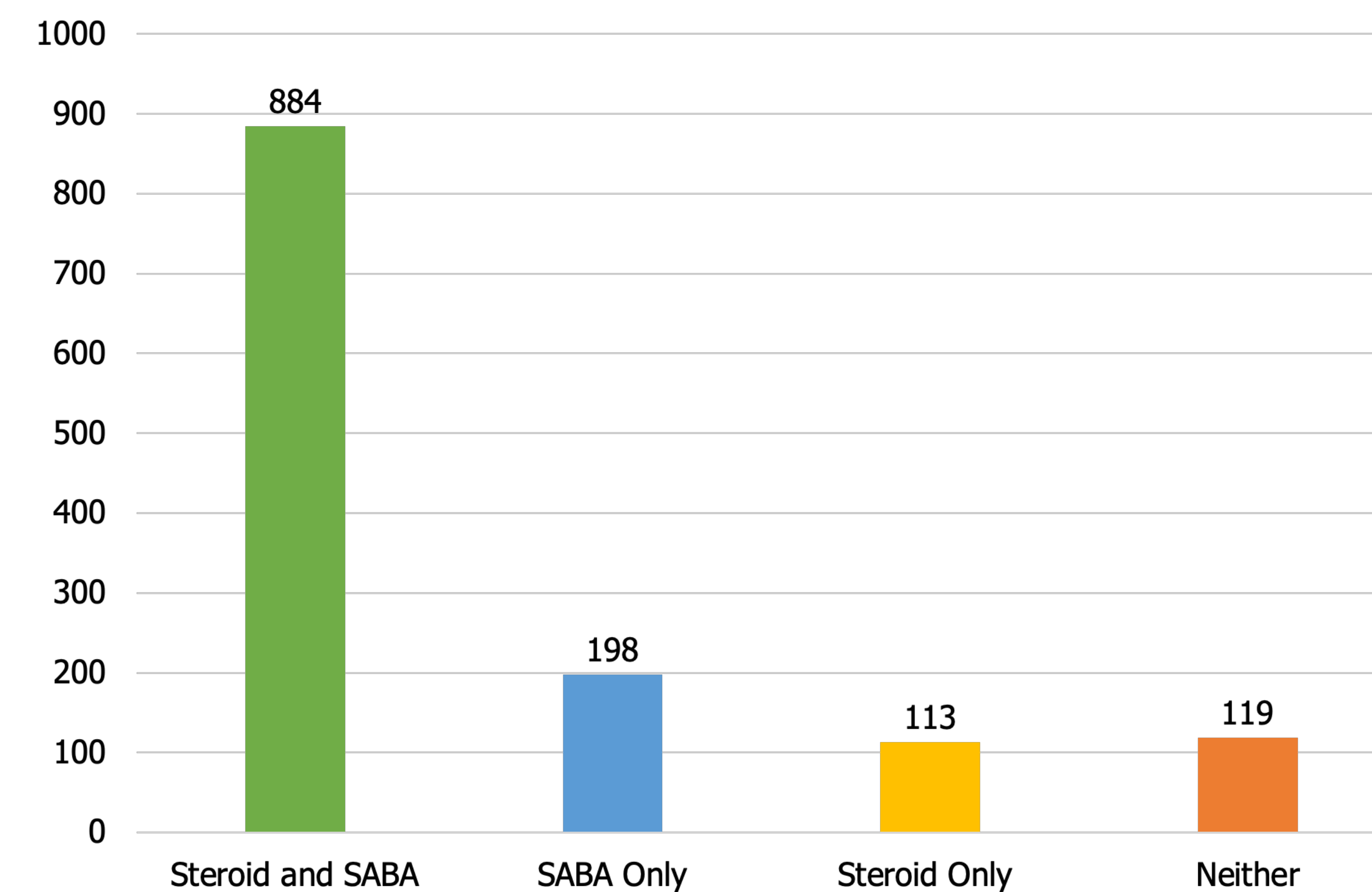
## RESULTS

Table 1: Patient Demographics	
Total patients, n	1314
Average age, years ± SD	4.8 ± 4.9
Age Categories, n (%)	
Neonates & Infants (0-12 months)	144 (11)
Children (1-12 years)	947 (72)
Adolescent (13-17 years)	223 (17)
Female sex, n (%)	503 (38)
Home Asthma Medication, n (%)	
Rescue Inhaler	614 (47)
Maintenance Inhaler	320 (24)
Maintenance Oral	173 (13)

## RESULTS

Table 2: Admission Vitals	
Heart Rate (BPM), Mean ± SD	120.3 ± 26.6
Respiratory Rate (BPM), Mean ± SD	25.4 ± 8.9
Oxygen Saturation (%), Mean ± SD	96.6 ± 3.4
O2 Device Required on Admission, n (%)	53 (4)
O2 Device Required in ED at any Point, n (%)	157 (12)

**Figure 1: Medications Prescribed in the ED**



**Figure 2: New ED Asthma-Related Encounter Within 30 Days**

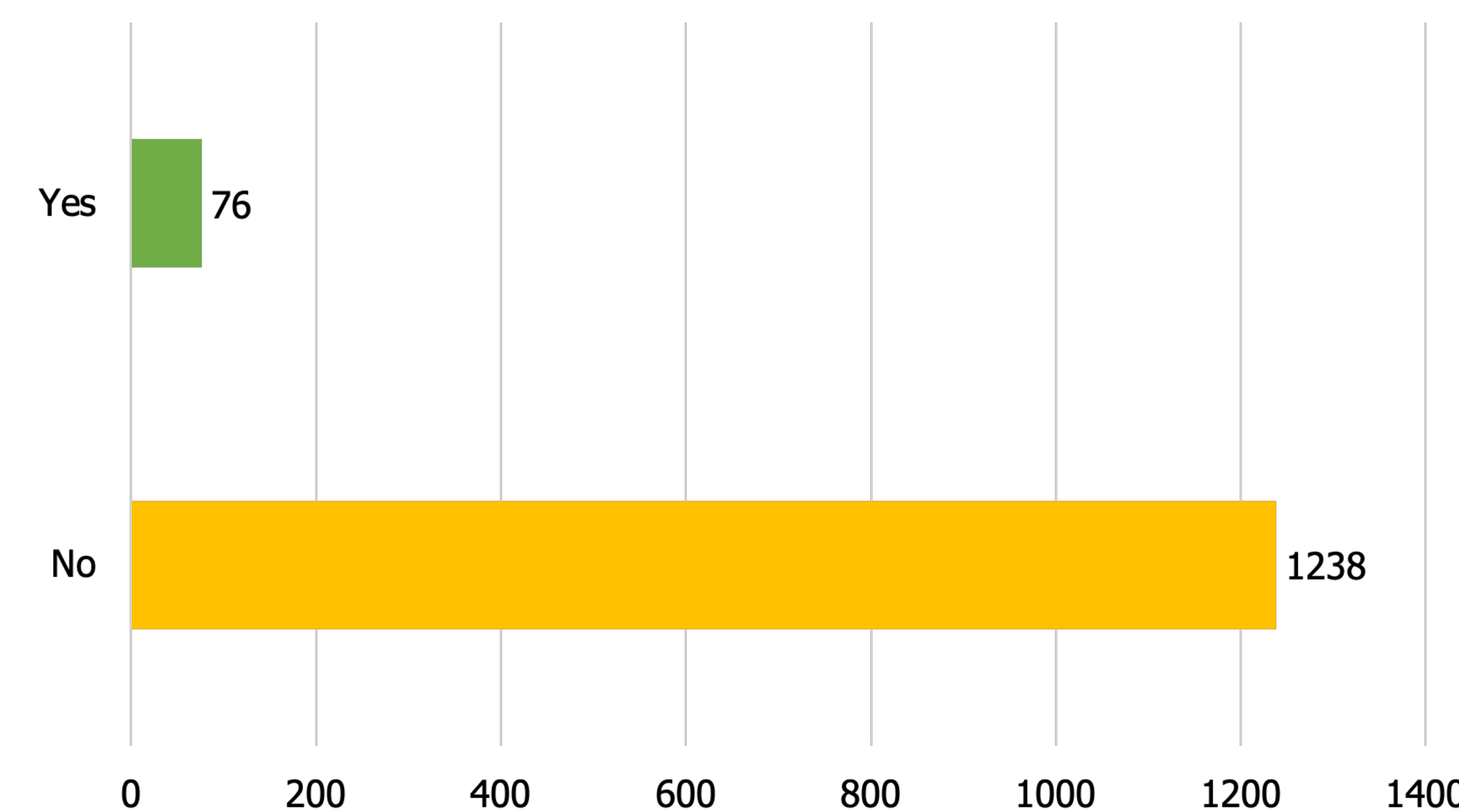
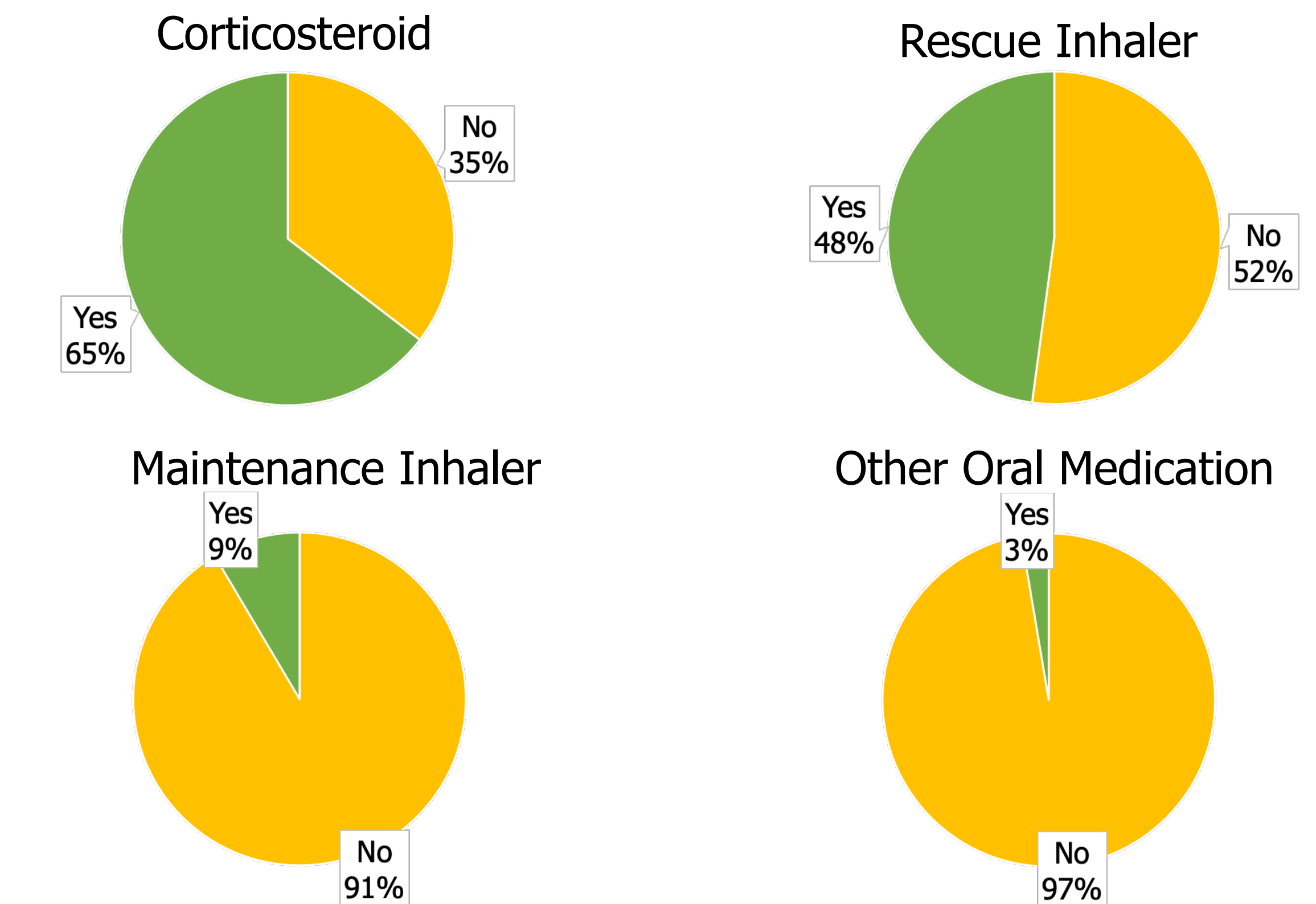


Table 3: Other Medications Administered	
Magnesium Administered, n (%)	18 (1)
Ketamine Administered, n (%)	0 (0)

## RESULTS

**Figure 3: Medications Prescribed at Discharge**



## DISCUSSION & CONCLUSIONS

- ED treatment:
  - First-line therapy was initiated in 67% of patients
  - Nine percent of patients did not receive SABA or steroid
- Discharge medications:
  - Prescription for steroids written for 849 patients (65%)
  - Parkview 30-day readmission rate = 6%
- Future goals:
  - Administer SABA to all patients presenting to the ED in an asthma exacerbation
  - Discharge all patients on course of oral steroids (unless otherwise contraindicated)
  - Improve patient care and to reduce admission rates
- Steps to achieve goals:
  - Review and update order sets and provide education to providers

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Special thanks to Sarah Ferrell PharmD, BCPPS and Jamie Gaul PharmD, BCPS

**Disclosure**  
The authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:  
Paige Grube: Nothing to disclose | Amber Ooley: Nothing to disclose | Kassandra Foellinger: Nothing to disclose