

BACKGROUND

- Children with asthma and obesity have worse clinical outcomes than non-obese children with asthma
- Studies suggest under-recognition of asthma severity in children with obesity which may lead to delays in treatment
- IV Magnesium (IV Mg) first line for adjunctive therapy on asthma pathway at our institution
- Variability of IV Magnesium administration and timing has been described
- Few studies have examined whether obese children with asthma have delays in timing of adjunctive therapy

HYPOTHESIS

- Compared to non-overweight patients, overweight or obese patients with asthma have delayed administration of IV Magnesium as adjunctive therapy for severe asthma exacerbations leading to worse outcomes

METHODS

- Observational retrospective cohort study
- Clinical Looking Glass (CLG), a clinical research database, queried
- Patients 2-17 years old with a primary diagnosis of severe asthma exacerbation who received IV Mg within 12 hours of triage
- Participants categorized by BMI for age percentile
- Excluded patients with other chronic lung diseases, BMI not available, or treatment prior to presentation to the Emergency Department (ED) or pediatric floor

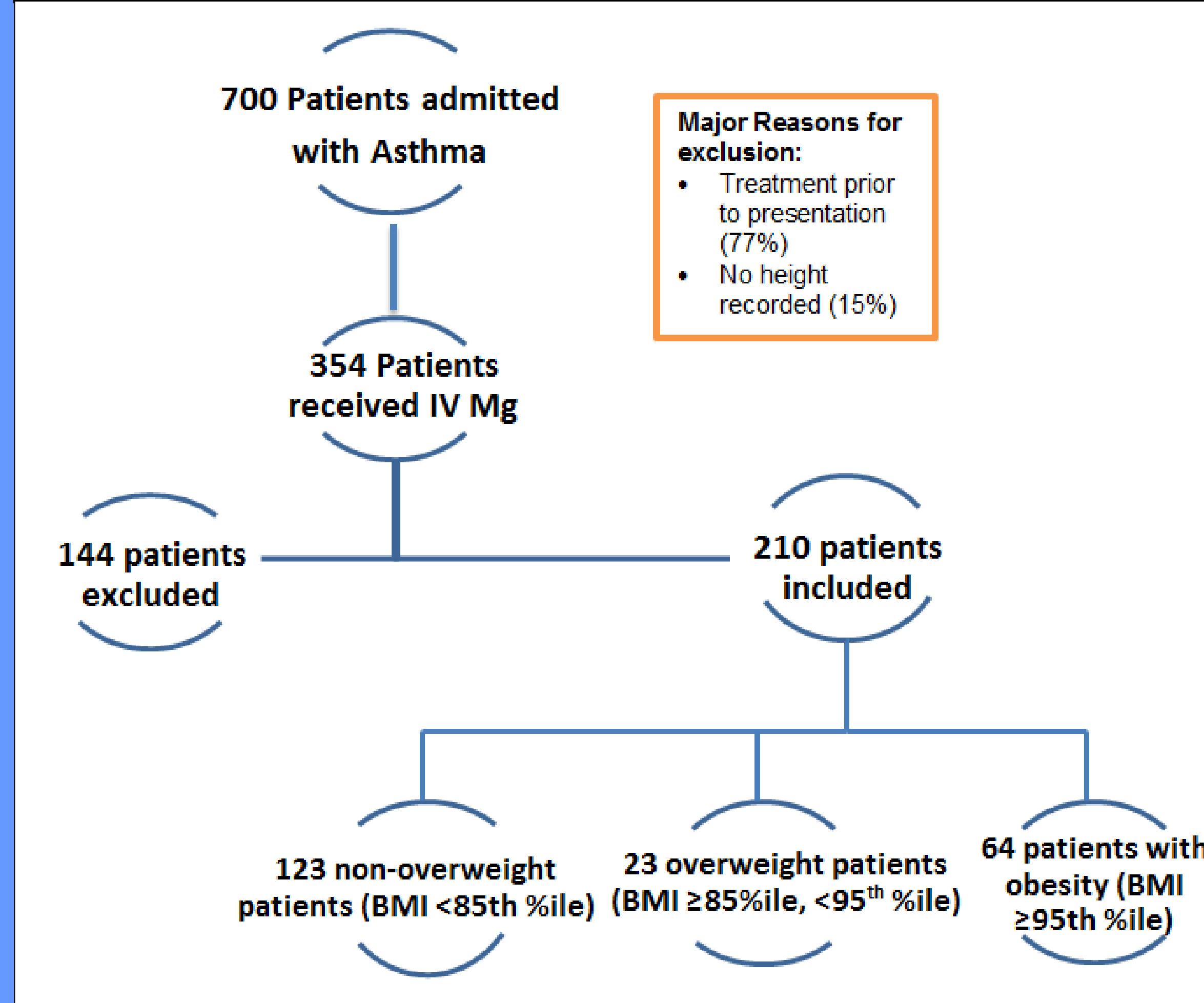
PRIMARY OUTCOME

- Time to IV Mg administration in minutes, from triage time to time of IV Mg administration

SECONDARY OUTCOMES

- Length of stay (days)
- Time to discharge-readiness (hours)
 - Defined as triage time to every 4 hour dosing of albuterol
- PICU admissions from ED (%)

STUDY SAMPLE



RESULTS

- Half of patients admitted for asthma exacerbations received IV Mg
- Time to IV Mg did not differ between groups
- Length of stay (LOS) also did not differ between groups
- Combining obese and overweight patients into one group did not change results
 - Results did not change when underweight patients excluded
- No significant association with BMI for age percentile and time to IV Mg found after adjusting for age, sex, race/ethnicity in a linear regression model

Table 1. PATIENT DEMOGRAPHICS AND BASELINE CHARACTERISTICS

	Non-overweight (n=123)	Overweight (n=23)	Obese (n=64)	All Patients (N=210)	p value
Age in years, median (IQR)*	6 (3, 10)	5 (3,12)	8.5 (5,12)	7 (4,11)	0.02*
Gender n, (%male)	72 (59)	18 (78)	37 (59)	127 (60)	0.18
Socioeconomic Status, median (IQR)^	-2.8 (-5.8, -1.3)	-5.6 (-6.6, -2.4)	-3.8 (-6.6, -1.4)	-3.33 (-6.3, -1.4)	0.14
Race/Ethnicity n, (%)					
Hispanic	51 (41)	11 (48)	37 (58)	99 (47)	0.32
Non-Hispanic Black	54 (44)	9 (39)	19 (30)	82 (39)	
Other	18 (15)	3 (13)	8 (13)	29 (14)	
Controller use on admission n, (%)	73 (61)	14 (61)	38 (59)	125 (60)	0.9
BMI, median (IQR)	16.2 (14.9, 17.4)	18.0 (17.5, 22.8)	26.2 (20.6, 28.3)	17.7 (15.8, 22.2)	
BMI Percentile for age, median (IQR)	52.2 (25.1, 70.6)	91.2 (86.9, 92.7)	97.7 (96.3, 99.2)	76.9 (43.4, 95.9)	

*statistically significant p value; ^reported as Z-score with NYS mean score as reference, based on patients' home address

Table 2. PRIMARY AND SECONDARY OUTCOMES BY BMI PERCENTILE, COMPARING ALL THREE GROUPS

	Non-Overweight (n=123)	Overweight (n=23)	Obese (n=64)	All (N=210)	P value
Time to IV Mg in minutes, median (IQR)	152 (97, 205)	149 (122, 209)	130 (97, 209)	149 (97, 207)	0.87
PICU Admission on Presentation, n (%)	27 (22)	5 (22)	10 (16)	42 (20)	0.58
Time to Discharge Readiness in hours, median (IQR)	31 (23, 47)	32 (26, 38)	31 (24, 48)	31 (24, 46)	0.96
Length of Stay in days, median (IQR)	1.67 (1.25, 2.25)	1.58 (1.25, 1.96)	1.79 (1.33, 2.38)	1.67 (1.25, 2.25)	0.47

CONCLUSIONS

- In this population, we did not find disparities in timing of IV Mg administration or LOS
- Study examined patients after widespread adoption of asthma pathway by our institution
 - Adoption of asthma pathway may help reduce health disparities in children with obesity

LIMITATIONS

- Single Center study
- Retrospective nature
 - Unable to fully assess severity of acute asthma exacerbation

FUTURE STUDIES

- Further work is needed:
 - To examine whether implementing asthma pathways can improve care and reduce disparities in health outcomes

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