

Background

- Asthma in children less than 5 years is difficult to definitively diagnose due to frequency of viral infection and the inability to perform pulmonary function testing.
- Current guidelines do not have clear recommendations on definitive diagnosis in this age group.
- Modified asthma predictive index (mAPI) is a commonly utilized tool recommended by the American Academy of Pediatrics for identification of children aged 3 years and younger at high risk for the development of persistent asthma.
- Pediatric Asthma Risk Score (PARS) was developed to improve the detection of asthma in children with mild-to-moderate risk to identify the patients missed by the mAPI.

Objective

- To investigate the implementation of an asthma predictive index in a General Pediatric Clinic by utilizing both mAPI and PARS criteria to most accurately classify patients in the hopes of assisting practitioners with diagnosing asthma in patients aged 3 and younger.

Methods

- Single center, retrospective chart review over 17 months
- Inclusion Criteria
 - Children aged 3 years
 - Diagnosed with wheeze (ICD-10 code R0.62)
 - Seen at Danis Pediatric Center
- Exclusion Criteria
 - History of apnea of prematurity and chronic lung disease
 - Mechanical ventilation
 - Tracheotomy
 - Age 0-2.9 years
 - Age 4 years or greater

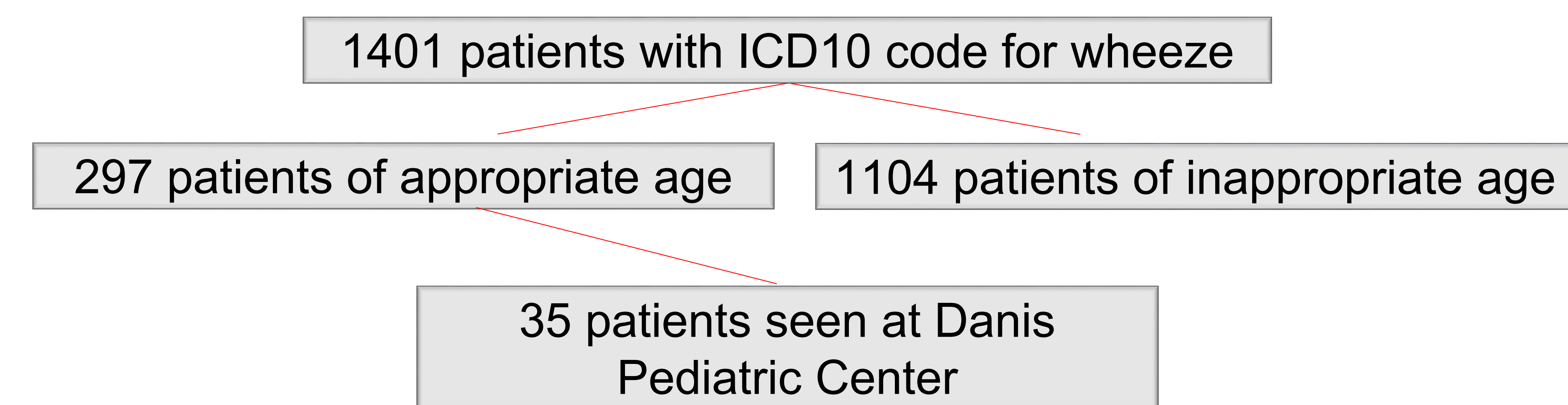
Table 1: mAPI vs PARS criteria

mAPI Criteria†	PARS Criteria
Major Criteria	Major Criteria
Parental history of asthma	Wheezing apart from colds
History of atopic dermatitis	Wheezing before age 3 years
Aeroallergen sensitivity	
Minor Criteria	Minor Criteria
Wheezing unrelated to colds	Parental history of asthma
Eosinophils ≥ 4%	Atopic dermatitis before age 3
Food allergy (dairy, egg, or peanut)	African-American Race
	Aeroallergen or food allergen sensitivity

† must have ≥ 4 documented wheeze episodes in 12 months

Methods

Figure 1: Study Population



Results

Table 2: Demographics

Characteristics	Total Population n= 35
Gender	
Male	22 (62.9%)
Female	13 (37.1%)
Race	
African American	24 (68.57%)
Caucasian	7 (20%)
Other	1 (2.86%)
Declined to answer	3 (8.57%)

Figure 2: Present Risk Factors

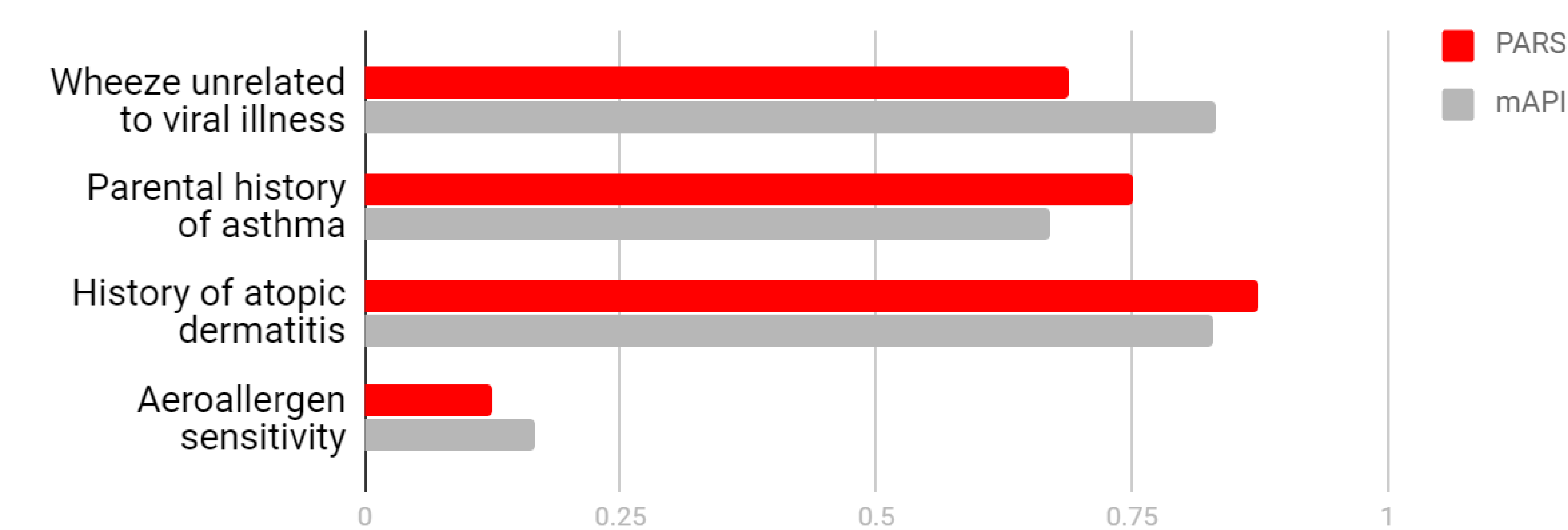
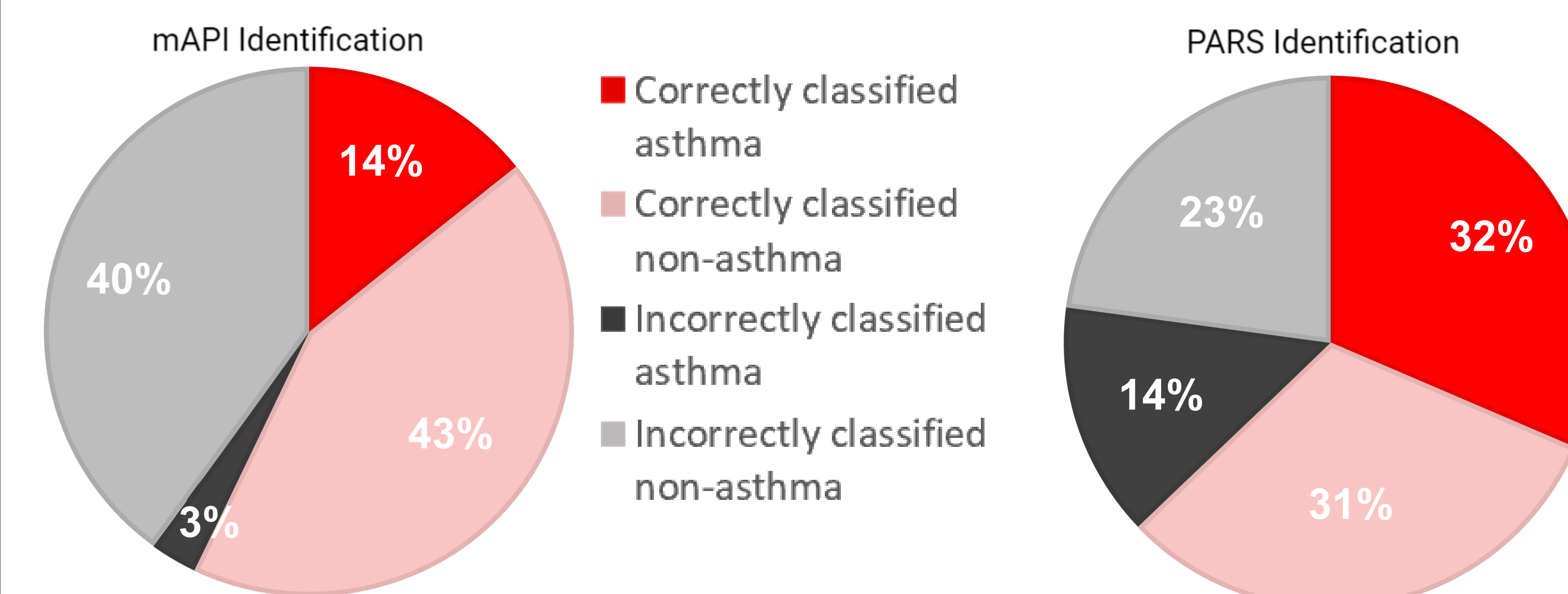


Figure 3: Identification Rates



Results

Table 3: mAPI vs PARS

	mAPI n (%)	PARS n (%)
Patients who met criteria	6 (17%)	16 (45.7%)
Asthma diagnosis before criteria met	3 (50%)	0 (0%)
Use of an inhaled corticosteroid	3 (50%)	7 (43.8%)
Use of a leukotriene receptor antagonist	2 (33%)	3 (18.8%)
Referral to asthma or allergy specialist	1 (16.7%)	2 (12.5%)

- Average wheeze episodes per child in first 3 years of life
 - mAPI = 5.3
 - PARS = 3

- 8 patients (42.1%) of the 19 with a diagnosis of asthma had a prescription for an inhaled corticosteroid

- 5 patients (14.2%) had a referral to an asthma or allergy specialist
 - 4 of these did not yet have an asthma diagnosis

Discussion

- PARS high risk subset correctly classified more patients than the mAPI criteria

- mAPI criteria is only predictive of those at high risk for asthma
 - 4 documented wheezing episodes in 12 months is a high burden

- Limitations
 - Small sample size
 - One study site at a general pediatric clinic
 - Possible inaccurate diagnoses
 - Lack of documentation of wheezing episodes
 - Descriptive statistics

- Results of this chart review identified a need to investigate the time from PARS criteria met to the time of asthma diagnosis
 - Could lead to an earlier diagnosis if PARS criteria were utilized as diagnostic criteria

Conclusion

- A small difference was identified in the accuracy of the mAPI criteria and the PARS high risk criteria for diagnosing asthma in children < 5 years of age.

- This leads to a recommendation for Cardinal Glennon Children's Hospital to implement a diagnosis tool containing PARS criteria to assist physicians in identifying patients at high risk for the development of asthma.