

# **Improving Pediatric Asthma Management by Utilizing a Scoring System and Care Pathway**

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## **Disclosures**

Julie Brown:

Nothing to Disclose

Kathleen Bryant, MD:

Nothing to Disclose

## Introduction

- Acute exacerbations of asthma are prevalent in pediatric population
- Differences in management exist among Emergency Department (ED) types and individual practitioners
- Pediatric Asthma Severity (PAS) scoring can guide therapeutic management and improve outcomes<sup>1</sup>

**AIM Statement:** Improve the efficiency of asthma exacerbation care in the Children's ED by decreasing the length of stay for patients presenting with acute asthma exacerbation by 10% in an initial 1-year period and 5% in subsequent years

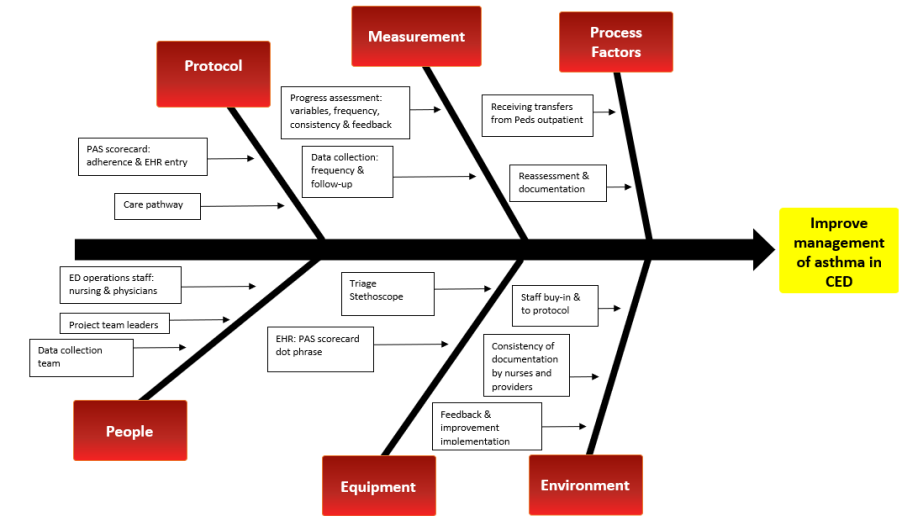
# Methods

**Context:** Children’s Emergency Department patients  $\geq 2$  years old with asthma exacerbation, October 2017-November 2020

- Gap analysis and **fishbone diagram study** were performed to identify and prioritize areas for improvement

### PEDIATRIC ASTHMA SCORE (PAS)

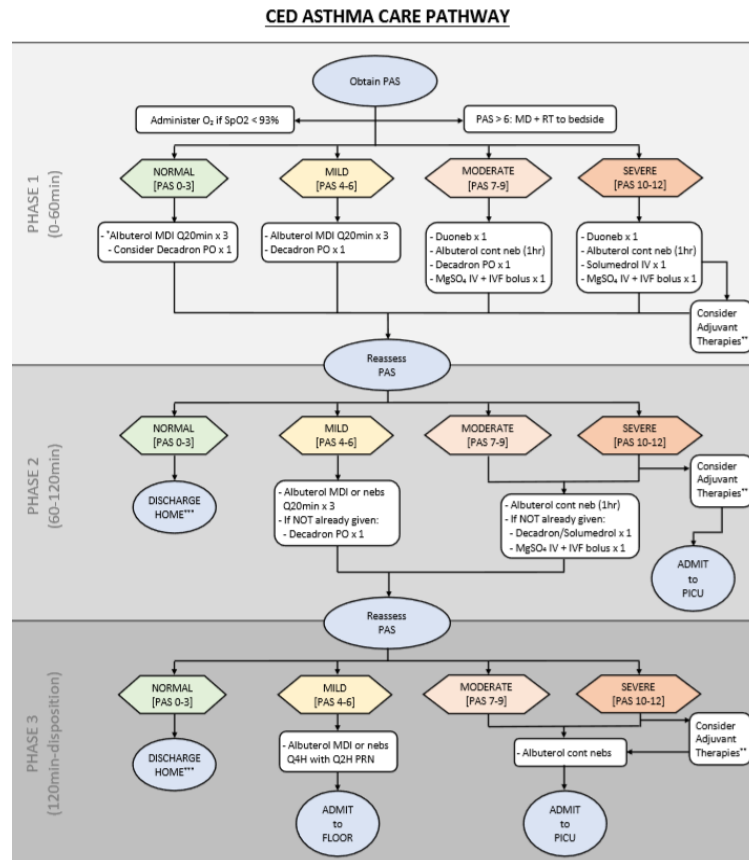
Scoring Factors	NORMAL 0	MILD 1	MODERATE 2	SEVERE 3
<b>Respiratory Rate</b>				
2-3 years	21-40	41-50	51-60	>61 or $\leq 20$
4-5 years	19-34	35-44	45-54	>55 or $\leq 18$
6-12 years	15-30	31-40	41-50	>51 or $\leq 14$
> 12years	11-16	17-26	27-36	>37 or $\leq 10$
<b>Auscultation</b>	Normal breath sounds with aeration throughout	End expiratory wheezes only	Expiratory wheezing	Inspiratory and/or expiratory wheezing to diminished breath sounds
<b>Retractions</b>	None	Subcostal and/or substernal	Intercostal and/or supraclavicular	Suprasternal and/or sternal
<b>Dyspnea</b>	Speaks in complete sentences	Speaks in short sentences, coos and babbles	Speaks in partial sentences, short cry	Speaks in single words, short phrases or grunting
<b>PAS</b>	<b>0 - 3</b>	<b>4 - 6</b>	<b>7 - 9</b>	<b>10 - 12</b>
*Note: Head bobbing alone suggests severe respiratory distress and mandates immediate evaluation by a clinician				
<b>Inclusion Criteria</b>		<b>Exclusion Criteria</b>		
<input type="checkbox"/> Greater than or equal to 2 years old <input type="checkbox"/> History of asthma, albuterol use, or recurrent cough/wheeze		<input type="checkbox"/> Stridor <input type="checkbox"/> History suggestive of foreign body <input type="checkbox"/> Chronic lung disease: cystic fibrosis, restrictive lung disease, bronchopulmonary disease <input type="checkbox"/> Congenital heart disease <input type="checkbox"/> Anatomical airway abnormalities: vocal cord paralysis, tracheomalacia, tracheostomy dependent <input type="checkbox"/> Immunocompromise/immunosuppression <input type="checkbox"/> Medically complex: neurologic disorder, metabolic disorder, mitochondrial disorder, etc		
*Must meet BOTH inclusion criteria and NONE of the exclusion criteria to be eligible for the CED Asthma Care Pathway				
*If the treating physician makes a diagnosis of bronchiolitis, croup or pneumonia the CED Asthma Care Pathway may no longer be used				



### Primary Interventions/PDSA cycles:

1. Implementation of **PAS scoring system**
2. Nursing staff and provider education on PAS risk stratification scoring system and Asthma Care Pathway (3 separate **education sessions**)
3. Implementation of **Asthma Care Pathway**
4. Transformation of Asthma Care Pathway into EHR-compatible **QuickTool**

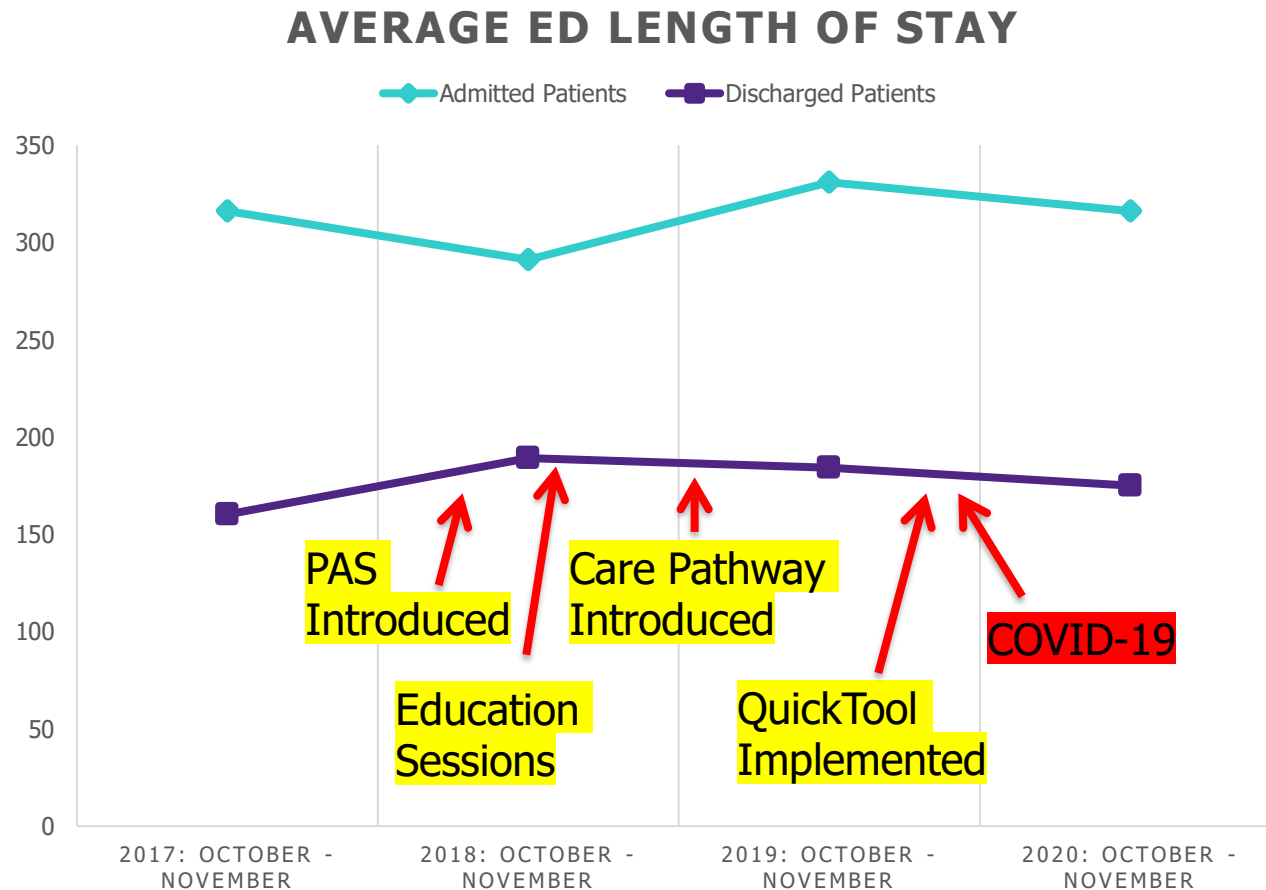
# Methods: Measuring Change



## Metrics and Measures:

- Data Collection: chart audit in 2-month increments as **four study periods:**
  - October 2017 – November 2017 (**Pre-Intervention**)
  - October 2018 – November 2018
  - October 2019 – November 2019
  - October 2020 – November 2020
- Parameters evaluated:
  - Triage start time
  - Time to medication administration
  - Time to Discharge
  - Time to Admission
- Primary outcome measure: **Average ED Length of Stay (LOS)**

# Results



- Overall, average Length of Stay (LOS) was maintained for both discharged and admitted patients
- Year 1: LOS for admitted patients decreased by 8%
- Following incorporation of Asthma QuickTool, LOS decreased for all patients:
  - Admitted patients: 4.5%
  - Discharged patients: 4.9%

## Conclusion

- Use of an *integrated* asthma care pathway can decrease the length of stay for discharged patients and patients admitted to the hospital

**Future directions:** continue to trend data (seasonal variation), evaluate additional outcome/process measures, reincorporate education sessions