

A Comparison of Emergency Department Care and Hospitalization Frequency for Acute Asthma in Pediatric Patients Pre and Post Coronavirus Disease 2019

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Background

- There is little data on the impact of COVID-19 on patients with asthma – especially pediatric patients with asthma, and it is unknown whether or not these patients are at increased risk for severe COVID-19 illness.

Objective

- To evaluate the frequency and outcomes of emergency department care and hospitalization in pediatric patients with acute asthma at SSM Health Cardinal Glennon Children's Hospital in light of the COVID-19 pandemic

Methods

Study Design

- Retrospective chart review analyzing electronic medical records from January 1st to June 30th in 2018, 2019, and 2020

Inclusion/Exclusion Criteria

- Patients 20 years old or younger who required emergency department care or hospitalization between January 1st and June 30th in 2018, 2019, or 2020
- Patients with chronic lung diseases or diseases that may mimic asthma symptoms (i.e. cerebral palsy)

Data Analysis

- Data analysis consisted of calculated averages and nominal outcome data.

Table 1: Patient Characteristics

Characteristic	N = 2089
Age - Years	
Average Age	7.6
Standard Deviation	4.76
Median Age	6.6
Interquartile Range	3.8 to 10.8
Female Sex – No. (%)	850 (41)
Race – No. (%)	
Black / African American	1609 (77)
White / Caucasian	338 (16)
Asian	22 (1)
Multi-Racial	65 (3)
Hispanic or Latino Origin	51 (2)
Declined to Answer	18 (1)
Unavailable	29 (1)

Results

Figure 1: Spring Asthma Emergency Room Visits by Year 2018-2020

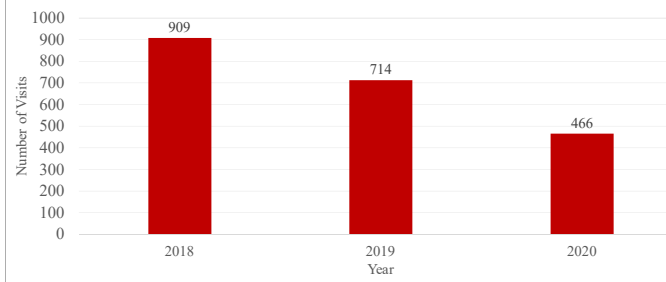


Figure 2: Spring Asthma Exacerbation Outcomes by Year 2018-2020

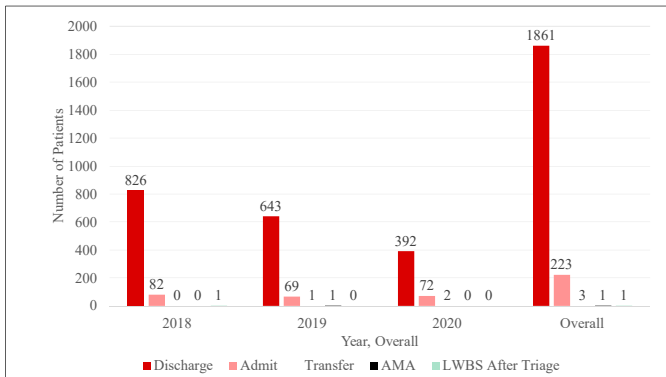
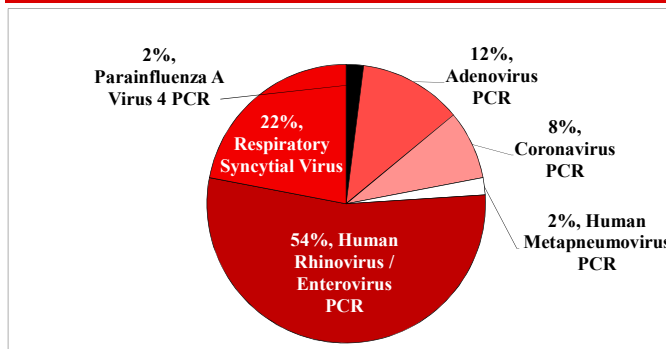


Figure 3: Overall Respiratory Pathogen Panel Findings 2018-2020



Results

Table 3. Percent Change in Hospitalizations Over Time

Time Interval	Percent Change
2018 to 2019	21%
2019 to 2020	35%
2018 to 2020	49%

Table 4. Month of Emergency Room Presentation

Month – No. (%)	N = 2089
January	361 (17)
February	392 (19)
March	427 (20)
April	341 (16)
May	396 (19)
June	172 (8)

Discussion

- Spring 2020 showed an almost 50% reduction in the frequency of acute asthma exacerbations leading to emergency department presentations compared to Spring 2018.
- There was a decrease in the primary outcome by approximately 21% from 2018 to 2019 and by approximately 35% from 2019 to 2020.
- Only 3% of subjects had a respiratory pathogen panel resulted – thus this study is unable to affirm or deny correlation or causation between acute asthma exacerbations and respiratory pathogens.
- Approximately one fifth of patients were diagnosed with acute asthma exacerbation triggered by environmental factors such as exposure to tobacco smoke. Only about 3% of patients had a family history of asthma.
- Most patients were covered by some form of commercial or government-assisted health insurance coverage, however roughly 5% of patients had no recorded health insurance coverage at all. Depending on the percentage of the local population that has some form of health insurance, this may point toward a potential barrier to care if it is almost entirely those with health insurance that are seen.

Conclusions

- The frequency of acute asthma exacerbations requiring emergency department care and hospitalization have decreased at an increasing rate from Spring 2018 through Spring 2020.
- Factors contributing to the decreasing rate of acute asthma exacerbations (social restrictions, asthma medication adherence health insurance, etc.) may provide ample opportunity to research and demonstrate the impact of pharmacists on patient care.