

Implementation of a Nurse-Driven Asthma Protocol to Improve Timeliness of Medication Administration and Length of Stay in a Pediatric Emergency Department

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PROBLEM STATEMENT

- Acute asthma exacerbations lead to an increase in pediatric emergency department (ED) visits.
- This places an economic burden on pediatric EDs to provide prompt and efficient treatment to reduce morbidity.
- ED overcrowding and increased length of stay (LOS) results in reduction of quality of care and delayed initial treatment for pediatric patients with acute asthma symptoms.
- When initiated promptly, utilization of nurse-driven ED protocols can effectively decrease time to treatment, decrease LOS, and reduce unnecessary resource utilization.

PROJECT PURPOSE

- To improve timeliness of asthma treatment and decrease ED LOS by implementing a nurse-driven ED asthma protocol for pediatric patients, 2-18 years old, who present with symptoms consistent with acute asthma exacerbation to the pediatric ED.
- The objective of this project is to implement a nurse-driven ED asthma triage protocol by promptly assigning a respiratory score and administration of first albuterol treatment.

MODEL/NURSING THEORY

- The Model for Improvement is a tool that is used to accelerate improvement within an organization as opposed to replacing a model or protocol that is already in place.
- This model effectively communicates the relationship between the formally established ED RN protocol and the need to improve upon this with the introduction of an ED asthma triage pathway, thus improving patient outcomes.
- The Change Theory of Nursing is a model that illustrates the process of changing behaviors by rejecting prior learning and replacing it with new interventions or ideas to transform nursing at the point-of-care.

METHODS

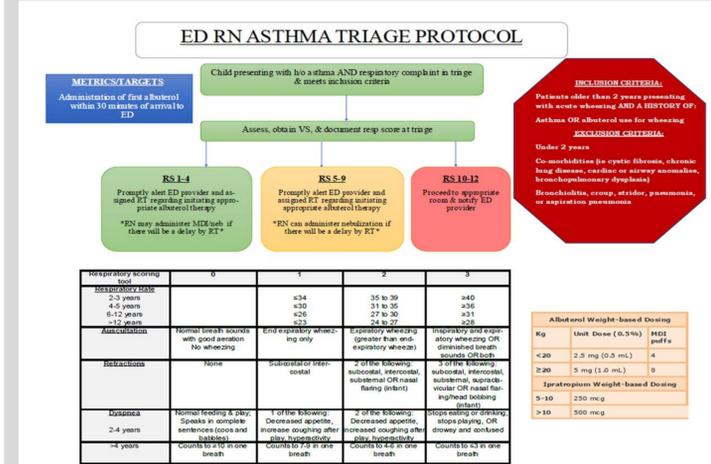
Subjects (Participants)

- Pediatric patients (2-18 years old; male and female) presenting to the ED with symptoms consistent with acute asthma exacerbation and known history of asthma.

Setting

- The project site is a freestanding children's hospital with a dedicated 18 bed pediatric ED. The ED staffs 24 providers (11 pediatric emergency medicine physicians, 4 pediatricians, and 9 advanced practice nurses), several family and pediatric residents, and students, as well as pediatric nurses, RTs, and medics.

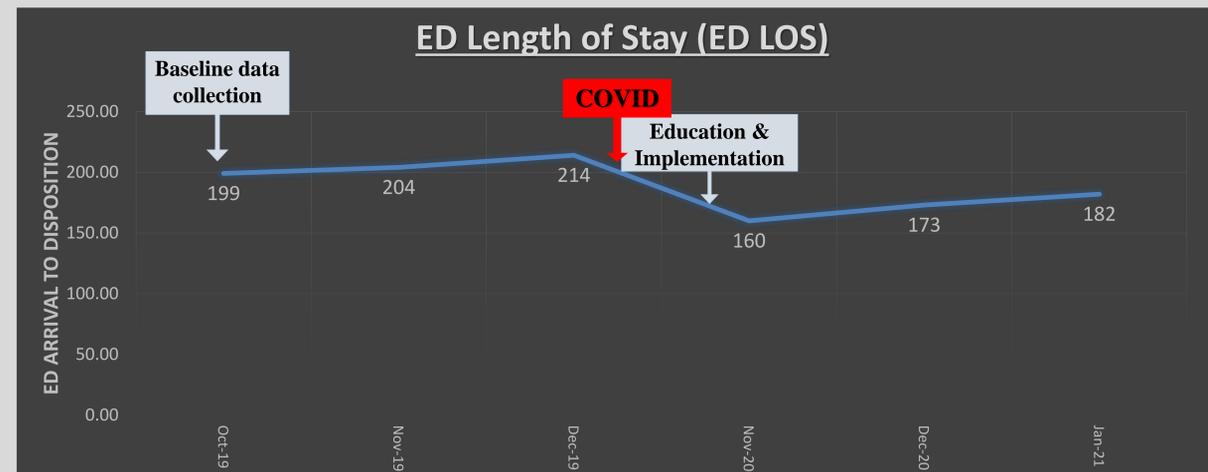
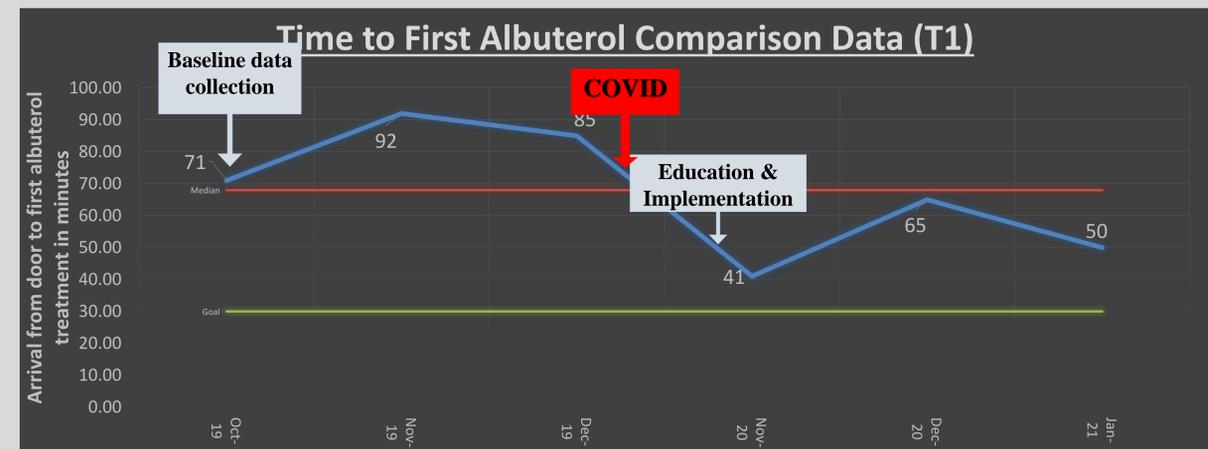
Instruments/Tools



RESULTS

	Pre-intervention n=176	Post-intervention n=42
Age in years	7.5 ± 4.2	6.9 ± 4.1
Baseline asthma respiratory score	4.16 ± 2.2	4.7 ± 2.4
Disposition: Home	143 (81%)	32 (76%)
Disposition: Admission	33 (19%)	10 (24%)

Outcome measure	Pre-intervention n n=176	Post-intervention n n=42	Mean difference	95% CI	P-value
Arrival to first albuterol (T1)	82.2 ± 52.8	54.5 ± 28.9	27.8	15.9, 39.6	<0.001
Length of stay in the ED (ED LOS)	205.7 ± 103.3	171.0 ± 64.1	34.7	1.8, 67.5	0.039



Intervention and Data Collection

- Retrospective data collection obtained between 10/2019 and 12/2019, manually reviewed outcome measures T1 (time to first albuterol) and ED LOS.
- Unit based education sessions provided prior to protocol implementation.
- Post-intervention data collected between 11/2020 to 1/2021.
- SPSS utilized to analyze comparative outcome measures using independent t-test statistics.

DISCUSSION

- The findings demonstrate that use of a nurse-initiated asthma protocol in the ED can effectively decrease time from arrival to first albuterol treatment among pediatric patients presenting with acute asthma exacerbation.
- There was a statistically significant reduction in T1 by 27.8 minutes.
- There was also a reduction in ED LOS by 34.7 minutes among the pre- and post-intervention groups, which was statistically significant.

LIMITATIONS

- A major limitation during this period of data collection and project implementation was the COVID-19 pandemic.
- Among the pediatric population nationwide, there was significant decrease in healthcare visits, ultimately affecting the sample size of post-intervention subjects.

IMPLICATIONS FOR ADVANCE PRACTICE NURSING

- Utilization of a nurse-driven ED protocol to rapidly assess and initiate treatment prior to provider assessment will optimize patient care by improve outcomes, increase nurse autonomy, and improve ED productivity.
- Implementation of additional nurse-driven ED protocols such as appendicitis and pain management.

SUSTAINABILITY

- Future studies might examine the use of nurse-driven protocols and the relationship to reduction in admission or ED recidivism.
- In addition, future studies can investigate the correlation between expedited care with the use of nurse-driven protocols and patient and family satisfaction scores.

REFERENCES



Although the sample size was dramatically affected as a result of the COVID-19 pandemic and its low rate of serious illness in children, the results demonstrate that initiation of nurse-driven protocol in the ED is effective at reduction of time to treatment, as well as length of stay in the ED. Furthermore, this suggests that utilization of a nurse-driven ED protocol to rapidly assess and initiate treatment prior to provider assessment will optimize patient care by improving outcomes, increase nurse autonomy, and improve ED productivity