

EVALUATION OF INITIAL MODIFIED PULMONARY INDEX SCORE (MPIS) TO PREDICT HOSPITAL ADMISSION FOR PEDIATRIC ASTHMA EXACERBATIONS

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Background: Patients presenting to the pediatric emergency department (PED) with asthma exacerbations require prompt evaluation and treatment. The inability of pediatric patients to perform reliable bedside pulmonary function measurements requires alternative means of evaluation; therefore, asthma scoring systems are often utilized. We implemented an evidence-based standing order-set (SOS) in February 2012. Initiation of the order-set was based upon patients' MPIS. In this investigation, we assessed the relationship between initial MPIS and patient disposition.

Methods: Patients between the ages of 2 and 18 years with a history of asthma who presented to our PED were retrospectively identified from electronic health records between February 23, 2012 (date of SOS implementation) and July 23, 2012. Data collected included age, maximum initial MPIS, and patient disposition. Statistical analysis was carried out using Fisher's exact test for categorical variables and unpaired t-test for continuous variables.

Results: Of the 173 SOS-eligible patients, 134 (77%, mean age 6.6 ± 3.5 years) had an MPIS documented. Fifty-three (40%) of these patients had an initial score of < 6 (the threshold for SOS implementation), and 81 (60%) had an MPIS of ≥ 6 . The admission rates were 7.5% and 27.8%, respectively, for these two groups ($p \leq 0.01$). The mean initial MPIS for admitted patients was 9.2 ± 3.9 compared to 6.0 ± 3.2 for those not admitted ($p \leq 0.01$). Admission rates for discrete initial MPIS ranges were as follows: 0-3 = 8.3%, 4-6 = 7.1%, 7-9 = 23.3%, 10-12 = 35.3%, and $> 12 = 62.5\%$. Likelihood ratios for initial MPIS score thresholds of 3, 6, 9, and 12 were 1.2, 1.9, 3.3 and 6.9, respectively.

Conclusion: Patients with an initial MPIS ≥ 6 are significantly more likely to require hospital admission. An MPIS threshold of 6 appears to be a reasonable cut-off value for the implementation of our SOS for asthma patients in our PED. Higher initial MPIS values are stronger predictors of need for inpatient care.