

Implementation of an Evidence-Based Protocol for the Diagnosis of Asthma

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Structured Abstract

LOCAL PROBLEM

Reversible airflow limitation demonstrated by spirometry is the evidence-based standard of asthma diagnosis. Lack of clinician adherence to evidence-based evaluation and diagnosis of asthma poses a significant challenge in the control of asthma symptoms. While under-diagnosis of asthma may result in increased exacerbations and ER visits, misdiagnosis may result in unnecessary treatment and potential adverse effects. Further, 11% of patients that had been diagnosed with asthma without the use of spirometry did not have the condition within the United States. Studies report at least 10% of Alabama's population had been diagnosed with asthma as of 2017, and the prevalence of patients diagnosed with asthma in Westchester County, New York from 2012 to 2013 was 98.4%. An accurate asthma diagnosis is imperative for positive health outcomes.

PROJECT PURPOSE

The purpose of this DNP project was to implement a protocol that guided clinicians in evidence-based evaluation and treatment of individuals presenting with a history and symptoms consistent with asthma. Project effectiveness was evaluated through pre- and post-implementation retrospective data reviews of patient records.

METHODOLOGY

The Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework was used to guide this DNP project. A standard of care evidence-based asthma evaluation and diagnosis protocol including an asthma checklist of self-reported symptoms and physical exam findings along with spirometry testing was implemented in 2 clinics located in Birmingham, Alabama and New Rochelle, NY. Self-reported symptoms included night cough, difficulty breathing, wheezing, atopic dermatitis, and previous bronchodilator use. Physical exam findings included dyspnea, atopic dermatitis, resting oxygen saturation, wheezing, and decreased breath sounds. After IRB approval, retrospective data review was conducted on a random sampling of charts of patients five years and older both pre- and post- implementation. Descriptive statistics and multivariate logistic regression analysis was completed.

RESULTS

A total of 200 patients ages 5-78 were sampled; 100 patients were evaluated before implementing the evidence-based protocol and 100 patients were evaluated after the spirometry-based protocol was implemented. For both the pre- and post-intervention patient groups, 70% were sampled from the Alabama clinic and 30% from the New York clinic. A multinomial logistic regression analysis determined which of the variables could be used to predict a positive asthma diagnosis. The variables with a statistically

significant (p-value < 0.05) effect on asthma diagnosis were retained in the summary. According to the pvalue, the variables that accurately predict a positive asthma diagnosis are decreased breathing sounds, wheezing, previous bronchodilator use, and chest tightness. Although all the self-reported symptoms and physical exam findings can predict asthma diagnosis, only self-reported chest tightness (p-value = 0.010), wheezing (p-value = 0.017), previous bronchodilator use (p-value = 0.013), and physical examination findings of decreased breathing sound (p-value = 0.036) can accurately predict a positive diagnosis. The referrals for confirmatory spirometry testing increased from 28% to 72% of all referrals made after introducing the evidence-based protocol. Following the implementation of the evaluation and diagnostic protocol, the number of spirometry confirmed asthma diagnoses increased by 157%. Previous bronchodilator use increased the odds of a positive asthma diagnosis by 16 times. Physical exam findings of decreased breath sounds increased the odds of a positive diagnosis by 14.7% respectively.

IMPLICATIONS FOR PRACTICE

Spirometry is the evidence-based tool for diagnosing persons with asthma. However, asthma diagnosis by spirometry has been underused, leading to misdiagnosis of the condition. The results of the study support spirometry as the evidence-based tool for diagnosing persons with asthma. The study supports the continued use of the implemented asthma checklist protocol consisting of self-reported symptoms and physical exam findings along with spirometry testing to accurately confirm an asthma diagnosis.

Keywords: asthma, outpatient care, provider education, spirometry

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