sample was taken and analyzed by flow cytometry. eNO was measured by using an NO analyzer. Univariate linear regression analysis was used to determine correlations between continuous variables and eNO concentrations.

RESULTS. eNO levels were significantly elevated in patients with moderate-to-severe asthma compared with those in healthy subjects (18.53 ± 2.00 vs 5.90 ± 0.90 ppb). With treatment, eNO levels in patients with moderate-to-severe asthma decreased to levels near those of the healthy subjects by 4 weeks. Interferon γ expression was decreased in patients with moderate-to-severe asthma. An elevated eNO level was also associated with decreased interleukin 4 and interleukin 13 cytokine expression in CD8 lymphocytes.

CONCLUSIONS. eNO levels were elevated in patients with moderate-to-severe asthma. With 4 weeks of treatment, eNO levels in patients with moderate-to-severe asthma were no different from those in the control subjects. There was decreased interferon γ expression by the CD4- and CD8-positive peripheral blood lymphocytes of patients with moderate-to-severe asthma. Elevated eNO levels were associated with suppression of both T-helper 1 and 2 cytokine expression by the peripheral blood lymphocyte, suggesting a systemic immunomodulatory effect.

REVIEWER COMMENTS. This study adds to the growing information on the utility of eNO levels to monitor asthma-treatment response. It demonstrates how eNO can be used to measure the reduction in airway inflammation as a response to treatment primarily in patients with moderate-to-severe asthma. At this point, it is not clear what the implications are of the association between elevated eNO levels and cytokine suppression.

Cardiopulmonary Exercise Testing in Children and Adolescents With Asthma Who Report Symptoms of Exercise-Induced Bronchoconstriction
Joyner BL, Fiorino EK, Matta-Arroyo E, Needleman JP. J Asthma. 2006;43:675–678

PURPOSE OF THE STUDY. To use cardiopulmonary exercise testing (CPET) to establish the cause of exercise limitation in a population of children with asthma who were reporting symptoms of exercise-induced bronchoconstriction (EIB).

STUDY POPULATION. A total of 42 children (aged 7 to 19 years) who continued to report exercise-associated symptoms attributed to asthma despite daily controller therapy were included in the study. There were 22 boys and 20 girls. All patients were receiving daily inhaled corticosteroids and had normal pulmonary function at the time of the study. Patients were excluded if they had underlying cardiac disease, had another chronic lung disease, or were unable to ride the cycle ergometer.

METHODS. Each patient’s BMI was calculated, and baseline spirometry was performed. Then, the patients performed cycle ergometry with a ramp protocol to voluntary exhaustion to determine maximal oxygen consumption (V̇O₂). Spirometry was repeated at intervals of 5 and 20 minutes. A decrease of 10% in forced expiratory volume in 1 second was considered a positive finding of EIB.

RESULTS. Ten patients (24%) developed EIB after CPET. There were no significant differences in BMI, BMI z score, V̇O₂, or initial pulmonary function between the subjects who developed EIB and those who did not.

CONCLUSIONS. Exercise limitation without EIB was found in both obese and nonobese patients, suggesting that poor fitness is a problem independent of body habitus. Including CPET in the management of children with suspected EIB would provide a better understanding of the etiology of their symptoms and facilitate more appropriate treatment.

REVIEWER COMMENTS. This study illustrates how a patient’s BMI does not directly correlate with fitness levels. Nonobese individuals can be just as out of shape as obese individuals. Given the trend toward more obesity in this country, it is important to not let any generalizations based on body habitus affect our judgment as physicians. Therefore, when a nonobese individual presents with symptoms similar to EIB, it may be prudent to have them undergo CPET before labeling them as asthmatic.

The Impact of Spirometry on Pediatric Asthma Diagnosis and Treatment

PURPOSE OF THE STUDY. To evaluate the use of spirometry as a diagnostic tool in a pediatric asthma-management program at an inner-city community health clinic.

STUDY POPULATION. The study profiled 56 pediatric patients who presented with respiratory symptoms that were indicative of an acute asthma exacerbation.

METHODS. Clinicians recorded each patient’s history of asthma symptoms as well as heart rate, respiratory rate, and pulse oximetry. Patients then were assessed for current asthma symptoms and given an initial assessment of asthma, upper respiratory infection, or both. An initial treatment plan for nonreactive airway management, al-
Cardiopulmonary Exercise Testing in Children and Adolescents With Asthma Who Report Symptoms of Exercise-Induced Bronchoconstriction

Fawwaz Humayun and Harvey L. Leo

*Pediatrics* 2007;120;S135

DOI: 10.1542/peds.2007-0846FF

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Cardiopulmonary Exercise Testing in Children and Adolescents With Asthma Who Report Symptoms of Exercise-Induced Bronchoconstriction
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