cise and postexercise spirometry with the addition of oxygen uptake, carbon dioxide production, continuous oximetry, and electrocardiogram monitoring during most tests. EIA was diagnosed if treadmill exercise resulted in reproduction of symptoms in association with a decrease in forced expiratory volume in 1 second of at least 15%. Endoscopy was performed if stridor and/or decreased maximal inspiratory flow were present. Criteria were established for restrictive abnormalities, physiologic limitation, exercise-induced hyperventilation, and normal physiologic limitation.

RESULTS. EID was present in the subjects for an average of 30.2 months (range: <1 to 192 months) before evaluation, and in 98 patients the symptoms were attributed to asthma. Symptoms of EID were reproduced during exercise testing in 117 patients. EIA was identified as the cause of EID in only 11 of the 117. Seventy-four demonstrated only normal physiologic exercise limitation; 48 of the 74 had normal-to-high cardiovascular conditioning, and 26 had poor conditioning. Other diagnoses for reproducible EID included restrictive abnormalities in 15, vocal cord dysfunction in 13, laryngomalacia in 2, primary hyperventilation in 1, and supraventricular tachycardia in 1.

CONCLUSIONS. The diagnoses of EIA should be questioned as the etiology of EID in children and adolescents who do not have other symptoms of asthma and who do not respond to pretreatment with a β₂ agonist.

REVIEWER COMMENTS. Although asthma is the most common cause of EID, this article demonstrates the important point that not all EID is caused by asthma. Patients who experience EID but not other signs or symptoms of asthma or who do not benefit from pretreatment with an inhaled β₂ agonist clearly can benefit from a treadmill test with cardiac and respiratory physiologic monitoring. A large portion of these patients demonstrated normal physiologic limitation associated with reproduction of symptoms. Routine treatment of EID as asthma can lead to both unnecessary medication and frustration on the part of the patients and their families.

Predictors of Primary Care Follow-up After a Pediatric Emergency Visit for Asthma

PURPOSE OF THE STUDY. To identify predictors associated with primary care pediatrician (PCP) follow-up in children evaluated for acute asthma in a pediatric emergency department (ED).

STUDY POPULATION. Parents of children aged 2 to 18 years being discharged after asthma treatment in a pediatric ED.

METHODS. Parents were surveyed by coordinators and described their child’s asthma history and perceived benefits and barriers to making a PCP follow-up visit. Bivariate tests and multivariable logistic regression were used to determine association with completion of a follow-up visit within 4 weeks of the ED visit.

RESULTS. A total of 278 subjects (n = 278) were enrolled; 55% saw their PCP within 4 weeks of the ED visit. Baseline factors that were associated with an increased likelihood of follow-up included a recent hospitalization, >1 ED visit for asthma in the past year, the parent’s assessment that the child had “very severe” asthma, and current daily use of a controller medication. Parental beliefs that taking daily asthma medications and finding out about the causes of asthma attacks were also associated with increased PCP follow-up rate. Parents were less likely to follow-up if they reported a lack of convenient appointments or prolonged waits in the PCP office. A multivariable model including clinical factors, parental beliefs, and the study intervention predicted the likelihood of follow-up.

CONCLUSIONS. Parental beliefs about asthma severity, the benefits of controlling asthma, and organizational barriers to seeing a PCP were associated with follow-up after a pediatric ED visit for asthma.

REVIEWER COMMENTS. Many children receive their first and subsequent follow-up visits for acute asthma attacks in the ED. Unfortunately, this is an inefficient and costly prohibitive method of managing asthma. This study attempted to identify parental perceptions of their child’s disease and the barriers to proper follow-up. These issues are paramount for the pediatrician caring for these children. Addressing parental concerns and removing barriers to follow-up can improve asthma control and allow for more cost-effective management and proper utilization of health care resources. Both the acute treating physician and practicing pediatrician can influence the possibility of appropriate follow-up and care.

Use of Asthma Guidelines by Primary Care Providers to Reduce Hospitalizations and Emergency Department Visits in Poor, Minority, Urban Children

PURPOSE OF THE STUDY. To determine if a standardized city-wide asthma management program delivered by pri-
primary care providers (PCPs) would increase adherence with the National Asthma Education and Prevention Program guidelines and whether this would improve medical service utilization.

STUDY POPULATION. Children between 6 months and 18 years of age (n = 8324) who presented for care at any of 6 primary care clinics in Hartford, Connecticut, between 1998 and 2002 and had enrolled in either Medicaid or the State Children’s Health Insurance Plan (SCHIP).

METHODS. Enrollment in the Easy Breathing asthma management program for PCPs included completing a survey regarding the child’s clinical history, provider assessment of asthma severity, and a written asthma treatment plan for the caregiver. Providers underwent training in the Easy Breathing curriculum. Data regarding demographics for enrolled patients were obtained from the survey and compared with all resident children in Hartford. Claims data were obtained. Utilization of medical services and prescriptions was examined. Children were continuously enrolled in the program during the 4-year analysis period. Relative rates of utilization (in event/child-months) were compared for the same children before and after enrollment.

RESULTS. Of the 1799 children with persistent asthma, only 38% were treated with antiinflammatory therapy before Easy Breathing; after enrollment, this improved to 96%, with 85% of those treated specifically with an inhaled corticosteroid. After enrollment in Easy Breathing, the rate of hospitalization for all children with asthma decreased 35% (P < .006), and the decrease was sustained over 3 years. There was a 27% overall decrease in emergency department (ED) visits for asthma (P < .01) and less seasonal variation in hospitalizations. Adjusted relative rates for total and asthma-specific ED and hospital visits decreased significantly for children with persistent asthma. Decreases in adjusted rates of outpatient visits after enrollment were also found for children overall (19%; P < .0001). This was true for children with intermittent asthma (22%; P < .001) and persistent asthma (18%; P < .001).

CONCLUSIONS. Adherence to National Asthma Education and Prevention Program guidelines by PCPs managing asthma for low-income minority children decreased their total number of hospitalizations and asthma-specific ED visits and outpatient visits. The authors believe that contributors to the success of the program include the standardized approach to therapy, including inhaled corticosteroids when indicated, as well as the development of a written, individualized asthma treatment plan. The benefits of the program continued through the 3 years.

REVIEWER COMMENTS. Despite a few limitations (nonrandomized, use of claims data), this study strongly reinforces the idea that improving asthma management relies not only on patient adherence but also physician review and faithful implementation of the current guidelines. PCPs managing asthma in low-income, urban, minority children would benefit the community by participating in such standardized programs that are focused on diagnosis and treatment. This not only decreases the morbidity related to asthma in these children but also alleviates the financial burden involved in excessive utilization of medical services.

A Multisite Randomized Trial of the Effects of Physician Education and Organizational Change in Chronic Asthma Care: Cost-effectiveness Analysis of the Pediatric Asthma Care Patient Outcomes Research Team II (PAC-PORT II)

PURPOSE OF THE STUDY. To estimate the cost-effectiveness of 2 different asthma care interventions: a peer leader–based physician behavior-change intervention (PLE) and a practice-based redesign called the planned asthma care intervention (PACI).

STUDY POPULATION. Participants were 638 children (aged 3–17 years) with mild-to-moderate asthma. More than half of the subjects were on maintenance medication.

METHODS. This was a 3-arm cluster-randomized trial conducted in 42 primary care practices. These practices were randomly assigned to PLE (n = 226), PACI (n = 213), or usual care (n = 199). The PLE strategy involved training a pediatrician at each of the practice sites as an asthma expert and champion. This leader provided support, education, and feedback to the other members of the practice with regard to asthma management. The PACI strategy included all the components of the PLE arm and also included scheduled asthma care visits with an asthma nurse, who provided standardized assessments, care planning, coordination with the primary care physician, and self-management tools. Practices in the usual-care arm received copies of the National Asthma Education and Prevention Program Expert Panel Report 2 and patient-information handouts 12 months into the study. The subjects were followed for 2 years. The primary outcome was symptom-free days (SFDs). Costs included asthma-related health care utilization and intervention.

RESULTS. Patients in the usual-care arm of the study had in increase in SFDs of 14.8 per year. Patients in the PLE and
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