tation between unchecked T-helper 2 responses and the development of atopy. As the authors suggested, mechanisms may include a deficiency in the regulatory activity of CD4+CD25+ T cells in atopic individuals or an activation and expansion of CD4+CD25- T cells in response to allergen exposure to a degree that overcomes the regulatory capacity of the CD4+CD25+ T cells. Although additional study will be necessary before these results can be applied clinically, augmentation of CD4+CD25+ T cell suppression of the T-helper 2 response may represent a future therapy for atopic disease.

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DIAGNOSIS AND MANAGEMENT

CLASSIFYING ASTHMA SEVERITY IN CHILDREN: MISMATCH BETWEEN SYMPTOMS, MEDICATION USE, AND LUNG FUNCTION


Purpose of the Study. To determine if lung-function measures are consistent with levels of asthma severity as defined by the National Asthma Education and Prevention Program/Expert Panel Report 2 guidelines.

Study Population. Children (n = 219) aged 5 to 18 years (mean age: 10.1 ± 3.4 years) with asthma attending 2 academic medical center subspecialty clinics for routine evaluation of asthma.

Methods. Parents completed questionnaires regarding asthma medication use and symptom frequency. Children performed spirometry. Symptom frequency (daytime, nighttime, and exertional) was used to classify severity of asthma according to the National Asthma Education and Prevention Program/Expert Panel Report 2 guidelines. Asthma severity was also categorized by medication use suggested in the guidelines. For inhaled corticosteroid (ICS) use, the average daily microgram dose actually taken was classified as low, medium, or high based on the guidelines. Patients receiving low-dose ICS or another controller medication (leukotriene receptor antagonists, cromolyn, nedocromil, or theophylline) alone were assigned mild persistent asthma status. Patients receiving low-dose ICS plus 1 additional controller medication or a medium dose of an ICS alone were classified as moderate persistent. The use of moderate-dose ICS with additional controller medication, the use of high-dose ICS, or the use of >2 controller medications resulted in a classification of severe persistent asthma (Table 1).

Results. Patients tended to report very good levels of asthma symptom control, with 68.1% of patients being classified as intermittent or mild persistent based on symptom frequency. However, because the majority of patients were receiving controller therapy, the distribution of severity assignments was shifted toward more severe disease when medication use alone was considered.

Conclusions. The authors concluded that in children, asthma severity classified by symptom frequency and medication usage does not correlate with forced expiratory volume in 1 second (FEV1) categories defined by National Asthma Education and Prevention Program guidelines. FEV1 is generally normal even in severe persistent childhood asthma.

Reviewer’s Comments. As the authors’ noted, “classification of asthma severity is complex and is influenced by the variability of disease severity within a patient over time as well as being confounded by current asthma treatment.” Rather than trying to hit the moving target of asthma severity classification, I believe it is preferable to focus on achieving good asthma control, defined by normal and/or personal-best spirometry and rare need for albuterol. If assignment to a severity category is still desired, this can be based on the amount of medication required to achieve good asthma control.

John M. Kelso, MD
San Diego, CA

PEAK FLOW MONITORING FOR GUIDED SELF-MANAGEMENT IN CHILDHOOD ASTHMA: A RANDOMIZED CONTROLLED TRIAL


Purpose of the Study. To determine if the addition of peak expiratory flow (PEF) recordings to a symptom-based self-management plan improved outcome in schoolchildren with asthma.

Study Population. Children (n = 90), aged 7 to 14 years with physician-diagnosed asthma, who are on regular inhaled corticosteroid therapy.

Methods. Children were randomized to receive a management plan based on either symptoms alone or symptoms plus PEF readings for 12 weeks. Children were asked to perform twice-daily spirometry (using an electronic recording spirometer that revealed PEF results only to the symptoms-plus-PEF group) and record a symptom diary. The child and the main caregiver were taught self-management at a training session. A printed plan, based on the child’s best previous PEF and incorporating the child’s own medication regime, was color coded: green: PEF ≥70%, few symptoms (carry on as usual); yellow: PEF 50% to 70% after β2 agonist (double-inhaled corticosteroid as well as taking additional β2-agonist therapy); red: PEF <50% after taking additional inhaled β2 agonist, severe symptoms (commence oral prednisolone and/or seek medical help).

Results. There were no differences between groups in mean symptom score or in spirometric lung function, PEF, quality-of-life score, or reported use of health services. During acute episodes, children responded to changes in symptoms by increasing their inhaled steroids at a mean PEF value of >70% of best so that overall PEF did not contribute to this important self-management decision.

Conclusions. This trial does not support the hypothesis that the routine incorporation of PEF monitoring into guided self-management protocols for schoolchildren with asthma improves the outcome. Knowledge of PEF did not enhance self-management even during acute exacerbations.


TABLE 1. Distribution of Patients by Level of Severity

<table>
<thead>
<tr>
<th>Basis for Severity Classifications</th>
<th>Symptoms, %</th>
<th>Medications, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild intermittent</td>
<td>39.3</td>
<td>18.0</td>
</tr>
<tr>
<td>Mild persistent</td>
<td>28.8</td>
<td>26.7</td>
</tr>
<tr>
<td>Moderate persistent</td>
<td>15.1</td>
<td>20.4</td>
</tr>
<tr>
<td>Severe persistent</td>
<td>16.9</td>
<td>35.0</td>
</tr>
</tbody>
</table>

Forced expiratory volume in 1 second (%) predicted did not differ by level of asthma severity.
peak-flow meters. We have ample evidence to abandon the routine use of written action plans were or were not provided. I believe plans based on peak-flow measurements to those based on medical management alone.” A recent Cochrane systematic review also found no difference in improving health care utilization, symptoms, or lung function and even further that “data are insufficient to support or refute the benefits of using written asthma action plans compared with symptom-based plans in children.” Pub. 02-5075) found that “evidence neither supports nor refutes the benefits of written action plans based on peak-flow monitoring compared with symptom-based plans in improving health care utilization, symptoms, or lung function” and even further that “data are insufficient to support or refute the benefits of using written asthma action plans compared with medical management alone.” A recent Cochrane systematic review also found no difference in any outcome measure when comparing written action plans based on peak-flow measurements to those based on symptoms or any difference in outcomes when formal written action plans were or were not provided. I believe we have ample evidence to abandon the routine use of peak-flow meters.

JOHN M. KELSO, MD
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COUGHING IN PRE-SCHOOL CHILDREN IN GENERAL PRACTICE: WHEN ARE RAST’s FOR INHALATION ALLERGY INDICATED?


Purpose of the Study. To identify patterns of clinical history associated with extreme (high or low) probabilities of allergic sensitization in coughing children to restrict allergy testing to those with an intermediate probability of sensitization.

Study Population. A total of 752 children in the Netherlands, aged 1 to 4 years, visiting their general practitioners for coughing (≥5 days), were studied.

Methods. Parents completed a questionnaire on family history of atopy, breastfeeding, smoking, pets, and floor covering. Sera from the children were tested for IgE antibodies to house dust mite, cat, and dog by using the RadioAllergoSorbent Test (RAST). Data of 640 children could be analyzed; 83 children (13%) were IgE positive to at least 1 allergen. In a logistic-regression analysis, a scoring formula for the prediction of being IgE positive was constructed by using variables from the patient’s history.

Results. Significant contributors for sensitization were: 3 to 4 years old (odds ratio[OR]: 2.6), infantile eczema (OR: 5.4), positive family history of mite allergy (OR: 2.2), sibling(s) with pollen allergy (OR: 5.5), and smoking by parents (OR: 1.8). If only 1 of these characteristics is present, the probability of sensitization was <25%.

Conclusions. Patient history–derived information contributes to distinguishing children who are at low risk for sensitization to house dust mite, cat, and dog. Watchful waiting may be preferred over testing if only 1 risk factor is present. Otherwise, a negative RAST may help to exclude sensitization, whereas a positive RAST helps to establish the diagnosis.

Reviewers’ Comments. Chronic cough is a very common symptom in childhood and accounts for a large number of visits to the pediatrician each year. Although many allergic children have symptoms of cough, there are numerous diagnoses that also need to be considered during an evaluation for chronic cough. This study supports limiting allergy testing in children with persistent cough to those with particular multiple risk factors for atopy to decrease unnecessary testing in young children.

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BENEFITS OF A SCHOOL-BASED ASTHMA TREATMENT PROGRAM IN THE ABSENCE OF SECONDHAND SMOKE EXPOSURE: RESULTS OF A RANDOMIZED CLINICAL TRIAL


Purpose of the Study. To evaluate the impact of providing inhaled corticosteroids in the school setting on asthma symptoms of urban children with asthma.

Study Population. Children aged 3 to 7 years from 54 urban schools in Rochester, New York, with asthma ranging in severity from mild persistent to severe.

Methods. The study had 2 arms into which patients were randomized: a school-based care group or a usual-care group. In the school-based care group, 2 puffs of fluticasone, 110 µg per puff, were given with a spacer each day that the children were in school. Identical medication with a spacer was given for home use on days that the children were not in school. Those children who were using >1 preventive medication were instructed to continue their other medications at the discretion of their primary care providers. For the patients in the usual-care group, their primary care providers and parents were informed of the severity of their asthma, but there were no other interventions. The main outcome measure was the number of symptom-free days during the 2 weeks leading up to monthly telephone interviews.

Results. Of 242 eligible children, 184 were enrolled; 93 children were allocated to the school-based group, and 91 were allocated to the usual-care group. The overall response rate for the follow-up interviews was 94%. Although there was not a significant difference in symptom-free days between the treatment groups, there were significant improvements in the school-based group in secondary measures such as caregiver quality of life (0.63 change score vs 0.24; P = .047), missed school days because of asthma (6.8 vs 8.8 days; P = .047), and symptom-free days during early winter months (mean days per 2-week period: 9.2 vs 7.3; P = .02). A posthoc analysis revealed that all the significant changes were among children where were not exposed to smoking in the home. Furthermore, among children who were not exposed to second-hand smoke, the school-based care group had more symptom-free days overall (11.5 vs 10.5 days; P = .046), had fewer days needing rescue medications (1.6 vs 2.3 days; P = .03), and were less likely to have had ≥3 acute visits for asthma (6 of 47 vs 17 of 54 children; P = .03).

Conclusions. This study demonstrates that a system involving the provision of inhaled corticosteroids in the school improves a number of outcome measures of asthma including missed school days and quality of life of caregivers. This study also demonstrates that such improvements in asthma outcomes are negated by smoke exposure in the home.

Reviewers’ Comments. Health care providers of children with asthma are often frustrated with patients’ poor adherence to medical treatment plans. This study demonstrated that a change in the system of care, using resources that are available in schools, led to improved outcomes. The investigators did not report specifics about actual adherence to the medical treatment given but stated that the children in the school-based treatment group received their medication 84% of days that school was in session, whereas 63% of those in the usual-care group reported using the daily medication. The difference in outcome measures between the school-based and usual-care groups may have been greater if the authors had controlled for several confounding factors (weekend management, school attendance, etc.).
Peak Flow Monitoring For Guided Self-Management in Childhood Asthma: A Randomized Controlled Trial

John M. Kelso

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John M. Kelso

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