MEDICAL THERAPIES

A Cost-Effectiveness Analysis of Inhaled Corticosteroid Delivery for Children With Asthma in the Emergency Department

PURPOSE OF THE STUDY. To determine the clinical outcomes and cost-effectiveness of 3 inhaled corticosteroid (ICS) delivery options for children with asthma treated in and discharged from the emergency department (ED).

STUDY POPULATION. A hypothetical cohort of children with asthma being discharged from the ED introduced into each arm of the decision tree analysis.

METHODS. A cost-effectiveness decision analysis model was designed by using a decision tree to compare 3 ED-based ICS delivery options: (1) usual care (recommending outpatient follow-up), (2) prescribe (uniformly prescribing ICS), and (3) dispense (uniformly dispensing ICS). Accounting for expected follow-up rates, prescription filling, and medication compliance, the investigators compared projected rates of ED relapse visits and hospitalizations within 1 month of ED visits across all 3 arms; 100 children in each group. Direct and indirect costs were compared.

RESULTS. The model predicts that the rate of return to ED per 100 patients within 1 month of ED visit was 10.6 visits for the usual care arm, 9.4 visits for the prescription arm, and 8.4 visits for the medication-dispensing arm. Rates of hospitalization per 100 patients were 2.4, 2.2, and 1.9, respectively. Direct costs per 100 patients for each arm were $23,000, $20,800, and $19,100, respectively. Including indirect costs related to missed parental work, total costs per 100 patients were $27,100, $22,000, and $20,100, respectively. Total costs savings per 100 patients comparing the usual care arm with the medication dispensing arm was $7000.

CONCLUSIONS. This decision analysis model suggests that uniform prescribing or dispensing of ICS at the time of ED visit for asthma may lead to fewer ED visits and hospital admissions within 1 month of the sentinel ED visit and provides a substantial cost-savings overall.

REVIEWER COMMENTS. Eureka! This is a common sense investigation with expected outcomes and recommendations that should be implemented. How many times are asthmatic children with asthma discharged from the ED with a prescription for oral corticosteroids but without prescribing or dispensing an ICS as an ongoing asthma controller therapy? Although ICSs are the recommended therapy for persistent asthma, they continue to be underprescribed and a minority of patients receives ICSs after acute ED visits for asthma. Although the Global Initiative for Asthma guidelines unequivocally state that children with asthma seen in the ED qualify as persistent and should be started on controller medications, National Heart, Lung, and Blood Institute guidelines do not make clear recommendations in this regard. This investigation implemented a decision analysis model to demonstrate that the uniform dispensing of ICS at the time of ED discharge for children with acute asthma exacerbations reduces subsequent acute care visits for asthma and yields a significant cost-savings per patient.

Corticosteroid Timing and Length of Stay for Children With Asthma in the Emergency Department

PURPOSE OF THE STUDY. To determine if early treatment with oral corticosteroids to pediatric patients with asthma exacerbations in the emergency department could decrease their length of stay.

STUDY POPULATION. Children between the ages of 2 and 18 years who presented to the emergency department with acute asthma exacerbations and received oral corticosteroids, either prednisolone or dexamethasone, were included.

METHODS. Retrospective chart review of 882 children who were seen over the 12-month study period was performed. A standardized asthma treatment algorithm was used as a guide based on severity of exacerbation, but the treating physician decided medications used. Timing of corticosteroid administration and length of stay was calculated by the electronic medical record. Children receiving corticosteroids within 60 minutes of triage were compared with those receiving corticosteroids ≥61 minutes after triage. The 2 groups were compared using either Student’s t test or χ² test, based on the level of measurement.

RESULTS. Children treated with corticosteroids within 60 minutes had a mean length of stay of 157 minutes, whereas children treated later than 60 minutes had a mean length of stay of 182 minutes (P < .0001). The greatest decrease in length of stay was among children who were categorized as having a moderate exacerbation and had a mean 38-minute decrease in length of stay if treated with corticosteroids in the first hour. Both study groups had similar baseline characteristics; however, the group receiving corticosteroids within 60 minutes had a higher percentage of severe exacerbations. Subjects who received dexamethasone had a 19-minute...
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*Pediatrics* 2013;132;S44

DOI: 10.1542/peds.2013-2294

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DOI: 10.1542/peds.2013-2294UUU

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