asthma severity, etc). Nonetheless, this study points the way to future research about and implementation of new systems of asthma care.

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ASTHMA AMONG HOMELESS CHILDREN:
UNDERCOUNTING AND UNDERTREATING THE UNDERSERVED

Purpose of the Study. To determine the prevalence of asthma among a population of homeless children.

Study Population. A total of 740 children whose families entered 3 family shelters in New York City, New York, from June 1998 to September 1999, representing 75% of all children entering these shelters.

Methods. On entry into the shelters, the investigators attempted to screen children with a 1-page, 11-item survey that included questions about daytime and nighttime symptoms, previous diagnosis of asthma, current medications, use of an emergency department for respiratory symptoms, and demographic characteristics. The asthma-symptom questions were coded to allow for staging as outlined in nationally recognized guidelines. The validity of the screening instrument was assessed by comparing the screening results of 117 children with a clinical assessment by a pediatrician or pediatric nurse practitioner. With this assessment, the sensitivity of the screening instrument was 77%, and the specificity was 92%.

Results. The prevalence of asthma in the children who were screened was 39.8%, with 26.9% having a prior physician diagnosis of asthma and 12.9% having no prior diagnosis but symptoms consistent with moderate to severe asthma. Furthermore, 50.3% of these children had current symptoms consistent with mild intermittent to severe asthma. Of those children who were <5 years old, 34.2%, 9.8%, 30.1%, and 25.9% had current symptoms consistent with mild intermittent, mild persistent, moderate, and severe asthma, respectively. Of those children who were ≥5 years old, 45%, 17%, 18%, and 20% had current symptoms consistent with mild intermittent, mild persistent, moderate, and severe asthma, respectively. Of those children with a prior physician diagnosis of asthma, the percentage of patients receiving anti-inflammatory treatment was 4%, 11%, 16%, 28%, and 20% for patients with no symptoms and current symptoms consistent with mild intermittent, mild persistent, moderate, and severe asthma, respectively. Finally, 48.6% of children with current asthma symptoms consistent with severe asthma visited an emergency department in the last year for respiratory symptoms, whereas 54.9% of severe asthmatics (and 68% of mild persistent asthmatics) with a prior physician diagnosis of asthma visited an emergency department in the year last for respiratory symptoms.

Conclusions. The data suggest that the routine use of a screening instrument for asthma would identify many at-risk children, an essential first step to providing them with appropriate medical care. Another remarkable finding is the low rate of use of anti-inflammatory medication even among severe asthmatics. This finding, taken along with the high rate of use of emergency department care for respiratory symptoms, provides evidence for a high rate of undertreatment of asthma among homeless children.

Reviewer’s Comments. This study, which provides evidence for a surprisingly high rate of asthma among homeless children, as well as undertreatment with anti-inflammatory medication and overuse of the emergency department, should be viewed by health care providers as a call to action. The medical system seems to have failed these children, and new approaches to their care are worth considering, such as routine screening for asthma, regular visits with primary care providers, and education of caregivers about asthma.

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A SCHOOL-BASED CASE IDENTIFICATION
PROCESS FOR IDENTIFYING INNER CITY CHILDREN WITH ASTHMA: THE BREATHMOBILE PROGRAM

Purpose of the Study. To evaluate the effectiveness of a school-based screening survey to detect asthma in a large population of inner-city schoolchildren.

Study Population. Parents of schoolchildren in the Los Angeles, California, area.

Methods. A bilingual 7-question self-administered parental asthma-screening survey was administered to 675 consecutive parents before enrolling their children in a free mobile asthma program, the Breathmobile. Participants were recruited by either fliers distributed at the school or referral from school nurses. Surveys were validated by comparing responses to the presence and severity of asthma as determined by the allergist evaluating the patient on the Breathmobile using National Heart, Lung, and Blood Institute guidelines. The surveys (n = 27 526) then were distributed to 1212 classrooms in 24 participating schools, with incentives offered to the teachers for high return rates.

Results. For survey validation, parental responses for 636 children were compared with physician classification, and the combination of questions that provided the best overall sensitivity and specificity were determined. Based on this algorithm, an abbreviated 5-question survey was developed with a positive classification resulting from a “yes” to asthma diagnosis or to any 3 of the following: chest tightness, trouble breathing, or exercise-induced and daytime symptoms. This survey was evaluated in a larger population of schoolchildren, yielding a sensitivity of 83.4%, specificity of 85.4%, positive predictive value of 93.9%, and negative predictive value of 65.5%. Offering a $25 school-supply gift-certificate incentive increased survey return rates from 35.3% to 65%, with return rates of ≥80% in many classrooms. A prevalence estimate of 14.1% children with probable asthma in Los Angeles schoolchildren was calculated by using this model.

Conclusions. The abbreviated 5-question survey yielded similar results when compared with the 7-question original survey. The surveys were easily distributed and analyzed with limited personnel using scanning software. The survey has been a useful tool for screening schoolchildren who may benefit from Breathmobile services and is an effective screening tool to identify children with probable asthma in this population of inner-city schoolchildren.

Reviewer’s Comments. This article describes the utility of a brief survey in identifying children with asthma in an inner-city, primarily Hispanic population. This survey has been used by the Los Angeles Breathmobile to screen >25 000 children, and it has been the model for similar surveys used by the 4 other Breathmobile programs in the country. Jones et al should be commended for their trail-
IMPLEMENTATION OF EVIDENCE BASED GUIDELINES FOR PEDIATRIC ASTHMA MANAGEMENT IN A TEACHING HOSPITAL


**Purpose of the Study.** To evaluate a systemic and coordinated approach to the development and implementation of evidence-based asthma guidelines for a pediatric hospital.

**Study Population.** This was a comparative study conducted at the Royal Children’s Hospital in Melbourne, Australia. There were 3 cohorts of children evaluated between the ages of 2 and 18 years who presented with acute asthma to the emergency department. Cohort 1 presented before the development of asthma guidelines, cohort 2 was recruited to assess the effectiveness of guideline implementation, and cohort 3 was recruited 1 year later to assess the sustainability of guideline changes.

**Methods.** The Royal Children’s Hospital best-practice guidelines for the care of asthma were established after careful review of established national/international guidelines and consideration of evidence-based reviews in the literature. The guidelines also took into consideration recommendations from Improving Child and Adolescent Asthma Management members. There was a detailed launch of the guidelines in the institution, with a major focus on implementation of the guideline recommendations through a variety of vectors. The primary outcome measures of this study were rates of readmission and readmission to the hospital, a change in asthma morbidity, and quality of life.

**Results.** There were 374 children in cohort 1, 363 in cohort 2, and 377 in cohort 3. There was no difference in baseline characteristics between the cohorts (age, gender, asthma severity). There was no statistically significant difference in the proportion of patients who revisited the emergency department or were admitted to the hospital between the 3 groups within 6 months of the initial presentation (21–27% for revisits to the emergency department and 11% rehospitalization). There also were no differences in measures of morbidity between the cohorts across 3 domains (interval symptoms, exercise compromise, and bronchodilator usage) or in parent or child quality-of-life scores between the groups. However, there was a significant difference in those who were given asthma-management plans with the implementation of the practice guidelines.

**Conclusions.** The implementation of evidence-based guidelines made no difference in readmission to the hospital, return visits to the emergency department, asthma morbidity, or quality of life but did increase the provision of asthma-management plans. The authors concluded that future efforts to improve asthma management should target specific components of asthma care.

**Reviewer’s Comments.** Certainly the results of this study are disappointing, especially for those of us who develop, implement, advocate, and teach guidelines. Were the guidelines at fault? Were the guidelines implemented properly? Were they carried through for both sides of the illness, and if so, for how long? It was not clear what went on after the first encounter. Was there appropriate follow-up with guideline-savvy primary caretakers who were able to emphasize the guidelines? My guess is that perhaps more emphasis and more “implementation” is needed more frequently at the patient/caretaker level, and I would not give up on guidelines just yet.

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EMOTIONAL QUALITY-OF-LIFE AND OUTCOMES IN ADOLESCENTS WITH ASTHMA


**Purpose of the Study.** To examine the association between emotional quality of life (QOL) and asthma morbidity in adolescents with asthma.

**Study Population.** The study included 185 adolescents (aged 11–17 years) with asthma from 3 different managed care organizations in the United States.

**Methods.** A voluntary cross-sectional survey was mailed to parents of a sampling of adolescents with asthma. Parents completed questions related to asthma symptoms, health service use, and impact of asthma on physical function. Adolescents completed the Child Health and Illness Profile-Adolescent Edition and the Pediatric Asthma Quality of Life Questionnaire. Outcomes assessed for the prior 12-month period included parent reports of emergency department (ED) visits for asthma, hospitalizations for asthma, doctor visits for worsening asthma, and the number of days of school missed for asthma in the prior 4-week period. The Pediatric Asthma Control Score, comprised of items that assess asthma symptoms, impact of asthma on planned activities, and asthma medication use, was also used as an outcome.

**Results.** In the prior 12 months, 10% of the subjects had been hospitalized, 41% had had ED visits, and 77% had had physician visits for worsening asthma; 30% missed ≥1 day of school in the previous 4 weeks. Regarding emotional QOL, 75% of parents reported having worried about their child’s emotional health in the prior 4 weeks. During the same 4-week period, adolescents commonly reported emotional symptoms: 45% felt depressed, 24% cried a lot, and 48% felt nervous. In bivariate analyses, worse Pediatric Asthma Quality of Life Questionnaire scores were significantly related to worse asthma control, more days of missed school (odd ratio: 7.1; P < .05), and doctor visits for worsening asthma (odds ratio: 7.0; P < .05). Among measures of asthma morbidity, the Pediatric Asthma Control Score showed the strongest and most consistent relationship with measures of emotional QOL: there were significantly fewer asthma-control problems for adolescents with the best level of emotional function that assess asthma symptoms, impact of asthma on quality of life.

**Conclusions.** Poor emotional QOL was common in adolescents with persistent asthma. More frequent school absence, worse asthma control, and more doctor visits for asthma were reported by adolescents with worse asthma-specific emotional QOL. This study does not answer the question of whether emotional QOL is a result or cause of greater asthma morbidity, but it indicates the importance of ascertaining this asthma-specific emotional QOL as a risk factor.

**Reviewer’s Comments.** Poorly controlled asthma has a tremendous impact on the school-aged child. This study emphasizes the need for clinicians to consider not only outcomes such as ED visits, forced expiratory volume in 1 second, and rescue inhaler use but also emotional QOL. It is likely that lower emotional QOL increases asthma morbidity and that greater asthma morbidity reduces emo-
A School-Based Case Identification Process for Identifying Inner City Children With Asthma: The Breathmobile Program

Mary Beth Bollinger

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