

# ORIGINAL COMMUNICATIONS

## A NOVEL ASTHMA CAMP INTERVENTION FOR CHILDHOOD ASTHMA AMONG URBAN BLACKS

Sherahe Brown Fitzpatrick, MD, Steven S. Coughlin, PhD, Jim Chamberlin, and the Pediatric Lung Committee of the American Lung Association of the District of Columbia (ALADC) Washington, DC

**Following a needs assessment, the American Lung Association of the District of Columbia (ALADC) began a 3-year pilot program (1986 to 1989) to improve the health status of 5- to 10-year-old urban black asthmatic children. The authors hypothesized that participation in a 1-day asthma camp curriculum, using a collaborative multidisciplinary team approach between university and community-based staff, would provide an effective educational intervention to teach children and their families daily management strategies for asthma. The 84 participants (mean age: 9.6 years) were predominantly black (93%), male (73%), and from single-parent or single-guardian homes (52.7%). Follow-up interviews suggested that a high percentage of the children were using new techniques such as aerosol/inhalers (78%) and breathing/warm-up exercises (55%). Overall, participation in this novel program was associated with a clinically significant, 36% to 69% reduction in school absences, emergency room visits, and hospitalizations. (*J Natl Med Assoc.* 1992;84:233-237.)**

**Key words** • pediatric asthma • self-management  
• asthma camp

Among American children less than 17 years of age, estimates indicate that asthma affects 2 to 5 million and accounts for 23% of school absences related to chronic illness.<sup>1-3</sup> The reported prevalence of ever having asthma has also increased among 6- to 11-year-old children from 4.8% in 1971-1974 to 7.6% in 1976-1980.<sup>3</sup> Although new diagnostic and therapeutic modalities for asthma have improved the quality of life for children with asthma, recent studies have indicated that rates of hospitalization are increasing and that significant morbidity and mortality still exist, especially among urban black children living below the poverty level.<sup>1,4-8</sup> Based on the 1979-1987 National Hospital Discharge Survey, Gergen and Weiss reported a 4.5% increase in asthma hospitalization per year, with the largest increase occurring in the 0-to-4-year age group. Within this age group, blacks had about a 1.8 times greater increase in hospitalization than whites.<sup>9</sup>

While impediments to achieving control of asthma among minorities remain unclear, health-care providers have suggested lack of continuity of medical care, lack of adherence to treatment regimens, low education and literacy levels, inadequate housing, cultural differences, and problems associated with effective self-management as contributing factors.<sup>1,3,8-15</sup> The recent observations of Weiss and Wagener on the clustering of asthma deaths in New York and Chicago seem to underscore the need for availability of and access to appropriate health care for the economically disadvantaged.<sup>16</sup> Although previous studies have shown that asthma self-management programs can be effective,

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From the Division of Pediatric Pulmonary Medicine of the Department of Pediatrics, and the Department of Medicine, Georgetown University School of Medicine, and the American Lung Association of the District of Columbia (ALADC), Washington, DC. Presented at the 30th Annual Meeting of the Ambulatory Pediatric Association, May 9, 1990, Anaheim, California. Requests for reprints should be addressed to Dr SHERAHE BROWN FITZPATRICK, Director of Pediatric Pulmonary Medicine, Dept of Pediatrics, Georgetown University School of Medicine, 3800 Reservoir Rd, NW, Washington, DC 20007.

current programs tailored to the unique needs of minority patients are not widely available and often require a moderately high level of reading skills or education.<sup>1,10-15</sup>

The population and relatively compact geography of the District of Columbia presented a unique opportunity to address the issues associated with control of asthma among minorities. Based on the 1985 District of Columbia's Office of Planning statistics, 73% of the 627 400 residents were black and 85.9% of the 68 600 children under 10 years of age were black. The 1980 United States census reported in four of the District's seven wards, 42% of blacks over 25 years of age had not completed high school, and 25% had 8 years or less of schooling. In conjunction with these statistics and following a needs assessment in 1986, the American Lung Association of the District of Columbia (ALADC) began a 3-year pilot program to improve the health status of 5- to 10-year-old urban black children with asthma. The authors hypothesized that participation in a 1-day asthma camp curriculum, using a collaborative, multidisciplinary team approach between university and community-based staff, would provide an effective educational intervention to teach children and their families daily management strategies for asthma.

## METHODS

District of Columbia children with asthma between 5 and 10 years of age were recruited to participate in the project through radio, television, and newspaper announcements sponsored by ALADC. The diagnosis of asthma was verified using HES and NHANES criteria and consisted of a current history of asthma diagnosed by a physician sometime in the past or frequent trouble with wheezing during the past 12 months, excluding colds or the flu.<sup>3</sup>

After reviewing asthma self-management literature,<sup>13,17-30</sup> the Pediatric Lung Committee and the ALADC staff designed and developed the vehicle of the yearly 1-day asthma camp to provide a forum for a multidisciplinary team approach to asthma management in an urban black population. The Pediatric Lung Committee of ALADC consisted of a pediatric pulmonologist, pediatric intensivist, allergists, pediatricians, psychologists, educators, pediatric nurse specialists, and respiratory therapists from Georgetown and Howard Schools of Medicine, University of the District of Columbia, Greater Southeast Hospital, and the Children's National Medical Center.

The asthma camp curriculum consisted of:

- a slide show on asthma triggers adapted from Superstuff Self-Management Program,<sup>26</sup>
- an art therapy session to elicit the children's feelings about having asthma, focusing on self-image and self-esteem,<sup>19,21</sup>
- a coloring book session depicting medical management and the psychosocial aspects of asthma based on the guidelines of the self-management programs previously evaluated with low-income families,<sup>19,21</sup>
- exercise classes conducted by respiratory therapists with warm-up exercises and breathing techniques for educational purposes as depicted in the Superstuff program,<sup>26</sup>
- a demonstration of equipment modalities such as nebulizer/aerosol therapy and metered dose inhalers,
- a rap session with the entire multidisciplinary team to teach parents/guardians assertive medical skills,<sup>14-20,22,26</sup> and
- recreational activities that urban black children living at or near the poverty level may not experience, such as swimming, horse/pony rides, clown, magic and puppet shows, and martial art demonstrations.

The 6-hour asthma camp was held on a Saturday to enhance the participation of the children and their families, volunteers, and university-based staff. The camp scheduled included: a half-hour registration period; a half-hour introduction program for staff and participants; five half-hour educational sessions (asthma triggers, art therapy, coloring book, exercise classes, and equipment modalities); a 1½-hour lunch period with entertainment and prizes; and an hour-long "rap session" for parents (with entertainment provided in a separate area for the children).

The camp participants were divided into small groups of 10 children each with their parents or guardians and rotated through the five educational stations. There was a staff ratio of one physician, one respiratory therapist, two college volunteers, and one nurse per 10 children. Introduction to local black celebrities (ie, football players and politicians) and other incentives (prizes) were used to enhance participation. Food donations, prizes, and transportation to and from the camp were provided by community organizations to ensure participation in the project. The American Lung Association of the District of Columbia provided reading lists and pamphlets on childhood asthma and copies of the Superstuff Kits to each parent or guardian attending the rap sessions.<sup>23</sup> The campsite and recreational equipment were provided by the District of Columbia Recreational Department.

Project evaluation surveys were given and predeter-

TABLE 1. PATIENT PROFILES

	No. (%)
Ever tested for allergies	
Yes	43 (79.6)
No	11 (20.4)
Ever received allergy treatment	
Yes	26 (47.3)
No	29 (52.7)
Smoker in the household	
Yes	24 (44.4)
No	30 (55.6)
Household pet	
Yes	12 (22.2)
No	42 (77.8)

mined follow-up telephone interviews were conducted 6 and 12 months after the camp was held with each participant's parent or guardian to assess the educational intervention of the program. Pre- and postcamp participants served as their own controls for the project. Data were collected and analyzed using paired *t* tests and chi-square tests.

## RESULTS

Between 1986 and 1989, publicity generated 180 requests for camp applications with 136 parents or guardians completing the enrollment and physician referral forms. The project was designed to serve 20 children and their parents in 1987, and was expanded to serve 40 per year thereafter. During the 3-year period, 84 urban black children with asthma and their parents or guardians participated in this pilot study. The initial 84 participants (mean age:  $9.6 \pm 2.18$ ) were predominantly black (93%), male (73%), and from single-parent or single-guardian homes (52.7%). Of the 84 enrollees, 60 responded to follow-up telephone interviews. The distribution of participants by year was eight in 1987, 18 in 1988, and 34 in 1989. Five children attended camp twice. Patient data are summarized in Table 1.

Demographic information revealed that 69% of mothers and 60% of fathers had completed high school, and 60% of mothers and 60% of fathers were employed. The average age of participants at diagnosis was 3.6 years, and the average age of participants' first asthma episode was 3 years.

Among participants, 38% were taking one medication, 11% were on two, 18% were on three or more, and 33% were currently taking no medications. Medication usage included: beta agonists (84%), theophylline (33%), cromolyn sodium (33%), and either oral or inhaled steroids (15%). Only 10% currently used

TABLE 2. HEALTH STATUS OF PARTICIPANTS

	Year Prior	Year Following	P Value
School days missed	$11.8 \pm 1.8$	$5.2 \pm 1.4$	<.001
Emergency room visits	$1.7 \pm 0.4$	$1.1 \pm 0.3$	.024
Days hospitalized	$2.1 \pm 0.6$	$0.7 \pm 0.4$	.044

nebulizer/aerosol equipment and 9% used a peak-flow meter in asthma management.

Follow-up interviews revealed that a high percentage of children were using new techniques such as nebulizer/aerosol therapy (78%) and breathing and warm-up exercises (55%).

The health status of the 1986-1988 participants in the years prior to and following the camp attendance is depicted in Table 2. After adjusting for differences in period of observation, a similar pattern was found for 1989 camp participants. Overall, participation in this novel program was associated with a clinically significant, 36% to 69% reduction in school absences, emergency room visits, and hospitalizations.

## DISCUSSION

With the increased morbidity and mortality data and hospitalization rates related to asthma, recent efforts on asthma control have focused on the concept of self-management.<sup>13,17-30</sup> Eight studies have been rigorously evaluated; they involve a large number of subjects and constitute either a controlled clinical trial of the educational intervention or a multiple time series design for evaluation.<sup>13,17-24</sup> Six other studies with either a smaller number of patients or less rigorous evaluation designs also have been evaluated.<sup>25-30</sup> Collectively, these 14 programs showed that educational interventions can improve self-management, reduce wheezing, help families adjust to the demands the disease imposes on family life, improve school attendance and performance, and change the use of health services by reducing emergency visits and hospitalizations.<sup>10,13,17-30</sup>

Overall, the 14 programs attempted to cover the following topics, with certain ones emphasizing some points more effectively:

- recognizing the signs and symptoms of asthma,
- administering prescribed medicines correctly and managing side effects,
- recognizing and responding to symptoms that require emergency care,

- reducing exposure to known triggers,
- normalizing the child's physical and social activities, and
- providing guidance or providing interaction with the physician or other health-care providers.<sup>13,17-30</sup>

Unfortunately, only two programs with low-income patients have been evaluated, and hence, the majority of asthma programs have little applicability to an urban metropolitan area.<sup>19,21</sup> These programs also require a certain educational level of both the child and the parent or guardian, and certain language skills and behavioral experience on the parents' part to interact assertively with the health-care provider. Several programs require multiple sessions of "one-on-one" interaction (physician to child or parent), which is not cost effective for an inner-city population, or require computer equipment to use the program that may not be available to this population.<sup>28</sup> Lastly, these programs did not provide or allow for the parent and child with asthma to interact with a family or in a situation similar to their inner-city family structure or living conditions. Hence, for a large urban metropolitan area such as Washington DC, these programs did not meet the needs of the urban black community.

Two approaches to behavior change have been applied to the development of effective patient education programs for children with asthma.<sup>13,17-30</sup> The first was training parents to use reinforcement contingencies that will help shape appropriate self-management behavior in their children. It was felt this approach would have limited applicability to the target population who often go home to situations with no adult present for many hours, have inconsistent or often/ changing caretakers, and have families struggling for existence in ways that preclude the kind of structure needed to implement an effective behavior modification program.

The camp curriculum was built around this second concept: that a child's and parent's sense of self-sufficiency can be changed by increasing their knowledge and belief in the ability to successfully master self-management of asthma.<sup>13,17-30</sup> For the target population, where so many conditions of life foster a generalized sense of learned helplessness, an approach that would lead to an increased sense of self-efficacy was vital. Because behavioral research on effective compliance and self-management of chronic illness demonstrates the importance of social support systems for the family, a multidisciplinary team approach of both university and community-based health-care providers was used.<sup>31,32</sup>

It is interesting that 79.6% of the participants had previously been tested for allergies; this indicates prior contact with subspecialty care providers. This figure, coupled with the statistics on the educational levels of District of Columbia residents, suggests the prior interaction with the health-care provider required a moderate educational level or did not encompass techniques applicable to this population. The percentage of participants receiving allergy treatments (52.7%) indicates prior multiple-visit contact with a health-care provider and supports the need for the team approach aimed at changing the child's and parent's sense of self-sufficiency by increasing their knowledge and belief of self-management.

Because current asthma self-management programs are not widely available or are not tailored to the unique needs of urban black patients and often require a moderately high level of reading skills or education, innovative educational programs must be devised for this population. As evidenced by an overall reduction of 36% to 69% in school absences, emergency room visits and hospitalizations, the data demonstrate that the vehicle of an asthma camp can provide a forum for a multidisciplinary team approach to address the specific needs of urban black children with asthma.

These improvements could be attributed to:

- perceptions of the child and parent or guardian of continued physician or team interest through follow-up telephone interviews at 6 and 12 months postcamp,
- subsequent establishment of an annual parents' support group of camp participants by ALADC,
- duration of time and the verbal/visual presentation of five areas of daily asthma management as defined by five camp educational session stations for a population in whom reading skills may be limited,
- distribution of educational reference materials to parents or guardians for reinforcement of this education intervention project, and
- the opportunity for families to interact with others in similar circumstances and living styles.

With respect to limitations, the present non-randomized study was exploratory in nature. There may have been some inaccuracies of recall although this tends to result in an underestimate of effect.<sup>33</sup> However, a randomized preventive trial is planned to further examine the effectiveness of this educational intervention. Thus, the educational interventions devised and tested in this study may serve as a model for similar programs aimed at inner-city black populations in the United States.

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