

CHILDHOOD ASTHMA CENTER

FIRST YEAR REPORT



I. INTRODUCTION

The *Childhood Protection and Care Association* (CPCA), is a non-profit association founded by a group of volunteers chaired by First Lady Mrs. Andrée Emile Lahoud, to help children with special needs. The CPCA created in February 2006 the *Childhood Asthma Center* (CAC), to improve the quality of life of children suffering from asthma and of their families.

The mission of the Childhood Asthma Center is to promote better disease management through several objectives which are:

1. To reduce hospitalizations and utilization of emergency services.
2. To reduce school absenteeism for asthma-related problems.
3. To decrease the number of attacks and the severity of symptoms
4. To stabilize asthma evolution before adulthood.

The Childhood Asthma Center offers two categories of services:

1. **Diagnosis and Care:** this department provides medical consultation, spirometry tests, allergic skin prick tests and health education. It runs the Childhood Asthma Mobile Clinic which performs screening and evaluation missions in remote areas of the country.
2. **Research and Outreach:** this department performs evaluation analyses and epidemiological studies. It organizes seminars,

lectures and training sessions addressed to health care providers, and leisure/education festive activities targeting the larger public.

CAC received initial support from the Ministries of Public Health (MOPH), of Social Affairs (MOSA), and of Education (MoEd). Primary Health Care clinics all over Lebanon have been referring patients to this Center. From the launching of the CAC in February 2006 till July 2007, 700 children have received a full clinical examination and the necessary treatment through the Childhood Asthma Mobile Clinic, and 496 children aged ≤ 15 years are currently followed through the CAC. This report presents an analysis of cases seen at CAC during that first year of activity.

II. METHODS

The report presents data on all asthmatic infants and children for whom a medical record was opened in the Center in 2006. Data on treatment and patient education are entered electronically for each child using in house developed entry software. They are subsequently analyzed using SPSS/PC.

The below categories of factors analyzed in this report are those with the highest levels of validity:

1. Socio-demographic factors
2. Factors related to asthma: these are variables related to the clinical history of the disease and its impact on daily life activities of the child.
3. Clinical progress: based on spirometric tests and other clinical outcomes.

In this analysis, clinical progress was assessed by socio-demographic and asthma-related factors. The significance of associations was tested using adequate methods: t-test, X-square or Z-test. An association was deemed significant if the p-value yielded by the statistical test was ≤ 0.05 .

III. RESULTS

Data from 496 children who presented to the Asthma Center between February 2006 and July 2007 were analyzed and results are detailed in the tables below. Their mean age was 7.1 years, ranging from 1 to 19, and 64% of them were boys. The socio-economic status (SES) of the group was assessed indirectly using the crowding index or number of persons/room in the household. An index of 1 person/room is generally considered an indicator of middle-class. A higher density indicates lower SES. In this group, the mean crowding was 1.6 person/room, and the range was more towards higher densities (0.5-5) indicating a tendency towards lower SES. This finding is not surprising as the outreach of the Asthma Children Center targets essentially children from less favored families. The largest caseload came from neighboring Mount-Lebanon, followed by the South (including the mohafazat of Nabatiyeh). Details on socio-demographic characteristics of cases are presented in Table 1.

At first visit, almost all patients had had suspicious symptoms at various ages but had never formally received a diagnosis of asthma. Symptoms had appeared almost at birth for 2.4% of all cases. When they were delivered this formal asthma diagnosis, their mean age was 2.7 years. About 70% were aged one year or less and less than 8% were already older than 10 years. More than 60% came from families with asthma history. Allergic diseases other than asthma, such as allergic rhinitis or eczema, were signaled in 28% of children. Parents attributed recent exacerbations of their children's status firstly to "changes in weather patterns" (80.2%) followed by Upper Respiratory Tract Infections (URTI) (80%), exercise (75%) and exposure to "dust" (68.1%). Interestingly, none mentioned passive smoking as a potential exacerbating factor. More than 54% had come to

the center for more than 1 visit, with an average number of 2 visits. Adverse effects which a good case-management should reduce, such as school absenteeism, utilization of emergency rooms and hospitalization for asthma crises were assessed at the last recorded visit. Very few children reported any such event. However, the recall periods for these events varied as the interval between the last two visits differed for each child. Recall should be standardized in future assessments. The asthma clinical severity index was assessed at least at two visits for 192 children. This assessment was based on an international classification scale (Appendix 1). In 45% of children with longitudinal follow-up, the evolution was favorable either in maintaining low severity asthma profiles or in moving from a more to a less severe one. Details for all asthma-related variables are presented in Table 2.

In the rest of the analysis, those children with a favorable prognosis were compared to those with a not favorable one on various socio-demographic variables. The prognosis was not associated with gender, age at first symptoms, number of visits, presence of other allergic diseases, or socio-economic status. Least favorable progress was found in children from the Beirut and Mount-Lebanon areas, compared to all other areas. Older children had a better prognosis than younger ones. None of those differences were statistically significant (Table 3).

IV. DISCUSSION & CONCLUSIONS

Data were available for 496 children seen at the Center during the first year of activity. They were mostly from modest socio-economic backgrounds, with an average age of 7-8 years. The largest caseload came from Mount-Lebanon, which is also the most populated area in Lebanon. The North was clearly under-represented, indicating that more outreach should be directed towards that area.

The disease profile did not present any particular features. For almost half the group, signs and symptoms had appeared anywhere between birth and the age of 3. Of concern however is that about 50% were in a situation of moderate to severe persistent asthma at time of first visit. Almost none had been formally told they had asthma before actually coming in contact with the Center. Whether they were misled and/or misdiagnosed is an issue that needs to be debated with all physicians who may come in contact with children suffering from any respiratory distress syndrome.

Of those children only 39% were assessed at two various visits, and their prognosis described. Small numbers most likely precluded any meaningful finding of differences between the two groups. Unsurprisingly, older children fare better than younger ones, and those living in the relatively more polluted areas of Beirut and Mount-Lebanon less well than those living elsewhere. The number of visits to the Center did not make any difference, indicating that what happens outside the visit in terms of compliance is much more important than the number of encounters per se. The continuity of asthma care is an issue that needs to be pressed with parents who should understand that follow-up visits are important even if the child appears to be doing well. Ensuring that caretakers adhere in fact to all therapeutic recommendations and precautions is also an important factor of success.

TABLE 1
SOCIO-DEMOGRAPHIC CHARACTERISTICS
OF ASTHMATIC CHILDREN AT THE CAC
(February 2006-July2007)

VARIABLES	(N= 496)
AGE (Mean, SD)	
Mean	7.11 (3.8)
Interval	1 - 19
GENDER (n, %)	
Male	316 (63.8)
Female	179 (36.2)
CROWDING INDEX (people/room) (mean, SD)	
Mean	1.6 (0.63)
Interval	0.5 - 5
MOHAFAZAT (n, %)	
Beirut	53 (10.7)
Bekaa	71 (14.3)
Mount Lebanon	216 (43.5)
Nabatieh	40 (8.1)
North	18 (3.6)
South	91 (18.3)
Total	496 (100)

TABLE 2
ASTHMA HISTORY OF CHILDREN TREATED AT THE CAC
(February 2006-July2007)

VARIABLES*	N=496
AGE OF BEGINNING OF SYMPTOMS (years) (n, %)	
Mean (SD)	2.7 (4.5)
Interval	(birth-19)
≤1 year	343 (69.9)
> 10 years	38 (7.7)
FAMILY HISTORY OF ASTHMA (n, %)	
Yes	308 (62.3)
No	186 (37.7)
PRESENCE OF OTHER ALLEGIC DISEASES (eczema or allergic rhinitis) (n, %)	
Yes	140 (28.2)
No	354 (71.8)
ATTRIBUTABLE EXACERBATING FACTORS (n, %) **	
Change of weather	398 (80.2)
Upper Respiratory Tract Infection	397 (80.0)
Exercise	372 (75.0)
Dust	338 (68.1)
Bad odors	332 (66.9)
Cold air	280 (56.5)
Anger	219 (44.2)
Emotional excitement	95 (19.2)
Lack of medications	25 (5.0)
Presence of domestic pets	13 (2.6)
SYMPTOMS WITH EXERCISE (n, %) **	
Cough	347 (70.0)
Shortness of breath	325 (65.5)
Chest tightness	276 (55.6)
Wheezing	215 (43.3)

Table 2 (continued)

NUMBER OF VISITS TO THE CENTER	
1	268 (54.0)
2	149 (30.0)
3	53 (10.7)
4	17 (3.5)
> 4	9 (1.8)
Mean (SD)	1.7 (1.0)
ADVERSE EVENTS SINCE LAST VISIT (N= 219)***	
Absenteeism (ranging from 1-10 days)	24 (11.0)
Utilization of emergency rooms	6 (2.7)
Hospitalization for acute asthma crises	3 (1.4)
SEVERITY CLASSIFICATION AT PRESENTATION (n, %)	
Mild intermittent	53 (14.9)
Mild persistent	122 (34.2)
Moderate persistent	174 (48.9)
Severe persistent	7 (2.0)
Total	356 (100)
SEVERITY CLASSIFICATION AT LAST VISIT (n, %)	
Mild intermittent	25 (13.0)
Mild persistent	61 (31.8)
Moderate persistent	103 (53.6)
Severe persistent	3 (1.6)
Total	192 (100)
PROGNOSIS	
Favorable (remained mild intermittent/persistent or improved)	86 (44.8)
Not favorable (remained moderate/severe persistent or worsened)	106 (55.2)
Total	192 (100)

* Totals do not match because of missing data

** More than one choice applied

*** Children seen at more than just one visit and for whom data were available

TABLE 3
FACTORS ASSOCIATED WITH TREATMENT PROGNOSIS
AMONG ASTHMA PATIENTS SEEN AT TWO VISITS (N=192)

VARIABLES	PROGNOSIS		p-value
	Favorable	Not favorable	
N (%)	86 (44.8)	106 (55.2)	
AGE AT FIRST VISIT			0.255
Mean years (SD)	7.5 (3.8)	6.9 (3.3)	
AGE AT FIRST SYMPTOMS			0.738
Mean months of life (SD)	30.84 (61.6)	33.76 (58.5)	
NUMBER OF VISTS			0.556
Mean (SD)	2.65 (1.0)	2.57 (0.9)	
SOCIO-ECONOMIC STATUS			0.740
Mean crowding index in pers./room (SD)	1.57 (0.6)	1.60 (0.7)	
GENDER			0.837
Male (n,%)	58 (45.3)	70 (54.7)	
Female (n,%)	28 (43.8)	36 (56.3)	
REGION			
Beirut	9 (40.9)	13 (59.1)	0.963
Bekaa	16 (50.0)	16 (50.0)	0.576
Mount Lebanon	41 (42.7)	55 (57.3)	0.144
North	3 (50.0)	3 (50.0)	0.545
South and Nabatieh	17 (48.6)	18 (51.4)	0.817
OTHER ALLERGIC DISEASES			0.654
Yes (n,%)	25 (42.4)	34 (57.6)	
No (n,%)	61 (45.9)	72 (54.1)	

APPENDIX 1

CLASSIFICATION OF ASTHMA SEVERITY

Asthma Classification *	Symptoms	Nighttime awakenings	Lung Function †	Interference with normal activity
Mild intermittent	≤ 2 days/week	≤ 2×/month	PEF or FEV1: 80 percent or more of predicted function	None
Mild Persistent	>2 days/week but not daily	3-4 ×/month	PEF or FEV1: 80 percent or more of predicted function	Minor limitation
Moderate Persistent	Daily	>1 ×/week but not nightly	PEF or FEV1: 60 - 80 percent or more of predicted function	Some limitation
Severe Persistent	Throughout the day	Often 7 ×/week	PEF or FEV1: 60 percent or less of predicted function	Extremely limited

PEF = peak expiratory flow; FEV1 = forced expiratory volume in one second.

* Clinical features before treatment or adequate control.

† Lung function measurements are used only in patients older than five years.

(Adapted from National Asthma Education and Prevention Program. Expert panel report: guidelines for the diagnosis and management of asthma: update on selected topics, 2002. Bethesda, Md.: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung, and Blood Institute, 2003; NIH publication no. 02-5074:115).

