Achieving and Maintaining Control of Asthma with Regular Participation in an Urban Pediatric Disease Management Program: The Breathmobile® Program

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RATIONALE: National guidelines suggest that, with appropriate care, most patients can control their asthma. This study evaluates the degree to which children in a lower socioeconomic urban setting achieve and maintain control of asthma with regular participation in a disease management program that provides guideline-based care.

METHODS: Interdisciplinary teams of asthma specialists use mobile clinics to offer ongoing care at schools and county clinics. A guideline-derived construct of asthma control is recorded at each visit.

RESULTS: 2185 enrollees were eligible to evaluate the time to first achieve control, while 1591 patients were eligible to evaluate subsequent control maintenance. Depending on severity, 70-87% of patients with persistent asthma achieved control by visit 3, and 89-98% were controlled by visit 6. Subsequent control maintenance was highly variable. 39% of patients displayed well-controlled asthma (control at visit 6). Subsequent control maintenance was highly variable. 39% of patients achieved control by visit 3, and 89-98% were controlled by visit 6. Subsequent control maintenance was highly variable. 39% of patients displayed well-controlled asthma (control at >90% of subsequent visits) while 13% displayed difficult to control asthma (<50% of subsequent visits). Patients from each baseline severity category were found in each group. Maintenance of control was influenced by physician-estimated compliance with the treatment plan, baseline severity, and the interval between clinic visits.

CONCLUSIONS: Many children can achieve asthma control with regular visit intervals and guideline-based care, however long term control can be highly variable among patients in all severity categories. These findings highlight the need, and feasibility, for systematically tracking each patient’s clinical response in order to individualize therapy and guide the use of population management strategies.

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Implementation of GINA Guidelines in Poor Countries May Have Resulted in an Unnecessary Expenditure on Pharmacotherapy

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RATIONALE: Wheezing episodes (WEs) are common in school children with persistent asthma (PA) and asthma induced by viral infections (VA). GINA’s guideline encourages the chronic use of controller medication in PA, but omits recommendations for VA. As in poor Peruvians WEs are mild and are not associated to atopy, we estimated the cost of GINA’s omission.

METHODS: Based on two previously published RCT, WEs in VA (Doull, BMJ 1997) and WEs in PA (CAMP, NEJM 2001); we estimated the number of emergency room visits and hospitalizations prevented per 100 children treated per year. Market price of medications and services were included in the analysis.

RESULTS: In Peru, the cost of inhaled corticosteroid per 100 children per year is $48,000 dollars. In the most likely scenario (WEs by VA): no single benefit would be obtained for the money spend. In the least likely scenario (WEs in PA): ten urgent care visits ($25.00 each) and two hospitalization ($350.00 each) would be prevented. The $750 saved on resources corresponds to 2% of the amount spend on chronic treatment.

CONCLUSIONS: GINA guideline lacks recommendations for WEs induced by viral infections. Public health interventions based on GINA guidelines in poor populations, where WEs are mostly induced by viral infections, do not favor societal interests. GINA’s omission must soon be corrected.

No Correlation Between Airway Obstruction Measured by FEV1/FVC and Asthma Control Test Scores

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RATIONALE: Asthma symptoms do not correlate significantly with airway obstruction measured by FEV1 or PEF. In recent years, the Asthma Control Test (ACT) has been validated as a tool for identifying patients with poor control. The ratio of FEV1 to FVC has been described as a potentially more sensitive indicator of expiratory flow limitation (Chest 2006;129:369). We studied associations between symptoms and lung functions to confirm previously reported low correlation and to determine if ACT correlates better with FEV1/FVC.

METHODS: We retrospectively analyzed visits with complete ACT scores and spirometric data (FEV1 and FEV1/FVC) from January-June 2006. Scatterplots were constructed and Spearman’s correlation coefficients were calculated. Patients with ACT scores ≥15 and FEV1 < 60% were classified as poor perceivers.

RESULTS: There were 295 visits for 236 asthma patients with mean age 47; of these 73% were female, 70% Caucasian, 28% had severe asthma; <5% were poor perceivers. ACT scores and spirometric values correlated poorly: FEV1 (% predicted) (r=0.28) and FEV1/FVC (r=0.08.). Severe asthma subjects had slightly higher correlations of ACT scores with FEV1 (% (r=0.16-0.37). Daytime and nocturnal symptoms, rescue medication use, limitations on everyday functioning or self rating of asthma control were not significant predictors of spirometric measurements. Adjusting for age, sex, race, and asthma severity, associations remained extremely weak.

CONCLUSIONS: We confirmed previous findings of low correlation between ACT scores and FEV1 in a population of <5% poor perceivers. There was no correlation between ACT scores and FEV1/FVC. These results support the contention that symptoms and spirometric measures are independent dimensions of asthma and proper management requires assessment of both.

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Does A WWW-based Interactive Computer Program change asthma Outcomes, Quality of Life and Asthma Knowledge

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RATIONALE: In 2001 we gained financing for our project www.astma-center.dk, which is an internet based, interactive asthma program. The purpose of this was to enhance children’s knowledge of asthma, self-management of asthma, quality of life and to reduce asthma morbidity and health costs.

Was there a difference between a group of asthma children allocated to this interactive program and a similar group of asthma children allocated to a program with the same asthma information but without the interactivity feasibility.

METHODS: 83 asthmatic children between ages 6 and 14 were randomly allocated to either the interactive or the non-interactive program. Two visits one year apart were scheduled. Peak-flow and forced expiratory volume in one second (FEV1) was recorded. A Quality of Life questionnaire and a questionnaire about asthma knowledge was completed. Information on number of admissions to hospital, visits to the emergency room (ER) and unscheduled visits to general practitioners (GP) during the year prior to each visit were obtained.

RESULTS: In Peru, the cost of inhaled corticosteroid per 100 children per year is $48,000 dollars. In the most likely scenario (WEs by VA): no single benefit would be obtained for the money spend. In the least likely scenario (WEs in PA): ten urgent care visits ($25.00 each) and two hospitalization ($350.00 each) would be prevented. The $750 saved on resources corresponds to 2% of the amount spend on chronic treatment.

CONCLUSIONS: The present study includes only a small group of probably selection-biased children and the results are therefore merely indicative. The results might be explained by the fact that all the children had already received good medical treatment and were well informed about asthma.

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