Impact of Community Pharmacists' Interventions on Outcomes of Asthma Patients: Use of the Asthma Control Test (ACT)™ in Asthma Management

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ABSTRACT (updated)

Objective: To assess community asthma control in adult asthma patients using the Asthma Control Test (ACT)™[1].To determine the impact of pharmacists interventions using the ACT result on changes in asthma control and therapy.

Methods: The study used a six month longitudinal design to collect behavioral data. A national sample of 4003 patients was recruited in 385 U.S. community pharmacies. Patients were eligible with a diagnosis of asthma, taking at least 1 asthma medication, and 18-85 years of age. Patients were administered the ACT along with questions regarding demographics, resource use and productivity. The ACT is a validated assessment of asthma control with a scoring range of 5-25, where threshold scores of ≤19 suggests inadequately controlled asthma. Pharmacists scored the ACT and counseled patients with scores ≤19 to discuss the results with their physician. Patient ACT scores were also faxed to the patient's physician. Follow-up ACT administration was conducted 60 to 120 days after the first; self-reported information about changes in asthma therapy was also collected. Data were analyzed using descriptive statistics.

Results: Of 3,981 patients enrolled in the program to date, 2787 of 3,981 (70%) patients enrolled scored ≤19 on the initial ACT, with a mean of 13.4. Follow-up outcomes measures have been analyzed for 1916 patients and the mean ACT score improved by 2.3 points, a 17% improvement. Overall, 1253 (65%) improved their ACT score while 414 (22%) scored lower. 471 of these 1916 patients (25%) achieved a ≥20 on follow-up suggesting well controlled asthma. Overall, 1196 patients (62%) reported seeing their physician and 372 patients (31%) reported a change in asthma therapy following the ACT and pharmacist counseling.

Conclusions: These results confirm that the majority of patients in a retail pharmacy setting have uncontrolled asthma. The study demonstrates the impact and benefit of a structured intervention and information program as administered by a community pharmacist on patient behavior, physician management, and an overall improvement in patients' asthma control.

BACKGROUND

Asthma continues to be a serious and growing health problem. An estimated 30.8 million persons in the US have been diagnosed with asthma in their lifetime.[2] According to the CDC Asthma Surveillance Survey (1999) reported cases of asthma increased by 102% between 1979-80 and 1993-94.[3-5] It was also reported by the CDC that 11 million people experienced an asthma attack in 2002.[6] Recently, asthma control has been introduced as a method to assess the adequacy of current treatment and inform asthma management.[7] The Asthma Control Test (ACT) is a validated tool designed to assess asthma control.[1,7-8] Thus, with use of a tool like the ACT to assess control in observational studies one can better understand the impact of interventions on asthma management. The community pharmacy offers a unique venue for assessing control of patients with asthma.

OBJECTIVES

- To assess community asthma control in adult asthma patients using the Asthma Control Test (ACT)[1]
- To determine the impact of pharmacists' interventions using the ACT on changes in asthma control and therapy

METHODS

- Data collected between March 20, 2006 and January 27, 2007*
- 1st Intervention: Collected ACT score and demographics data during patient counseling at time of asthma medication fill at community pharmacies
- 2nd Intervention: Additional data collected at 60-120 days following 1st Intervention (intervention via telephone)*
  - Administered 2nd ACT test
  - Obtained patient responses regarding whether
    - they had seen their physician since taking the first ACT
    - they discussed ACT results with physician or asked about asthma therapy
    - their physician made any changes to their asthma medications

*Data collection still ongoing

RESULTS

Table 1: Participant Characteristics

Mean Age 39.6	n=4,001
Female 70%	n=2,803
Race	n=4,001
White/Caucasian	**82%**
African-American	10%
Hispanic/Latino	5%
American Indian	0.7%
Native Hawaiian	0.7%
Asian	0.6%
Other	0.4%
Declined to answer	0.7%

Household Income	% reporting n=1,662	% total n=4,001
<25K	**43.7**	**18.2**
20 to 60K	31.8	13.2
60 to 100K	15.5	6.4
100 to 150K	5.2	2.2
>150K	3.7	1.5
Declined to answer		**58.5**

Education	% reporting n=1,969	% total n=4,001
<12th Grade	14.6	7.2
High School Diploma	**31.9**	**15.7**
Some College	21.6	10.6
College Associates Degree	7.7	3.8
College Bachelors Degree	14.7	7.2
Graduate – Masters	6.9	3.4
Graduate – Doctorate	2.6	1.3
Declined to answer		**50.8**

Figure 1: 1st ACT Results at Day 0
(all patients at enrollment)

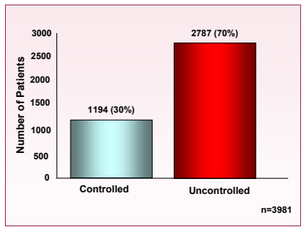
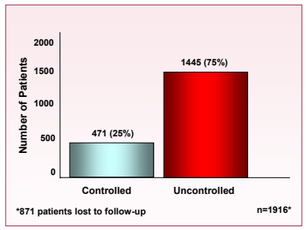


Figure 2: 2nd ACT Results at Day 60-120
*(patients who had uncontrolled asthma at enrollment based on the ACT)**

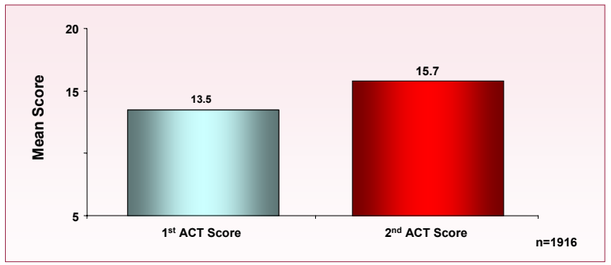


- 1st ACT = ACT test administered at enrollment
- 2nd ACT = ACT test administered 60-120 days post enrollment to previously uncontrolled patients

*Data on patients who completed the second assessment by the time of this analysis

- 3981 patients took the Asthma Control Test at enrollment
- 2787 patients (70%) had uncontrolled asthma (ACT score of 19 or less)
- 1916 patients who had uncontrolled asthma based on the 1st ACT test (69%) were retested at 60-120 days (2nd ACT test)
  - 471 of these patients (25%) had controlled asthma based on the second ACT test at 60-120 days
    - 871 patients, who had uncontrolled asthma based on the 1st ACT test (31%) were lost to follow-up

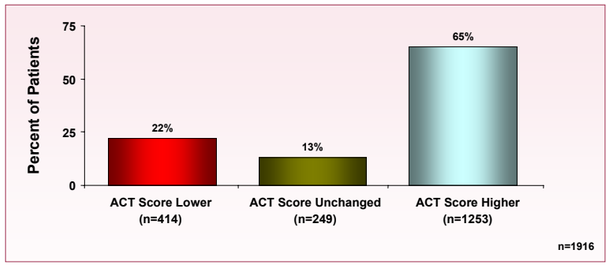
Figure 3: Comparison of Mean ACT Scores 1st ACT Test vs. 2nd ACT Test for Only Those Patients who Received Both Tests*



- Although the mean ACT scores still indicate that patients' asthma was uncontrolled, the scores for patients previously uncontrolled on the ACT improved by 2.3 points overall (a 17% improvement)

*Data on patients who completed the second assessment by the time of this analysis

Figure 4: Distribution of Patient ACT Score Changes 1st ACT vs. 2nd ACT for Only Those Patients who Received Both Tests*



*Data on patients who completed the second assessment by the time of this analysis

- 1,916 patients were uncontrolled (based on 1st ACT test) and took the 2nd ACT test: 1,196 (62%) reported seeing their physician and 372 (31%) reported a change in asthma therapy following the ACT and pharmacist counseling*

*Patient self-report data on patients who completed the second assessment by the time of this analysis

CONCLUSIONS

- The results of this study to date illustrate that a large majority of patients in the community pharmacy setting who have been diagnosed with asthma are uncontrolled based on the ACT
- The study results to date also demonstrate the positive impact and benefit of a structured intervention and information program, as administered by a community pharmacist on patient behavior, physician management and an overall improvement in patients' asthma control

1. Asthma Control Test is a trademark of QualityMetric Incorporated.
2. Asthma Prevalence, Health Care Use and Mortality, 2002 CDC National Center for Health Statistics
3. National Heart, Lung, and Blood Institute (NHLBI). Data Fact Sheet. Asthma Statistics. Bethesda MD: National Institutes of Health (NIH), Public Health Service (PHS), 1999
4. National Center for Health Statistics (NHCS). Current estimates from the National Health Interview Survey, 1990. Vital and Health Statistics 10(194), 1997
5. Healthy People 2010 http://www.healthypeople.gov/Document/HTML/volume2/24Respiratory.htm
5. Asthma in the Workplace 2006, www.managedcaremag.com/asthma
7. Nathan RA, Sorkness CA, Kosinski M, Schatz M, Li JT, Marcus P, Murray JJ, Pendergraft TB. Development of the asthma control test: a survey for assessing asthma control. *J Allergy Clinical Immunol* 2004;113(1):59-65.
8. Schatz M, Sorkness CA, Li JT, Marcus P, Murray JJ, Nathan RA, Kosinski M, Pendergraft TB. Asthma control test: reliability, validity, and responsiveness in patients not previously followed by asthma specialists. *J Allergy Clin Immunol* 2006;117:549-56.

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