

Final Report Regarding Asthma Adherence

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TASK FORCE MEMBERS

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GROUPS INTERVIEWED

Specialists: allergists/pulmonologists
Pharmacists: retail and hospital
Nurses: office/school-based
Asthma educators: hospital nursing/respiratory
therapists
Pharmaceutical companies
Managed care organization medical directors
Residency training directors
State public health officials
Primary care physicians/nurse practitioners
physician assistants
Asthma Consortium

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RECOMMENDATIONS

1. Improve physician practice management capabilities by encouraging the development of medication assays and asthma metered-dose inhaler (MDI) monitoring systems to become commercially available in order to accurately diagnose patient adherence status.
2. Promote the development of cost-effective clinical management strategies that combine drug monitoring with educational interventions to maximize adherence and minimize nonadherence.
3. Promote the development of educational programs for practicing physicians, physicians-in-training, and other health care providers to improve patient adherence.
4. Develop a collaborative relationship with pharmacies to improve patient adherence by tracking medication refill data and cooperatively educating asthmatic patients.

BACKGROUND

Michael Alexander, M.D., developed the concept of establishing a Medication Adherence Task Force during his term as president of the Medical Society of Delaware. The task force, part of the Environmental and Public Health Committee, was established to identify reasons for low adherence to medical recommendations and develop recommendations to improve adherence in patients treated in Delaware. Physicians have always recognized the relationship between adherence to treatment recommendations and successful outcomes; however, the actual medication adherence of patients with chronic illness has been universally recognized as poor, contributing to persistent morbidity.

As chair of the task force, Dr. Weinstein, an allergist/clinical immunologist, selected asthma as the first disease to be studied due to his asthma adherence research. Although there were no detailed data regarding asthma incidence, morbidity, and costs in Delaware, it was assumed that Delaware had a proportional representation of the estimated 12 to 15 million affected Americans, including 4.8 million children under age 18. According to the 1995 national asthma morbidity statistics published in the 1999 NIH Asthma Fact Sheet,¹ asthma was responsible for:

- 500,000 hospitalizations
- 1.8 million emergency room visits
- 6,500 deaths
- 9 million lost work days
- 10 million lost school days
- 1998 total cost of 11.3 billion dollars
- 3.6 billion dollars due to hospitalization

As the task force proceeded with its investigation, several recurring themes surfaced.

1. There were no clear data on the magnitude of asthma nonadherence since physicians have no objective measures with which to assess this. Quantifying adherence patterns was less of a problem in the 1980s and early 1990s when theophylline was more widely used as a primary treatment of asthma. Physicians were able to

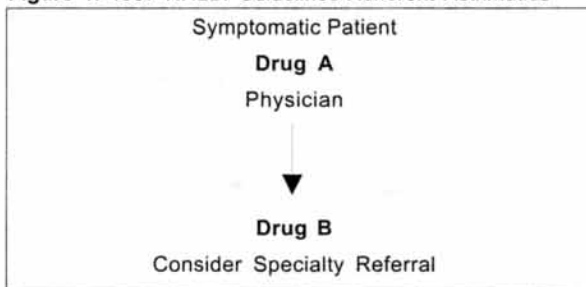
assess patient adherence by measuring the concentration of theophylline in blood specimens. With the recent emphasis on preventative anti-inflammatory therapy for asthma, physicians lack objective measures to determine the actual use of inhaled corticosteroids or cromolyn-like drugs as well as oral leukotriene modifiers.

2. The practice of medicine functions on the "honor system." Physicians must accept their patients' word about medication use, despite multiple studies that demonstrate convincingly that patients overstate their adherence. A study by Milgrom, Bender, and colleagues has documented that parents of asthmatic children in a research outcome study with inhaled corticosteroids overstate the use of medication taken.² They examined 24 asthmatic children, ages eight to 12 years and with moderate to severe asthma, for 13 weeks. The parents were asked to keep a diary of medications used, symptoms experienced, and peak flow values. A microchip device was attached to the MDI to give an objective measure of medication administration. They found a significant discrepancy between the measured use of the MDIs and the reported use in the diaries. The median inhaled corticosteroid use written in the diaries was 95 percent versus 58 percent determined by the monitoring device. Ninety-two percent of the subjects exaggerated their use of the inhaled steroid, and only 32 percent of the subjects inhaled the medication at the correct time. In this study, the eight children requiring emergency visits resulting in oral steroid bursts had been dramatically less adherent to the prescribed regimen than the group of 16 children with stable symptom control. Other studies of adult asthmatics using monitoring devices report deception by the subjects when reporting medication use.³

3. As a result of the lack of clinically available objective, diagnostic adherence "tools" (medication assays or MDI monitors) for physicians, many non-adherent asthmatics are incorrectly diagnosed as adherent and receive inaccurate, expensive, and inefficient care. This may lead to persistent morbidity and possible death due to the failure of the physician to make the correct

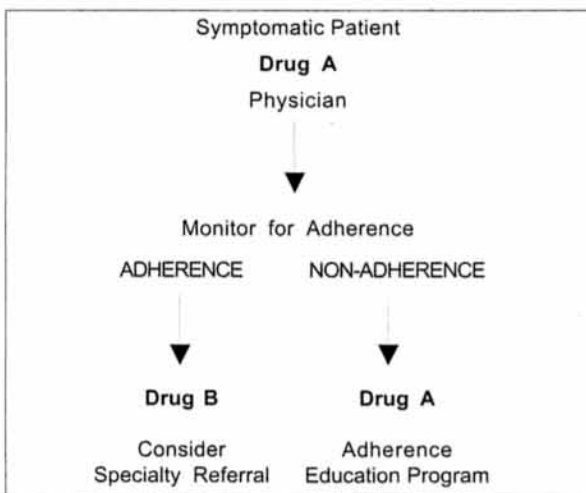
adherence diagnosis. The current National Heart, Lung, and Blood Institute (NHLBI) asthma management guidelines recommend that physicians make treatment decisions that increase or decrease the level of care based on the frequency of symptoms and pulmonary function of asthmatic patients (Figure 1).⁴

Figure 1. 1997 NHLBI Guidelines *Adherent Asthmatics*



This is appropriate for adherent patients who fail a less effective regimen. It is not appropriate for the non-adherent asthmatic who is symptomatic because of failure to take the prescribed regimen. A more efficient and cost-effective approach would be to implement a monitoring system to identify the symptomatic non-adherent patients and place them into an educational program that promotes consistent medication use (Figure 2).

Figure 2. New NHLBI Guidelines *Adherent and Non-Adherent Asthmatics*



4. The current quality of asthma care, as measured by the morbidity data reviewed above, is directly related to the adherence of both patients and physicians to the NHLBI guidelines. Experts in the area of quality health care control observe that achievement of optimal product quality is dependent upon the ability to measure the quality of each component of the process involved in the production of that product.⁵ Currently, physicians lack the means to objectively measure a patient's adherence status during the evaluation process of a symptomatic patient. As a result, health care researchers and practitioners are unable to determine the cause of treatment failure, limiting the opportunity to improve the quality of care provided.

5. There are few evidence-based studies that examine the cost-effectiveness of clinical interventions to promote adherence with asthma medications. Most studies that examine the cost-effectiveness of an intervention to decrease asthma expenditures do not objectively determine the adherence of the subjects studied. These investigators assume that the individuals did so as evidenced by the diary reports submitted. Weinstein and colleagues demonstrated the cost-effectiveness of an asthma adherence education program for severe asthmatic children and their families in both inpatient and outpatient rehabilitation settings.^{6,7} By monitoring patients with theophylline levels, these investigators were able to identify and change non-adherent behavior, control symptoms, and reduce costs. In the year prior to entry into the inpatient rehabilitation program, the 59 severe asthmatic children had a median of seven hospital days and four emergency room visits. The median number of hospital days and emergency visits at all four years of outpatient follow-up was zero. Median cost the year prior to rehabilitation was \$10,240. Median cost at first year follow-up was \$4,036; second year, \$2,801; third year, \$2,316; and fourth year, \$1,936. Health plans are interested in evaluating studies that determine the effectiveness of assays, monitoring devices, and clinical programs that may increase adherence. Funding to develop assays and monitoring devices for

anti-inflammatory medication as well as for support to conduct these studies is currently unavailable through the state's managed care organizations or the state's Department of Public Health.

6. A significant number of physicians in the state are not aware of asthma treatment guidelines recommending daily anti-inflammatory therapy. A larger number do not follow the National Asthma Education and Prevention Program (NAEPP) guidelines that include prescribing spacers and peak flow meters as well as developing an asthma action plan for each patient. While there are no data to fully appreciate the extent of this problem, the Delaware Asthma Consortium, a state-wide "grass roots" coalition of health care professionals organized by the Delaware chapter of the American Lung Association, is examining ways to increase patient and physician awareness of the NAEPP Guidelines. Pharmaceutical companies and managed care organizations are part of the Asthma Consortium.

7. Most physicians lack the training to change non-adherent patient behaviors. Nurses are trained more extensively in assessing problems regarding adherence and behavior change. Pharmaceutical companies participating in the task force deliberations have expressed interest in supporting educational efforts to improve physician communication skills to promote adherence to asthma treatment recommendations.

8. It is estimated that more than half of the 1.8 billion prescriptions written annually in the United States are taken incorrectly.⁸ A significant number are not filled at all. Pharmacy data to "indirectly" track patient adherence is becoming available. However, these data are not routinely available for physicians in our state. In some managed care settings, pharmacy databases can provide information on the exact regimen prescribed, the amount of medication dispensed, and the timing of refills. Electronic systems are being developed to provide these data to physicians' offices. Pharmacists in Delaware are interested in working collaboratively with physicians to provide prescription refill data and develop programs to increase asthma patient adherence.

IMPLEMENTATION OF RECOMMENDATIONS

1. Improve physician practice management capabilities by encouraging the development of medication assays and asthma MDI monitoring systems to become commercially available in order to accurately diagnose patient adherence status.

This can be achieved by having members of the Medical Society work with pharmaceutical companies, biomedical equipment companies, and laboratories to assist physicians in identifying nonadherent patients. Current anti-inflammatory MDIs are quite effective when taken. The focus of this group is to spur the production of "smarter" MDIs with monitoring technology to increase the effectiveness of the physicians prescribing them.

2. Promote the development of cost-effective clinical management strategies that combine drug monitoring with educational interventions to maximize adherence and minimize non-adherence.

This can be achieved by supporting research grants developed by investigators in the state to examine these issues. Health plans and area hospitals that have interests in this area could be partners with the Medical Society in developing protocols and providing a patient base to forward this research. The State of Delaware, responsible for Medicaid costs, and employers in the state who are responsible for the health care costs of their employees and families, may be interested in supporting this cost saving research.

3. Promote the development of educational programs for practicing physicians, physicians-in-training, and other health care providers to improve patient adherence.

This can be achieved by having physicians, working with pharmaceutical companies and managed care organizations, develop and disseminate educational material. Both of these industries have always been supportive of physician and patient education. They would both benefit financially from an environment in which chronically ill asthmatic patients are more consistent with their medication.

4. Develop a collaborative relationship with pharmacies to improve patient adherence by tracking medication refill data and cooperatively educating asthmatic patients.

This can be achieved by developing computerized, web-enabled tracking systems for prescriptions and refills, dispensed by Delaware pharmacies, for patients seen by Delaware physicians. Physicians and pharmacists could then test varying interventions and points of service for educational adherence programs.

CONCLUSION

The members of the Medication Adherence Task Force believe that improving asthmatic patient adherence is a primary responsibility of the physician, his or her nursing staff, the patient, and the family of the pediatric patient. Physicians are limited in their effectiveness in maintaining adherence to asthma regimens due to the lack of 1) diagnostic tools to correctly determine the adherence status of the symptomatic patient, 2) clinical management programs to improve adherence, and 3) training necessary to implement these programs. The ascertainment and promotion of adherence is an essential component of the successful care of asthma as well as any other chronic medical condition, and physicians must assume the leadership role in promoting it. By working cooperatively with all the participants of Delaware's health care in-

dustry, the Medical Society of Delaware can assist the medical profession in addressing these deficits, improve the quality of life of asthmatic individuals, and reduce the costs of care.

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