

Asthma Disease Management

a report by

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Asthma has been managed since the time of Hippocrates, and many remedies have been introduced over the centuries (see *Table 1*). In 1991, in response to observed increasing asthma mortality in the 1970s and 1980s, especially among inner-city African-Americans, the National Asthma Education and Prevention Program (NAEPP), introduced Guidelines for Asthma treatments.¹ A group of experts were invited to Virginia from all regions of the country to hear the guidelines and disseminate the suggestions to local physicians through lectures using specific content material. Although physician knowledge was documented to be more consistent with the guidelines over the next five years, patient management changed little, with the use of beta agonists remaining the major therapy administered to private and public sector moderate and severe asthmatics.

Two more updates have been published based on more recent reviews of scientific literature and subsequent expert opinions.^{2,3} Numerous subsequent studies have demonstrated that guidelines tend to be poorly followed by physicians.⁴⁻⁶ This is not specific for asthmatics.⁷ Even when guidelines are introduced with a programme of education that is specifically developed using adult learning theory, the effect on physician behaviour is not impressive^{8,9} and requires incremental steps.¹⁰

One problem with asthma guidelines is that, although they make sense, they are not often backed by large randomised clinical trials (RCTs) with solid proof of effectiveness. This is especially true in real-life circumstances such as doctors' offices.¹¹ For example, use of daily peak flow meters, flow meters as part of an action plan, action plans *per se*, long-acting beta agonist as controllers, very high inhaled corticosteroid dosing with more severe clinical asthma and frequent office visits are just a few recommendations that are of questionable added efficacy.^{3,12-14} These guideline recommendations, which often appear to the practising clinician as added effort without personal observation of major gain, have created credibility gaps and barriers with practicing physicians.

Another problem with guidelines has been their stated final goals – 'near normal' pulmonary function and activity for all asthma patients. This may be unrealistic. In fact, some had suggested that asthma control as defined by the NAEPP is unrealistic for a large majority of patients.¹⁵

A recent study has examined the question of whether or not asthma-guidelines-defined control could be achieved in a one-year randomised, double blind parallel group study of over 3,000 patients in cohort of previously uncontrolled patients. The study attempted to achieve a measure of control defined as total and/or well controlled. Treatment was stepped up until total control was achieved or 500 micrograms bid of inhaled fluticasone plus salmeterol was administered. Across all strata, most patients ended up on the highest doses of medication. Total control was achieved in less than half of the patients, and well controlled status as strictly defined by the authors as a reflection of the NAEPP guidelines was less than 50% and 63% respectively. These levels of control were better than on the prior regimens of the same patients before the study. Although the majority of patients received good control, 40% of severe asthmatics did not, even at high dose combination therapy over 52 weeks. These were well motivated patients managed in a study environment that is unlikely to be simulated in standard practice.

This outcome is well below the expectations set out by the NAEPP guidelines. The experts who developed the guidelines actually thought better outcomes would occur if their instructions were followed. In spite of the above shortcomings of guideline goals and the building of unrealistic expectations, most patients will do quite well if adequate controller therapy is administered. In fact, most failures are not attributed to the state or nature of disease or problems of treatment strategies, but rather to low physician and patient expectations, sub-optimal treatment compliance¹³ and financial limitations on available treatments.¹³

Physicians tend not to follow clinical practice guidelines, and barriers to physician performance

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Table 1: Historical Treatment of Asthma

Prescriber	Year	Recommendation
Agenta	600 AD	<i>vinegar of squills; cow-parsnip; mustard; round birthwort; external application of figs, honey, wax, and barley; bleeding, vomiting and administration of clysters</i>
Cardano	1500 AD	<i>diet, elimination of feather beds, horseback riding; weekly baths; purging of head through the nose</i>
Herberden	1802	<i>peruvian bark, mustard seed, quicksilver; garlic, opium, smoking tobacco, blood letting</i>
Laennec	1619	<i>squills; IPECAC; narcotics; dilute prussic acid; emetics; volatilised oxides of lead; oxygen</i>
Salter	1864	<i>IPECAC; tobacco; strong hot coffee; inhalation of chloroform; smoking of stramonium; fumes of burning nitro-paper; shower bath; quinine; inhalation of oxygen; respiration of compressed air</i>
Osler	1912	<i>inhalation of chloroform; ampules of amylnitrate; IM. pilocarpine; P.O. warm whiskey with or without chloroform; morphia; strychnine; belladonna; atropine cigarettes; compressed air and occasionally oxygen by inhalation</i>

in one setting may not be present in another,¹⁵ so some groups of healthcare providers have focused on disease management. This strategy has become popular as a way to focus on and presumably improve outcomes through multiple incentives or mandated changes in the process of asthma care delivery.¹⁶

Currently, asthma disease management, along with purchasing pools and insistence on using generic or cheaper drug substitution, is very popular among healthcare organisations, hospitals and even state agencies. These programmes can train various individuals such as asthma management nurses and specialist pharmacists, and add disease-specific clinics, education programmes and respiratory therapy device usage instruction. Physicians may or may not be pivotal in these programmes and may be perceived more as a problem than a solution. Documentation is often critical or primary in the programme's reported success, i.e. the number of asthmatics that attended a class or that received an action plan, a peak flow meter or an inhaled corticosteroid (ICS). Short-term emergency visit outcomes compared with prior emergency visit outcome measures are frequently tested.¹⁷

Few studies, if any, are RCTs modelling real-life circumstance. Many use outcomes such as percentage of patients filling ICS prescriptions^{18,19} not necessarily the right dose of ICS for particular patients.^{20,21} In fact, although several standardised measures of asthma control exist, no direct comparisons of the performance and properties of these control measures have been published and none related to asthma disease severity.²² Most management programmes employ numerous

processes that, by themselves, increase cost (education) and patient and physician time (peak flow meters, action plans) without proven individual benefit to particular patients.

These comprehensive programmes are being introduced among indigent patients where outcomes are poor (frequent emergency room (ER) visits), barriers to physician access are high, and cost is high, (measured primarily in ER visits and hospitalisation), often with few significant changes from prior benchmarks over time when observation is prolonged.²³

Should all patients with asthma be managed (in contrast to treated) and should the process be the same for all patients? Although physicians and society desire a healthy patient (Human services, Healthy People 2010 initiative²⁴), disease management and health maintenance corporations desire to ultimately make care more efficient; evaluation of the programme costs and complexities determines whether outcome expectations are realistic or whether there is an alternative way to achieve reasonable results, especially in inner-city minority patients.

If one of the major benchmark outcomes is measured in provision of ICS therapy to all patients with persistent asthma,¹⁸ and that therapy most certainly improves quality of life among asthmatics, the reasons for health maintenance programmes (indigent programmes included) not supplying ICS to all patients with the diagnosis of mild or moderate-to-severe asthma are brought into question.

In over 100 severe asthmatic patients first captured in the ER or hospital, ICS was started at the highest doses and automatically stepped down every three to four months as clinically indicated. Dependant on the individual's pre-defined benchmarks (hospitalisation, ER visits, quality of life questionnaire, etc.), when examined, this simple strategy compares favourably with the usual comprehensive asthma management programme.

Although expectations for long-term asthma outcomes, prevention of disease remodelling²⁵ and complications are presumed to be best achieved with close patient contact and optimum early ICS therapy,²⁶ this has not been scientifically proven. Currently, the mortality for asthma has decreased even among the most 'at risk' groups.²⁷ Is this improvement due to NAEPP guidelines, better Asthma Management, societal events or luck? Treatment of asthma must be reassessed, expectations for patients must be reasonable, and new ways must be developed to provide indicated ICS and optimise patient/provider economic costs, especially in the inner-city indigent population. **n**

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