

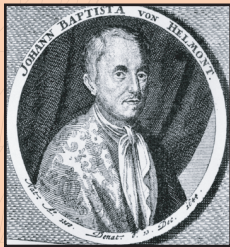


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# Asthma Focus

Vol.1 No.2 May-July 2005

## FAMOUS ASTHMATICS



Helmont, Johannes  
Baptista Van  
(1579 - 1644)

Physician and  
pioneer chemist  
Jean Baptista van

Helmont studied his own asthma, recording factors that aggravated it. His work challenged the established theory that an imbalance of blood, phlegm, yellow bile, and black bile causes disease. He called asthma, "the falling sickness of the lungs".

He went for education in Louvain, to have an M.D. Upon the completion of his initial studies he refused to accept an M.A. because he felt that he had not learned anything. He studied under some Jesuits, but felt he did not learn anything from them either. He did, however, return to Louvain to earn an M.D. in 1599.

Upon graduation Helmont was offered a well-endowed canonry, but he refused it. 1596, he lectured on surgery at Louvain. 1605, he practiced medicine during the plague in Antwerp.

Although he was a physician, Helmont practiced for only a short time. He refused on principle to practice medicine and profit from the suffering of others. He did treat people, but free of charge.

He was placed in ecclesiastical custody in 1634. Then he was released but placed under house arrest. This was lifted in 1636, but church proceedings were not formally ended until 1642. In 1646 his widow received official rehabilitation from the archbishop .

## Management of Chronic Asthma - An Update

### INTRODUCTION

Although much progress has been made in understanding of bronchial asthma over the past decade, it remains a frequently encountered condition challenging physicians in the indoor, outdoor as well as in emergency care settings. Asthma prevalence is increasing worldwide and the morbidity and mortality remains unacceptably high. It is of paramount importance to promote a better standard of treatment based on advances in the understanding of the pathophysiology and pharmacotherapy of asthma and to encourage uniformity in the management of asthma.

### AIMS OF MANAGEMENT

The aims of asthma management are to:

- Avoid causative & trigger factors
- Restore normal (or best possible) lung function
- Abolish symptoms and achieve a normal lifestyle
- Reduce the risk of severe attacks
- Optimise treatment and minimise side-effects of drugs

These aims are promoted by early recognition of asthma and treatment of airway inflammation with inhaled corticosteroids. The severity of asthma is assessed and treatment initiated on the principle of prompt and optimal management strategy to gain rapid control. This is achieved by a step care procedure.

### MANAGEMENT GUIDELINES

Asthma management includes avoidance of triggers and precipitating factors, and pharmacotherapy.

#### 1. AVOIDANCE

Exposure to agents known to aggravate or cause asthma including house dust mite, smoke and fumes, pollens and moulds, animal dander, cigarette smoke (active and passive) and exposure to sensitising agents in workplace should be avoided or minimised as far as practically possible. Certain drugs like NSAIDs and  $\beta$ -blockers (including  $\beta$ -blocker eye drops) should be avoided.

Table 1. Classification of drugs used in the maintenance of asthma

RELIEVERS	PREVENTERS	PROTECTORS
Short-acting $\beta_2$ agonists • Salbutamol (Sultoin <sup>®</sup> ) • Fenoterol	Inhaled corticosteroids • Beclomethasone (Beclomin <sup>®</sup> ) • Fluticasone (Flaso <sup>®</sup> )	Long-acting $\beta_2$ agonists • Salmeterol (Salmate <sup>®</sup> )
Anti-cholinergics • Ipratropium bromide (Iprex <sup>®</sup> )	Systemic corticosteroids • Prednisolone • Betamethasone	Sustained-release theophyllines (Asmany SR)
Short-acting theophyllines • Aminophylline • Theophylline	Cromones • Sodium Cromoglycate (Nacromin <sup>®</sup> ) Nedochromil Sodium	
	Leukotriene antagonists • Montelukast (Montene <sup>®</sup> )	
COMBINATIONS • Salmeterol & Fluticasone (Ticamet <sup>®</sup> )		

## 2. PHARMACOTHERAPY

A classification of asthma drugs based on current knowledge of their mode of action is represented in Table 1.

They may be:

- Relievers: short-acting bronchodilators that provide acute relief of symptoms
- Preventers: anti-inflammatory medications
- Protectors: a sustained bronchodilator action to control symptoms with unproven or mild anti-inflammatory action

Physicians should be acquainted with the trade names, formulations, dosage and mode of administration of each preparation. In general, duplication of drugs within one group should be avoided. Combinations such as the regular use of controllers like long-acting  $\beta_2$  agonists (salmeterol) with an inhaled corticosteroid

medication may be used and have many potential merits. The combination of a short-acting  $\beta_2$  agonist inhaler with ipratropium bromide is not recommended for routine use in asthma.

### STEP CARE MANAGEMENT

Step Care Management is like a staircase. Treatment is started at the appropriate step after evaluating the level of severity of asthma. Then "step up" is done along the stairs if asthma is not controlled or becomes more severe and "step down" is employed when patient's asthma is fully controlled for 3 months or more.

Step care management plan for chronic asthma in adults consists of five steps. At first, the basic principles of these five steps should be understood. Then any step can be constructed by combining available drugs.

## BASIC PRINCIPLES OF STEP CARE MANAGEMENT

Table-2 Step care management of chronic asthma in  $\geq 5$  years to adults

THE STAIR CASE OF STEP CARE MANAGEMENT			
(for children $\geq 5$ years to adults)			
Step	Treatment to be given		
Step V	Oral Steroid (Prednisolone) Single Morning dose (5-20mg)	PLUS All medications of Step IVB	PLUS Step I
Step IV	IVB	Long-acting $\beta_2$ -agonist inhaler (Salmeterol) PLUS Sustained release Aminophylline/Theophylline (Both)	PLUS High dose Corticosteroids (Option: Z) PLUS Step I
	IVA	Long-acting $\beta_2$ -agonist inhaler (Salmeterol) OR Sustained release Aminophylline/Theophylline (Alone)	
Step III	Option : Z High dose Corticosteroid inhaler (Dose for $\geq 5$ -18 years upto 400-800 $\mu\text{g}$ m or more; for Adults - 800-2000 $\mu\text{g}$ m)		PLUS Step I
	Option : Y Low dose Corticosteroid inhaler (Option : b) PLUS Long-acting $\beta_2$ -agonists (Salmeterol) OR Sustained release Aminophylline/Theophylline OR Slow released Salbutamol		
	Option : X Full dose Cromone inhaler (Option : a) PLUS Low dose Corticosteroid inhaler (Option : b)		
Step II	Option : c Leukotrienes antagonists ( Zafirlukast 20mg bd, 1 hr before or 2 hrs after meal. Montelukast 6 -12 yrs : 5mg, >12 yrs: 10 mg at bed time)		PLUS Step I
	Option : b Low dose of Corticosteroid inhaler (Triamcinolone /Beclomethasone) (Dose for $\geq 5$ -18 years upto 400 $\mu\text{g}$ m; for Adults - upto 800 $\mu\text{g}$ m)		
	Option : a Full dose of Cromone inhaler ( Sodium Cromoglycate / Nedocromil Sodium). Dose - 10 mg 4 times daily.		
Step I	Short acting $\beta_2$ agonist inhaler (Salbutamol) as required ( when patient feels even mild cough, wheeze and chest tightness, he should take inhaled Salbutamol, up to 4-6 times/day) Additional inhalation prior to exercise may be required		

### Step- I:

Inflammation is so minimal that no Preventer or anti-inflammatory medication is required. Patient only take Reliever drug (bronchodilator) as per need.

Onwards Step-I is kept as a part of Step II to Step V.

### Step-II:

For control of inflammation, low dose Preventer (anti-inflammatory medication) is required. Reliever drug will be used in step-II to step-V as per need, like step-I. low dose anti-inflammatory action can be achieved by using "low dose Inhaled Corticosteroids (LDICS)" or "full dose Cromones" or "Leukotrienes antagonists".

### Step - III:

To control airway inflammation, high dose Preventer (anti-inflammatory medication) is required. This means high dose

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Salmeterol 25  $\mu\text{g}$  & Fluticasone 125 or 250  $\mu\text{g}$ /puff; 120 puffs

inhaled Corticosteroids (HDICS). But low dose inhaled Corticosteroids (LDICS) along with Cromones or long-acting  $\beta_2$ -agonist (Salmeterol) inhaler or Sustained release Theophyllin (protectors) may also be given. Any of these combinations is equivalent to high dose inhaled Corticosteroids (HDICS).

**Step - IV:**

There are two divisions of step-IV viz. IVA and IVB. When high dose anti-inflammatory drugs (HDICS) are seemed to be insufficient to control asthma then step - IVA or IVB is used. Step IVA (A=alone) means addition of either Salmeterol inhaler or Theophyllin SR along with HDICS. Step IVB (B= both) means both Salmeterol inhaler and Theophyllin SR will be added with HDICS.

**Step -V:**

It is the highest step. Oral Corticosteroid, added as a single morning dose, with step-IVB is known as step-V. This step is given when step IVB is seemed to be inadequate to control asthma.

Childhood asthma demands special attention in diagnosis as well as in management. The basic principle of management in this age group is same as above. However, it differs in formulation of steps in some aspects.

**REFERRAL TO A PULMONOLOGIST**

The majority of asthmatics can be managed optimally in a primary health care facility provided the elements of the asthma guidelines are accommodated. If asthma is not controlled even after giving step-V management, round the clock nebulized bronchodilators can be used and the patient must be referred to a Pulmonologist (Chest Disease Specialist). A sec-

ond thought should be given whether the diagnosis is correct or not and management plan including environmental control should be reviewed minutely.

**SUMMARY**

These updates represent a practical approach to the treatment of chronic asthma in adults and children. It is intended to encourage a standardised approach to asthma treatment based on the current understanding of asthma pathophysiology and drug treatment.

The foundation of chronic asthma management is anti-inflammatory treatment. Inhaled corticosteroids remain unrivalled in potency and cost-effectiveness. Avoidance measures and a self-management plan are emphasised. The management strategies of acute exacerbation of asthma consist of several fundamental differences. The practicing physicians should also appraise that.

**Table- 3 Guideline for management of asthma in children below five years of age**

Step	Daily Controller Medications	Other Treatment Options
All level: In addition to regular daily controller therapy, rapid-acting inhaled $\beta_2$ -agonist should be taken as needed to relieve symptoms, but should not be taken more than 3-4 times a day. Patient education is essential at every step		
Step 4 Severe Persistent	<ul style="list-style-type: none"> <li>High-dose inhaled glucocorticosteroid plus one or more of the following, if needed:</li> <li>Sustained-release theophylline</li> <li>Long-acting inhaled <math>\beta_2</math>-agonist</li> <li>Leukotrienes antagonists</li> <li>Oral glucocorticosteroid</li> </ul>	
Step 3 Moderate Persistent	<ul style="list-style-type: none"> <li>Medium-dose inhaled glucocorticosteroid</li> </ul>	<ul style="list-style-type: none"> <li>Medium-dose inhaled glucocorticosteroid plus sustained-release theophylline, or</li> <li>Medium-dose inhaled glucocorticosteroid plus long-acting inhaled <math>\beta_2</math>-agonist, or</li> <li>High-dose inhaled glucocorticosteroid or</li> <li>Medium-dose glucocorticosteroid plus Leukotrienes antagonists</li> </ul>
Step 2 Mild Persistent	<ul style="list-style-type: none"> <li>Low-dose inhaled glucocorticosteroid</li> </ul>	<ul style="list-style-type: none"> <li>Sustained-release theophylline, or</li> <li>Cromone, or</li> <li>Leukotrienes antagonists</li> </ul>
Step 1 Intermittent	<ul style="list-style-type: none"> <li>Inhaled short-acting <math>\beta_2</math> agonist as required</li> </ul>	
All steps: Once control of asthma is achieved and maintained for at least 3 months, a gradual reduction of the maintenance therapy should be tried to identify the minimum therapy required to maintain control.		

**References:**

- 1 National Asthma Guidelines for medical practitioners, Second edition, Asthma Association, Bangladesh.
2. POCKET GUIDE FOR ASTHMA MANAGEMENT AND PREVENTION: A Pocket Guide for Physicians and Nurses, Updated 2004; GLOBAL INITIATIVE FOR ASTHMA
3. Guidelines for the management of chronic asthma in adults - 2000 update, South African Medical Journal, May 2000, Vol 90, No. 5: 540-552; SA Thoracic Society and the Allergy Society of South Africa

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### Antioxidants Cut Asthma Risk in Children

Children with high levels of antioxidants such as beta-carotene and vitamin C have lower rates of asthma, a new study finds. The reduction in asthma prevalence proved most dramatic among children exposed to secondhand smoke, researchers report. The study raises the possibility that dietary intervention may be something to consider for prevention or treatment of asthma.

Children with higher levels of a third antioxidant - selenium, a mineral nutrient - also had lower prevalence of asthma, researchers found.

The researchers focused on 6,153 children, aged 4 to 16. They looked at results of a health exam, a household questionnaire on whether asthma had been diagnosed, and blood tests measuring antioxidant levels and exposure to cigarette smoke.

Children with higher levels of selenium had a 10 percent reduction in asthma prevalence. In children exposed to secondhand smoke, the reduction associated with selenium climbed to 50 percent.

Higher beta carotene levels in children also were associated with a reduction in asthma - by 40 percent among those exposed to secondhand smoke and by 10 percent among those not exposed to smoke. Higher vitamin C levels, too, were associated with reducing asthma, by about 40 percent for those exposed to smoke and by 10 percent for others.

Beta carotene is found in fruits and vegetables such as carrots, mangos and oranges. Vitamin C is plentiful in oranges and other citrus fruits, as well as red and green peppers, broccoli and Brussels sprouts. Selenium can be found in liver, cereals, grains, fish and some nuts. Supplements containing antioxidants also are available, but too much selenium can be toxic, the researchers note.

Another antioxidant, vitamin E, had little or no association with asthma prevalence regardless of smoke exposure.

Source: American Journal of Respiratory and Critical Care Medicine, 2004

### Sublingual Allergy Immunotherapy Gains Ground

Sublingual immunotherapy shows promise, as investigators document its efficacy against more allergens and safety in young children.

In one study, patients with mite-induced allergic rhinitis, asthma, or both used fewer drugs and required fewer unscheduled medical appointments after treatment with sublingual immunotherapy. The investigators enrolled 68 patients with mite-induced rhinitis, asthma, or both. All patients had undergone a baseline assessment prior to enrollment. The average age was 32 years. During the two-year study, patients received either standard antihistamine or asthma treatment along with sublingual immunotherapy or placebo. The investigators documented a significant reduction in nasal obstruction, nasal itching, and cough in treatment group compared with both the placebo group and baseline. In second year, the treatment group had a 25% reduction in drug consumption, while the placebo group had no change. Therefore, despite the cost of immunotherapy, the treatment is less expensive.

In other research, it was found that the sublingual immunotherapy is safe in children under five years. Because of the reactions that can occur with immunotherapy, it is typically not given to preschool children. In this study involving 126 children (average age, 4.2 years) and 39,000 doses, the investigators documented nine adverse events in seven children: two mild episodes of oral itching and one mild episode of abdominal pain. The remaining six, which consisted of gastrointestinal events, were resolved by reducing the dose.

Source: Silva GE, Sherrill DL, Guerra S, Barbee RA. Chest 2004 Jul; 126(1): 59-65, AAAAI 61st Annual Meeting, March 2005: Abstract 828 & abstract 1056

### Montelukast is effective for childhood asthma

Montelukast can reduce asthma exacerbations and controller medications in children aged two to five years, according to the results of a recent study.

Asthma generally has greatest prevalence in children aged 5 to 14 years, and exacerbations are more common in school children. Controller therapy with inhaled corticosteroids is recommended for persistent asthma but not for intermittent asthma. On-demand  $\beta$ -agonists are recommended for acute exacerbations, mainly rhinovirus, account for most asthma exacerbations and daily symptoms.

Montelukast reduces symptoms and exacerbations in children with asthma. If used for long-term control, it may reduce asthma exacerbations.

This study is a randomized, placebo-controlled, multicenter trial (68 sites in 23 countries) comparing montelukast on asthma exacerbation frequency in children with mild intermittent asthma to placebo. Montelukast effectively reduced asthma exacerbations in children with intermittent asthma over 12 months. Montelukast was generally well tolerated.

Source: Am J Respir Crit Care Med. 2005;171:315-322



### New inhaled corticosteroid Improves Quality-of-Life in Severe Asthma

Treatment with the new inhaled corticosteroid ciclesonide is linked to improved quality of life in patients with severe asthma, according to findings of a new study.

In this study of quality-of-life outcomes, it was found that patients with severe persistent asthma did as well with ciclesonide as with fluticasone and both were superior to placebo. This finding shows that the availability of ciclesonide broadens physicians' treatment options in a difficult-to-treat population.

One of the apparent advantages of ciclesonide is that it may be associated with a low rate of local effects, such as dysphonia and oral candidiasis.

The investigators used the Juniper Asthma Quality of Life Questionnaire (AQLQ) examined whether patients' reports on this parameter were influenced by the study drug.

A total of 531 patients with severe asthma randomized to receive ciclesonide at a dose of 160 or 320 µg twice daily, fluticasone 440 µg twice daily, or placebo by MDI. Patients were at least 12 years and had FEV1 of 40% to 65% of that predicted for the individual's age and height.

The patients had participated in a 12-week, phase 3, multicenter, double-blind, parallel-group, placebo-controlled trial. The investigators recorded patients' overall AQLQ scores and individual domain scores at baseline and at weeks 4 and 12.

The investigators observed clinically significant improvements in overall AQLQ scores between baseline and week 12 in all of the treatment groups compared with placebo. Compared with placebo patients with ciclesonide 160 µg twice-daily had an average increase of 0.61; those receiving 320 µg twice daily had an average increase of 0.65. The fluticasone group's score exceeded placebo by an average of 0.91 points.

Source: David I. Bernstein, AAAAI 61st Annual Meeting, March 2005: Abstract 836.

### Childhood asthma exacerbations

exacerbations and use of rescue to five years with mild intermittent a recent randomized trial.

valence in children younger than five e common in preschool children than apy with inhaled corticosteroids is ma but not for intermittent asthma. ended for intermittent asthma. Viral ccount for up to 85% of asthma

s and exacerbations from RSV t asthma and has efficacy in asthma cerbation in viral infection.

placebo-controlled international countries) of two- to five-year-old thma to examine the effect of daily opation for one year. Montelukast rberations in 2 to 5-year-old patients 12 months of treatment and was

5-322

### Aspirin-Induced Asthma

A new study finds aspirin can trigger an asthma attack in about one in five adults with the disease. Some people with asthma can have a severe reaction to aspirin and other common painkillers, but the extent and seriousness of the problem is controversial. However, other experts say the risk is still small.

The British analysis of 21 studies of asthmatic patients revealed that 21 percent of adults and 5 percent of children with asthma could have their condition triggered by aspirin, the researchers report. In addition, most people in the studies also had severe asthmatic reactions to common over-the-counter, nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen, naproxen and diclofenac. However, only 7 percent were sensitive to acetaminophen.

However, Dr. Russell B. Leftwich, of Vanderbilt University, USA and a spokesman for the American Academy of Allergy Asthma and Immunology, says he believes the British researchers overestimate the frequency of aspirin sensitivity.

The bigger clinical issue with aspirin and NSAIDs, according to Dr. Malone, is a reaction that causes swelling of the lips and other parts of the mouth and throat. This can be life-threatening if the swelling makes it difficult to breathe.

Source: John Costello et.al., British Medical Journal, 2004

## Asthma and Indoor Environment

Continued exposure to inhaled aeroallergens is associated with increased morbidity in the majority of patients with asthma and allergies. Therefore, asthma management guidelines appropriately insist on measures to reduce exposure to aeroallergens, especially exposure to the indoor allergens like house dust mites and furred pets.

Effective measures to reduce exposure to the allergens produced by house dust mites are well described. Essentially, they consist of:

- Encasing the mattress and pillows in mite-impermeable materials.
- Removing reservoirs of allergen such as carpets, upholstered furniture, and soft toys, especially from the bedroom.
- Washing the remaining bedding weekly in hot water (> 54.4° C).
- Maintaining indoor humidity below 50%.

If carpet removal is not possible, vacuuming should be carried out with a vacuum cleaner, preferably when the asthmatic patient is not present. Such a multifaceted and concerted approach to reducing levels of dust mite allergen among asthmatic subjects with positive allergy skin test results to mite allergens, if successful, is clearly associated with improvement of asthma control.

Reducing exposure to allergens derived from furred pets is most reliably done by completely excluding the pet from the home and avoiding exposure elsewhere. Anyone working with patients with asthma who have documented pet allergy, even those patients whose asthma is difficult to control, knows that this is often not possible, at least in the short term. It is important to make patients aware of the choices they are making and to reexamine these choices on a regular basis.

Unfortunately, there is little hard evidence that anything other than complete avoidance can benefit asthmatic patients with a documented pet allergy. Since there appears to be a dose-response relationship between parameters of asthma control and exposure to allergen, it seems reasonable to keep the cat out of the bedroom, living room, and playroom. Washing pets has given variable results and must be repeated so frequently as to be impractical in most instances.

Dust control measures prescribed for dust mite control, such as removal of carpets or use of a vacuum cleaner, will also reduce the amount of settled allergen.

Cat and dog allergen, as opposed to dust mite allergen, are often found on small particles that are easily airborne. Due to the small particle size of airborne allergens, vacuum cleaners are likely required.

A systematic review of randomized trials of the use of air filtration systems in patients with asthma or allergies, found a reduction in symptoms, but not of medication use, and no improvement in measures of peak flow. Since dust mite allergen is found on large particles less likely to be airborne than pet allergen, dust mite exposure is less amenable to control with air filtration devices.

Given the potential benefit of allergen avoidance and the relative lack of adverse effects, practical methods of reducing allergen in the indoor environment, where we spend the greater part of our time, deserve adequate evaluation and investment.

It may be more difficult to justify large studies of expensive or time-consuming ways of reducing exposure to furred pets, since total exclusion of the pet from the home is so simple and effective.

For patients with the courage to get rid of their pets, it is important to remind them that the full benefits of their action will be reaped only over many months, since pet allergen, especially cat allergen, can persist for prolonged periods at significant levels in the home.

In summary, all patients with asthma deserve an allergy evaluation to identify sensitization to common inhaled allergens. Avoidance of allergens to which a patient with asthma is sensitized is an integral and effective part of asthma management.

Indoor allergens are of particular importance because of the large amount of time spent indoors. The indoor allergens most likely to be relevant are dust mites, cockroaches, and furred pets. Avoidance measures for dust mites and cockroaches are well described and are probably effective at improving asthma control if the measures are strictly adhered to.

Air filtration devices are unlikely to be important or effective over and above the more usual measures, given the characteristic distribution of these allergens in the home. Air filtration devices are effective at reducing levels of pet allergen in the home and may improve asthma control when combined with exclusion of the pet from the bedroom. This is likely to be much less effective than ridding the home of the pet completely and is therefore difficult to recommend.

References: 1 Custovic A, Simpson A, Chapman MD, et al. Allergen avoidance in the treatment of asthma and atopic disorders [review]. *Thorax* 1998; 53:63- 72 2. Arlian LG, Platts-Mills TA. The biology of dust mites and the remediation of mite allergens in allergic disease. *J Allergy Clin Immunol* 2001; 107(3 suppl):S406 - S413 3. Chapman MD, Wood RA. The role and remediation of animal allergens in allergic diseases. *J Allergy Clin Immunol* 2001; 107(3 suppl):S414 - S421

## Evidence-Based Guidelines for Use of Aerosol Therapy in Asthma

Use of inhaled aerosols has revolutionized the care of obstructive respiratory disease by allowing the selective delivery of optimal concentrations of drugs to the airway without creating the undesirable side effects that might result from systemic administration. Nonetheless, the caregiver is in a dilemma as to which aerosol delivery system is best for his or her patient.

Against this background, the American College of Chest Physicians (ACCP) and the American College of Allergy, Asthma, and Immunology (ACAAI) have issued joint evidence-based guidelines for selecting aerosol delivery devices for use in asthma or chronic obstructive pulmonary disease (COPD).

The new evidence-based guidelines provide additional criteria for device selection. It is worthy to note, regardless of what delivery system is chosen, patient education is essential to assure optimal outcomes.

From 1982 to 2001, there were 394 RCTs in which the same drug was administered with different devices, allowing comparison of metered-dose inhalers (MDIs) with or without spacers/holding chambers, dry powder inhalers (DPIs), and nebulizers. The devices delivered  $\beta_2$ -agonists, inhaled corticosteroids, and anticholinergic agents. Because of the limited number of published RCTs of inhaled corticosteroids, most of the studies reviewed and selected were RCTs of bronchodilators. Of 131 eligible studies, only 59 (45%) yielded usable data for pooled meta-analyses, and these studies were predominantly those testing  $\beta_2$ -agonists.

In each of the clinical settings investigated, there was no significant difference between devices in any efficacy outcome in any patient group. Reported adverse effects were minimal and related to the increased drug dose. When patients used the correct inhalation technique, each of the delivery devices provided similar outcomes.

The current practice of device selection for the delivery of aerosolized asthma or COPD medication is largely based on the device's effectiveness in delivering the medication to the patient. Although there are advantages and disadvantages associated with each device and medication, when used properly, all aerosol devices can work equally well and can be interchanged.

The literature reviewed by the panel suggested that aerosolized medication delivery systems, when used with comparable drug doses, provide equivalent efficacy. The guidelines panel therefore recommended that selection of an aerosol delivery

device should be based on device and drug availability, clinical setting, patient age and ability to use the selected device correctly, device use with multiple medications, cost and reimbursement, drug administration time, convenience in both outpatient and inpatient settings, and physician and patient preference.

Health-care providers should choose a device based on the individual characteristics of each patient. If asthma control is not achieved using one delivery device, it may be beneficial for patients to switch to another device.

Recommendations specific to clinical setting include nebulizers and MDIs with spacer/holding chambers for use in the inpatient setting or for delivery of  $\beta_2$ -agonists in the emergency department. In patients supported by mechanical ventilation, meticulous attention to details of the technique used for drug delivery is of vital importance.

The new evidence-based guidelines for aerosol therapy integrate individual clinical expertise with the best available evidence on respiratory medication and delivery devices. Ultimately, by following these evidence-based guidelines, clinicians will have a more current and consistent approach to selecting aerosol therapy for patients.

The evidence reviewed on intermittent vs continuous nebulizer delivery of  $\beta_2$ -agonists showed that there were similar benefits on pulmonary function and asthma symptom scores and similar adverse effects. However, time requirements for staff administration and maintenance of treatment are less for continuous nebulization than for intermittent nebulization. The guidelines suggest that both alternatives are appropriate in patients with severe dyspnea in the emergency department or intensive care unit.

For outpatient treatment of asthma, the guidelines suggest that both the MDI, used with or without the spacer/holding chamber, and the DPI are appropriate for the delivery of short-acting  $\beta_2$ -agonists. Regardless of the device used, clinicians need to provide patients with adequate education on the use of their aerosol inhaler to maximize asthma control.

Many health-care providers are confused by the large number of aerosol delivery devices available and have difficulty explaining their correct use to patients. Physicians, respiratory therapists, and nurses caring for patients with respiratory diseases should be familiar with issues related to performance and correct use of aerosol delivery devices in order to instruct their patients on proper usage.

**Congratulations !!!**



## The Winners of

**Asthma Focus (Jan-March, 2005) Quiz Competition**

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Hospital Road, Maizdee Court, Noakhali.
2. Dr. P.B. ROY SUPRIYA  
MBBS, MD (Medicine), DCH, ICAM (INDIA)  
Modern X-Ray Clinic, Hospital Road, B. Baria.
3. Dr. MD. ABDUL QAYYUM  
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### Editorial Note:

Dear Doctor :

We are happy to present you the second issue of 'Asthma Focus'. We are extremely encouraged to get your excellent enthusiasm for this newsletter. We also thank those who participate in our quiz competition. This issue is focused on the "Management of Chronic Asthma". Please send your valuable comments to make the newsletter more exclusive.

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