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Asthma Burden—Part II

Part I of this article was published in the last issue of the Weekly Epidemiological Report.

Current guidelines identify four key components for the successful management of asthma. The goal of management is control of asthma, which means that the patient exhibits:

- minimal or no chronic symptoms, including nocturnal symptoms
- infrequent or no exacerbations
- no emergency visits for acute symptom exacerbations
- minimal or no use of prn (as-needed) short-acting β_2-agonist
- no limitations on activities, including exercise and other physical activity
- circadian variations in peak expriatory flow (PEF) <20%
- normal or near normal PEF and
- minimal or no adverse effects from medicine.

Managing the asthma patient involves four key components: diagnosis, pharmacotherapy, environmental control and patient education. Asthma is a lifelong inflammatory disease affecting the airways; the earlier the patient is diagnosed and appropriate treatment started the better the overall outcome for health and quality of life. Early diagnosis and appropriate treatment of persistent asthma with controller medications are therefore critical factors for clinical success. In addition to pharmacotherapy, application of environmental control measures can reduce symptoms in patients with persistent asthma and can even minimise symptoms in patients with mild, intermittent asthma. In combination with pharmacotherapy, strict adherence to environmental control measures can lower medication requirements. Environmental control measures are particularly important for:

- tobacco and/or wood smoke
- allergens to which the patient is sensitive and
- other airborne irritants.

As for any chronic disease, successful clinical outcomes require a partnership between the patient, family and healthcare provider and an educational plan that permits the patient (and family) to understand and successfully manage the disease. Patient education should dispel any misperceptions about asthma and its treatment, emphasizing that:

- asthma is a chronic disease, not just episodic or acute
- asthma is physical, not emotional
- medication for asthma is not addictive and does not become ineffective over time
- asthma is best treated with prescriptive medications, not over-the-counter (OTC) medications and
- regular healthcare visits are important, even during symptom-free times

Moving Towards Optimal Asthma Management – Early Diagnosis:

The key to optimal asthma management is an early and correct diagnosis that includes classifying the patient's degree of disease severity. This is achieved on the basis of medical history, physical examination and objective measurements of lung function. The earlier the diagnosis and start

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of treatment, the better the outcome for the patient. The components for establishing a diagnosis of asthma are described below.

Medical History: The medical history should focus on establishing patterns of episodic symptoms (breathlessness, wheezing, chest tightness, coughing) in relation to specific triggers.

Physical Examination: Physical examination should include the upper respiratory tract and skin, as well as the lower respiratory tract. The physical examination may be normal at a routine office visit. Findings
supporting a diagnosis of asthma include:

- hyper-expansion of the thorax (especially in children)
- sounds of wheezing during normal (or deep) breathing
- signs and symptoms of nasal disease (allergic rhinitis, rhinosi nusitis, nasal polyps) and
- atopic dermatitis/eczema.

Pulmonary Function Tests: Spirometry (forced expiratory volume in one second (FEV_1) or forced vital capacity (FVC)) is the gold standard measurement used to confirm the diagnosis of asthma. Reversibility in airflow limitation is demonstrated by increases greater than 15% at 10 to 20 minutes after inhalation of a short-acting bronchodilator and can be shown even for patients with relatively mild disease (i.e. FEV_1 in the normal range, ε 80% predicted normal). PEF, while not as sensitive as FEV_1, may be substituted when a patient cannot perform spirometry – e.g. in a primary care office that has no spirometer. PEF may also be useful for diagnosing the patient with relatively mild disease who has normal FEV_1. The severity of asthma is reflected in the variability of PEF over 24 hours. Ideally, measurements should be made upon waking in the morning and before using a bronchodilator (when values are at their lowest), and before going to bed at night when values are close to maximum. A diurnal variation in PEF greater than 20% is considered to be diagnostic of asthma .PEF measurements are more frequently used to monitor the patient's asthma control and adjust medication usage.

Once asthma is diagnosed, the patient's disease severity is classified according to:

- the frequency, duration and severity of symptoms;
- the degree of airflow obstruction; and
- the extent to which the disease interferes with daily activities.

Classifying asthma severity determines appropriate therapy. Asthma may be treated in a step-care manner according to the patient's degree of severity at any point in time. However, it is important to recognize that asthma severity is not static and does not move in steps. Rather, asthma severity is a continuum that can change over time for any patient. Any patient, regardless of severity, can experience a severe exacerbation of symptoms.

Moving Towards Optimal Asthma Management – Early and Aggressive Pharmacotherapy:

Asthma remains underdiagnosed and undertreated despite better understanding of the pathophysiology of asthma and the increased availability of a variety of medications targeting airway inflammation. Early recognition of the disease and aggressive therapy to treat the underlying inflammation are critical.

All patients with persistent asthma require two types of medications:

- controller medication – a long-term anti-inflammatory agent to reduce the underlying airway pathology; and
- reliever medication – a short-acting β_2-agonist to provide 'rescue' from acute-symptom episodes.

Inhaled corticosteroids (ICS) remain the gold standard for treating persistent asthma, but there is room for improving their pharmacological properties. Efficacy is hampered by inter-individual variability and the fact that both the desired clinical effects and the unwanted adverse effects are mediated by a single glucocorticoid receptor that is distributed throughout the tissues of the body. While all current guidelines agree on the clinical benefit provided by ICS, all also note a degree of caution in terms of potential for systemic adverse effects. Future developments in ICS therapy will focus on maintaining goldstandard efficacy, optimising safety and tolerability profiles and providing a greater degree of reassurance and convenience for the physician and the patient.

Important Asthma Triggers:

Environmental Tobacco Smoke : Environmental tobacco smoke is often called "secondhand smoke" because it is smoke that is breathed in not by a smoker but by a second person nearby.

Dust Mites : Dust mites are found in almost everybody's home, but they don't cause everybody to have asthma attacks. If someone has asthma, dust mites may be a trigger for an attack.

Outdoor Air Pollution : Pollution caused by industrial emissions and automobile exhaust can cause an asthma attack.

Cockroach Allergen : Cockroaches and their droppings may trigger an asthma attack.

Pets : Furry pets may trigger an asthma attack.

Other Triggers : Strenuous physical exercise; some medicines; bad weather such as thunderstorms, high humidity, or freezing temperatures; and some foods and food additives can trigger an asthma attack. Strong emotional states can also lead to hyperventilation and an asthma attack.

Learn what triggers your attacks so that you can avoid the triggers whenever possible and be alert for a possible

Sources:

Farrar JR. The global burden of asthma and current approaches to its management.. Eur Pharmacother 2005: 126, 128, 998-1000.

This article was compiled by Dr Samitha Ginige - Consultant Epidemiologist

Table 1: Vaccine-preventable Diseases & AFP

3rd - 9th May 2008 (19th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01 GM=1	00	00	00	00	00	00	01 BD=1	00	02	01	33	32	+3.1%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	00.0%
Measles	00	01 KD=1	02 GL=2	00	00	02 PU=2	01 PO=1	00	00	06	01	48	28	+59.3%
Tetanus	00	00	00	00	00	01 KR=1	00	01 MO=1	00	02	00	14	13	+9.0%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	14	17	-21.4%
Tuberculosis	46	15	03	02	13	18	39	00	06	142	188	3140	3668	-14.4%

Table 2: Newly Introduced Notifiable Diseases

3rd - 9th May 2008 (19th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	52	13	13	08	06	06	14	13	12	137	101	2299	1372	+69.3%
Meningitis	08 CO=3 GM=3 KL=2	02 KD=2	02 MT=2	00	00	02 KR=2	01 PO=1	02 BD =1 MO=1	03 KG=2 RP=1	20	00	622	49	+1004.1%
Mumps	07	07	08	27	00	11	11	06	07	84	36	962	476	+100.4%

Key to Table 1 & 2

Provinces: W=Western, C=Central, S=Southern, N=North, E= East, NC=North Central, NW=North Western, U=Uva, Sab=Sabaragamuwa.

DPDHS Divisions: CB=Colombo, GM=Gampaha, KL=Kalutara, KD=Kandy, ML=Matale, NE=Nuwara Eliya, GL=Galle, HB=Hambantota, MT=Matara, JF=Jaffna, KN=Killinochchi, MN=Mannar, VA=Vavuniya, MU=Mullaitivu, BT=Batticaloa, AM=Ampara, TR=Trincomalee, KM=Kalmunai, KR=Kurunegala, PU=Puttalam, AP=Anuradhapura, PO=Polonnaruwa, BD=Badulla, MO=Moneragala, RP=Ratnapura, KG=Kegalle.

Table 3: Laboratory Surveillance of Dengue Fever 3rd - 9th May 2008 (19th Week)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	11	06	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	89	49	07	13	00	00	04	05	01	04	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephalitis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

3rd– 9th May 2008 (19th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephal-itis		Enteric Fever		Food Poisoning		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human-Rabies		Re-turns Re-ceive
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	43	741	08	71	00	06	00	48	00	57	07	172	01	02	05	58	00	01	**100**
Gampaha	18	452	04	67	00	05	01	28	00	66	08	154	00	04	01	61	00	01	**86**
Kalutara	11	225	09	135	02	09	01	38	00	16	04	155	00	02	01	19	00	00	**100**
Kandy	03	94	10	101	01	04	01	21	00	30	13	126	00	40	01	73	00	00	**80**
Matale	01	54	04	107	00	01	00	22	00	02	25	310	00	01	00	16	00	00	**83**
Nuwara Eliya	03	12	02	92	00	01	16	114	00	107	00	15	00	30	02	62	00	01	**100**
Galle	01	53	01	48	00	08	00	10	00	42	06	165	00	08	00	04	00	03	**88**
Hambantota	00	46	01	35	00	03	00	05	00	06	01	48	02	50	00	04	00	00	**82**
Matara	05	104	09	77	00	04	00	20	00	02	07	164	04	93	00	05	00	01	**94**
Jaffna	00	40	02	57	00	01	05	168	00	05	00	00	05	127	02	19	00	00	**63**
Kilinochchi	00	00	00	03	00	00	00	00	00	00	00	02	00	00	00	01	00	00	**50**
Mannar	00	24	00	07	00	06	02	95	00	00	00	00	00	00	00	11	00	00	**50**
Vavuniya	00	10	01	18	00	02	00	01	00	09	00	04	00	00	00	03	00	00	**100**
Mullaitivu	00	00	00	01	00	00	01	06	00	12	00	00	00	00	00	04	00	00	**20**
Batticaloa	02	75	04	34	00	02	02	11	00	18	00	01	00	01	00	66	01	05	**64**
Ampara	00	09	00	87	00	00	00	04	00	00	03	11	00	00	00	04	00	00	**29**
Trincomalee	01	153	06	40	00	00	00	07	00	03	00	11	00	10	00	09	00	00	**60**
Kurunegala	03	189	04	131	00	10	00	23	00	10	13	91	00	14	00	21	00	04	**78**
Puttalam	09	214	05	41	00	02	01	76	00	18	00	06	02	26	00	19	00	02	**89**
Anuradhapur	06	106	00	39	00	04	00	08	00	04	13	110	00	09	01	10	00	00	**74**
Polonnaruwa	03	40	03	45	00	01	02	20	00	06	00	30	00	00	00	15	00	00	**86**
Badulla	02	40	17	181	00	03	03	57	07	13	01	16	06	61	03	58	00	01	**93**
Monaragala	03	35	07	99	00	01	02	25	00	19	11	60	01	53	02	13	00	00	**100**
Ratnapura	04	117	09	107	01	19	03	39	00	42	02	85	00	66	00	35	00	00	**75**
Kegalle	09	164	06	179	03	20	02	29	00	00	18	100	03	35	35	281	00	00	**91**
Kalmunai	01	20	05	84	00	02	01	08	00	10	00	00	01	02	00	13	00	00	**54**
SRI LANKA	**128**	**3017**	**117**	**1886**	**07**	**114**	**43**	**883**	**07**	**497**	**132**	**1836**	**25**	**634**	**53**	**884**	**01**	**20**	**80**

Source: Weekly Returns of Communicable Diseases (WRCD).

***Dengue Fever / DHF** refers to Dengue Fever / Dengue Haemorrhagic Fever.

****Timely** refers to returns received on or before 17May, 2008 Total number of reporting units =238. Number of reporting units data provided for the current week: 246

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