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RGH Rawalpindi
TAKING A NEW LOOKING AT ASTHMA:

Unfortunately...

* Asthma prevalence, particularly in children, is increasing worldwide
* It is under diagnosed and under treated
Fortunately...

* New methods are available for recognizing, diagnosing, treating and controlling asthma

* Personal, social, and economic burdens of asthma can be minimized

* Patient education increases the likelihood of life long success

* You can make a difference
Figure 2-25 With bronchial asthma, the bronchiole is obstructed on expiration, particularly by muscle spasm, edema of the mucosa, and thick secretions.

From Wilson.97
New definition:

* Asthma is a **chronic inflammatory** disorder of the airway

* Chronically inflamed airway are hyper responsive; they become obstructed and airflow is limited when airways are exposed to various stimuli, or triggers
* Asthma causes recurring episodes of coughing, wheezing, chest tightness and difficult breathing

* Asthma attacks can be life threatening

* They can be prevented
Common Asthma Triggers

* Viral infections
* Allergens as domestic dust mites (bedding, carpets and fabrics)
* Animals with fur & cockroach
* Pollen and molds
* Tobacco smoke & air pollution
* Exercise
* Strong emotional expression
* Chemical irritants and drugs (aspirin and beta blockers)
* Asthma can change over time
  Asthma can be mild, moderate or severe

* The severity of asthma varies among individuals, and it can change in one individual over time

* Treatment decisions are based on the severity of asthma
* Asthma can be treated and controlled so that almost all patients can:

- Prevent troublesome symptoms night and day

- Prevent serious attacks, require little or no quick-relief medication

- Have productive, physically active lives have (near) normal lung function
* Asthma may be preventable.

- For infants with a family history of asthma or atopy, it is highly likely that avoiding exposure to following can prevent asthma
  - Passive smoking
  - Domestic dust mite
  - Cat
  - Cockroach allergens
Diagnosing Asthma

Is It Asthma?
Consider asthma if any of the following signs or symptoms are present
* Wheezing
* History of any of the following
  - Cough, worse at night
  - Recurrent wheeze
  - Recurrent difficult breathing
* Symptoms occur or worsen at night, awakening the patient
Symptoms occur or worsen in the presence of:

- Exercise
- Viral infection
- Animals with fur
- Domestic dust mites
  (mattresses, pillows, upholstered furniture, carpets)
- Smoke (tobacco, wood)
- Pollen
- Changes in temperature
- Strong emotional expression (Laughing or crying hard)
- Aerosol chemicals
- Drugs (aspirin, beta blockers)
Reversible and variable airflow limitation

As measured by using a peak expiratory flow (PEF) meter in any of the following ways:

* **PEF increases > 15%**
  15 to 20 minutes after inhalation of a short-acting beta2-agonist, or

* **PEF varies more than 20%** from morning measurement upon arising to measurement 12 hours later in patients taking a bronchodilator or

* **PEF decreases more than 15%**
  after 6 minutes of running or exercise
Diagnostic challenges

* Young children whose primary symptoms is cough or who wheeze with respiratory infections

* Children with family history of allergy or asthma, and perinatal exposure to passive smoke and allergens are more strongly associated with asthma

* **Asthma should be considered if** the patient’s colds repeatedly “goes to the chest” or take more than 10 days to clear up, **or** if the patient improves when asthma medication is given
Peak Flow Meters:

Uses:

* Helps diagnose and monitor the course of asthma

* Peak flow meters measure peak expiratory flow (PEF), the fastest rate at which air moves through the airways during a forced expiration

* The accuracy of PEF measurement depends on patients' effort and correct technique
Technique of PEF:

* Stand up and hold peak flow meter. Make sure the marker is at the bottom of the scale

* Take a deep breath, put the peak flow meter in your mouth, seal your lips around the mouth piece, and breathe out as hard and fast as possible

* Record the results. Return the marker to zero

* Repeat twice more. Choose the highest of the three readings
PEF Monitoring Significance:

* For establishing a diagnosis and treatment

* Evaluating a patient’s response to therapy

* Help detect early signs of worsening before symptoms occur

* Monitor and modify Asthma care for effective long – term control
Controlling Asthma

Aims:

* New approaches to asthma therapy

- Help patients prevent most attacks

- Stay free of troublesome night and day symptoms, and keep physically active
Achieving control of asthma requires:

- Selecting appropriate medications
- Managing asthma long term
- Treating asthma attacks
- Identifying and avoiding triggers that make asthma worse
- Educating patients to manage their condition
- Monitoring and modifying asthma care
Select Medications

* Two types of medications:
  - Long – term preventive
  - Quick – relief

* Inhaled Medications are preferred because
  - High therapeutic ratio: high concentrations of drug are delivered directly to the airway
  - Potent therapeutic effects and few systemic side effects
Devices available to deliver inhaled medication

- Pressurized metered-dose inhalers (MDI’s)
- Breath-actuated metered dose inhalers
- Dry powder inhalers
- Nebulizers
- **Spacer** (or holding chamber) devices make inhalers easier to use
- Spacers also reduce systemic absorption and side effects of inhaled corticosteroids
Select the most appropriate devices

- **Children under 2 years of age**
  pressurized MDI with a spacer and a face mask, or a nebulizer

- **Children 2 to 5 years of age**
  pressurized MDI with a spacer or a nebulizer

- **For patients using spacers**
  - Spacer must fit the inhaler
  - Size of the spacer must increase as a child grows and lung size increases

- **Patients of any age over 5 years**
  - Pressurized MDI.s
Select most appropriate devices

* Patients who are having severe attacks should use a pressurized MDI with a spacer or a nebulizer

* Teach patients (and parents) how to use inhaler devices

* Different devices need different inhalation techniques

* Give demonstrations and illustrated instructions

* Ask patients to show their technique at every visit
Manage Asthma Long term

* A stepwise approach is used to classify asthma severity and guide treatment

* Persistent asthma is more effectively controlled by long-term treatment

* Anti-inflammatory agents, particularly inhaled corticosteroids, are currently the most effective long-term preventive medications
Gain Control

There are two approaches to gaining control of asthma

* The first approach is preferred
  1. Establish control promptly with a high level of therapy and then step down if control is sustained for 3 months or
  2. Start treatment at the step most appropriate to the level of asthma severity and step down if necessary
* Improvement should be achieved within 1 month
* But first review the
  - Patient’s medication technique,
  - Compliance
  - Avoidance of triggers
* Step down if control is sustained for at least 3 months;
follow a gradual stepwise reduction in treatment
* Review treatment every 3 to 6 months once asthma is under control
* Manage Long Term
## Classify Severity

### Clinical Features Before Treatment

<table>
<thead>
<tr>
<th>Classification</th>
<th>Symptoms</th>
<th>Night time symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEP 4</strong></td>
<td>Continuous</td>
<td>Frequent</td>
</tr>
<tr>
<td>Severe Persistent</td>
<td>limited physical activity</td>
<td>&gt; 1 times a week</td>
</tr>
<tr>
<td><strong>STEP 3</strong></td>
<td>Daily</td>
<td>&gt; 1 times a week</td>
</tr>
<tr>
<td>Moderate Persistent</td>
<td>Use $\beta_2$ – agonist daily</td>
<td>&gt; 2 times a month</td>
</tr>
<tr>
<td><strong>STEP 2</strong></td>
<td>&gt; 1 times a week</td>
<td>&gt; 2 times a month</td>
</tr>
<tr>
<td>Mild persistent</td>
<td>but &lt; 1 times a day</td>
<td></td>
</tr>
<tr>
<td><strong>STEP 1</strong></td>
<td>&lt; 1 times a week</td>
<td>&lt; 2 times a month</td>
</tr>
<tr>
<td>Intermittent</td>
<td></td>
<td></td>
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Classify Severity
Clinical Features Before Treatment

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<tr>
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<th>Persistent</th>
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</thead>
<tbody>
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<td>Symptoms</td>
<td>Continuous</td>
</tr>
<tr>
<td></td>
<td>limited physical activity</td>
</tr>
<tr>
<td>Nighttime symptoms</td>
<td>Frequent</td>
</tr>
<tr>
<td>PEF</td>
<td>&lt; 60% predicted variability</td>
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<tr>
<td></td>
<td>&gt; 30%</td>
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# Classify Severity

## Clinical Features Before Treatment

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<th>Moderate Persistent</th>
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<tr>
<td>Symptoms</td>
<td>Daily</td>
</tr>
<tr>
<td></td>
<td>Use $\beta_2$ – agonist daily</td>
</tr>
<tr>
<td></td>
<td>Attacks affect activity</td>
</tr>
<tr>
<td>Nighttime symptoms</td>
<td>&gt; 1 times a week</td>
</tr>
<tr>
<td>PEF</td>
<td>&lt; 60% - &lt; 80% predicted variability &gt; 30%</td>
</tr>
</tbody>
</table>
## Classify Severity

### Clinical Features Before Treatment

**STEP 2**  
**Mid Persistent**

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>&gt; 1 times a week but &lt; 1 times a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nighttime symptoms</td>
<td>&gt; 2 times a week</td>
</tr>
<tr>
<td>PEF</td>
<td>&lt; 80% predicted variability 20-30%</td>
</tr>
</tbody>
</table>
## Classify Severity

### Clinical Features Before Treatment

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<tr>
<th>STEP 1</th>
<th>Intermittent</th>
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</table>
| Symptoms | < 1 times a week  
Asymptomatic and normal PEF between attacks |
| Nighttime symptoms | < 2 times a month |
| PEF | > 80% predicted variability < 20% |
Treatment

STEP 4    Severe Persistent

Long term preventive:

daily Medications:

* Inhaled Corticosteroids 800 – 2000 mcg

* Long acting bronchodilator:
    either inhaled beta$_2$ agonist or the theophylline

* Oral corticosteroids

Quick – Relief

* Short acting bronchodilator:
    Inhaled beta$_2$ – agonist
Treatment

STEP 3  Moderate Persistent

Long term preventive:

Daily Medications:
* Inhaled Corticosteroids 500 mcg
* Long acting bronchodilators
* Consider adding anti-leukotriene

Quick – Relief
* Short acting bronchodilator: Inhaled beta₂ – agonist
Treatment

STEP 2  Mild Persistent

Long term preventive:
Daily Medications:
   Inhaled Corticosteroids 200 – 500 mcg
   Or cromoglycate or theophylline

Quick – Relief
* Short acting bronchodilators
Treatment

STEP 1  Intermittent

Long term preventive:  None needed

Quick – Relief
  * Short acting bronchodilators
    Inhaled beta$_2$ – agonist
Conclusion:

* **Asthma attacks** (or exacerbations) are episodic, but airway inflammation is chronically present

* **Asthma is a chronic disorder** requiring long-term management

* For many patients, this mean taking **preventive medication** every day
Thank You