Asthma (Obstructive Disease)

Definition	• **Inflammatory** condition of the airways • **hyperresponsiveness** leading to **airway edema + bronchoconstriction** • Recurrent/intermittent episodes of wheezing, shortness of breath, and/or cough • Usually **reversible** either spontaneously or with treatment.
Causes	Atopy (**IgE mediated**) + Environmental triggers (allergens, irritants, chemicals, respiratory infections, physical stress, and emotional stress).
Diagnosis	**Reversible bronchoconstriction** on own or with bronchodilator and a history. **Consider challenge test**
Severity	Intermittent, mild persistent, moderate persistent, and severe persistent
Relationships	• GERD, Allergic rhinitis • Worsened by Allergic bronchopulmonary aspergillosis (ABPA), Obstructive sleep apnea-hypopnea (OSA), Stress

TESTS

PFT's	• Normal if no active disease. • **FEV1/FVC < 70%** • Decreased expiratory flow • **Significant response to beta2-agonist**. • Normal or increased TLC (due to hyperinflation). • Normal or reduced VC. • DLCO is normal.

TESTS (cont)

Exercise-induced bronchospasm	Decrease in FEV1 of >10% on a treadmill or a stationary bicycle.
CXR	Normal in mild cases. **Severe asthma shows hyperinflation**.
Arterial Blood Gas	• Indicated in respiratory distress. • Hypocarbia from hyperventilation. • Hypoxemia may be present. • If CO_2 level is normal or high sign that the patient is decompensating due to fatigue or severe airway obstruction and **intubation** may be required.
Challenge Test	•Methacholine challenge, histamine challenge, and thermal (cold air). Principle of nonspecific hyperirritability. •**Must both tighten up with the challenge and loosen up with subsequent bronchodilators**. • Response to short-acting bronchodilator **(increase in the FEV1 > 12% and increase of 200 mL**).

Treatment

Rescue	SABA (albuterol)
Quick relief (acute, mild, intermittent disease)	• Short-acting beta2-agonists (SABAs) • Systemic corticosteroids • Anticholinergics
Long-Term control	• **Inhaled corticosteroids** (ICS; most potent and most effective) • Long-acting beta2-agonists (LABAs) • Mast-cell stabilizers (cromolyn sodium +nedocromil) • Leukotriene modifiers • Methylxanthines (theophylline) • Immunomodulators (omalizumab = anti-IgE)

By **xkissmekatex** (kissmekate)
cheatography.com/kissmekate/

Published 13th January, 2017.
Last updated 16th January, 2017.

Treatment (cont)

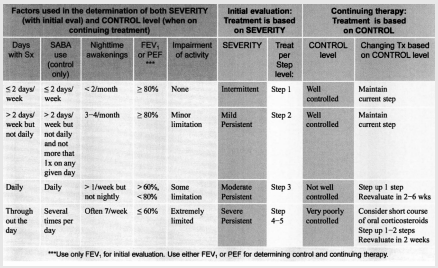
Acute Exacerbation	• Inhaled B agonist and ipratropium via nebulizer or MDI. Assess response clinically and with peak flow. • IV or oral corticosteroids, then taper when improvement occurs. • Third-line agents include IV magnesium, which helps with bronchospasm in severe refractory cases. • Supplemental oxygen to keep Osat>90%. Antibiotics if necessary. Intubation for respiratory failure.
Mild Intermittent	• Symptoms <2 times per week, nighttime awakenings <2x per month. • Normal baseline FEV1 and FEV1/FVC. • Needs no long-term control medications, just short acting beta agonist (albuterol).
Mild Persistent	• Symptoms >2 times per week but not every day. 3-4 nighttime awakenings per month, minor limitations on activities. • Normal PFTs. • **Low dose inhaled corticosteroid** indicated with PRN albuterol inhaler.

Treatment (cont)

Moderate Persistent	• **Daily symptoms** with frequent exacerbations. • FEV1 is 60-80% of expected. • Daily inhaled low dose corticosteroid, PRN albuterol inhaler, and LABA inhaler. +/- cromolyn/methylxanthine/antileukotriene.
Severe Persistent	• Continual symptoms with frequent exacerbations and **limited physical activity**. • **FEV1 <60% of predicted**. • Daily high dose inhaled corticosteroid, PRN albuterol, and long-acting beta agonists. +/- methylxanthine and systemic corticosteroids.

.

Treatment and Maintenance



Factors used in the determination of both SEVERITY (with initial eval) and CONTROL level (when on continuing treatment)					Initial evaluation: Treatment is based on SEVERITY		Continuing therapy: Treatment is based on CONTROL	
Days with Sx	SABA use (control only)	Nighttime awakenings	FEV$_1$ or PEF ***	Impairment of activity	SEVERITY	Treat per Step level:	CONTROL level	Changing Tx based on CONTROL level
≤ 2 days/ week	≤ 2 days/ week	< 2/month	≥ 80%	None	Intermittent	Step 1	Well controlled	Maintain current step
> 2 days/ week but not daily	> 2 days/ week but not daily and not more that 1x on any given day	3–4/month	≥ 80%	Minor limitation	Mild Persistent	Step 2	Well controlled	Maintain current step
Daily	Daily	> 1/week but not nightly	> 60%, < 80%	Some limitation	Moderate Persistent	Step 3	Not well controlled	Step up 1 step Reevaluate in 2–6 wks
Through out the day	Several times per day	Often 7/week	≤ 60%	Extremely limited	Severe Persistent	Step 4–5	Very poorly controlled	Consider short course of oral corticosteroids Step up 1–2 steps Reevaluate in 2 weeks

***Use only FEV$_1$ for initial evaluation. Use either FEV$_1$ or PEF for determining control and continuing therapy.

.

Differential Diagnosis of Wheezing

• CHF: due to edema of airways and congestion of bronchial mucosa.
• COPD: inflamed airways may be narrowed or bronchospasm may be present.
• **Asthma: most common cause**.
• Cardiomyopathy/Pericarditis: can lead to edema around the bronchi.
• Lung Cancer: due to obstruction of airways (central tumor or mediastinal invasion).

.