

Wheezing and Shortness of Breath in a 42-year-old Female

History of Present Illness

- 42 year old female with history of asthma
 - Childhood wheezing
 - Symptoms began in her 20s
- Episodic wheezing
- Daily cough with occasional sputum production
- Exacerbated by strong smells, smoke, and exercise
- Treated for asthma but symptoms are progressing

Current Medications

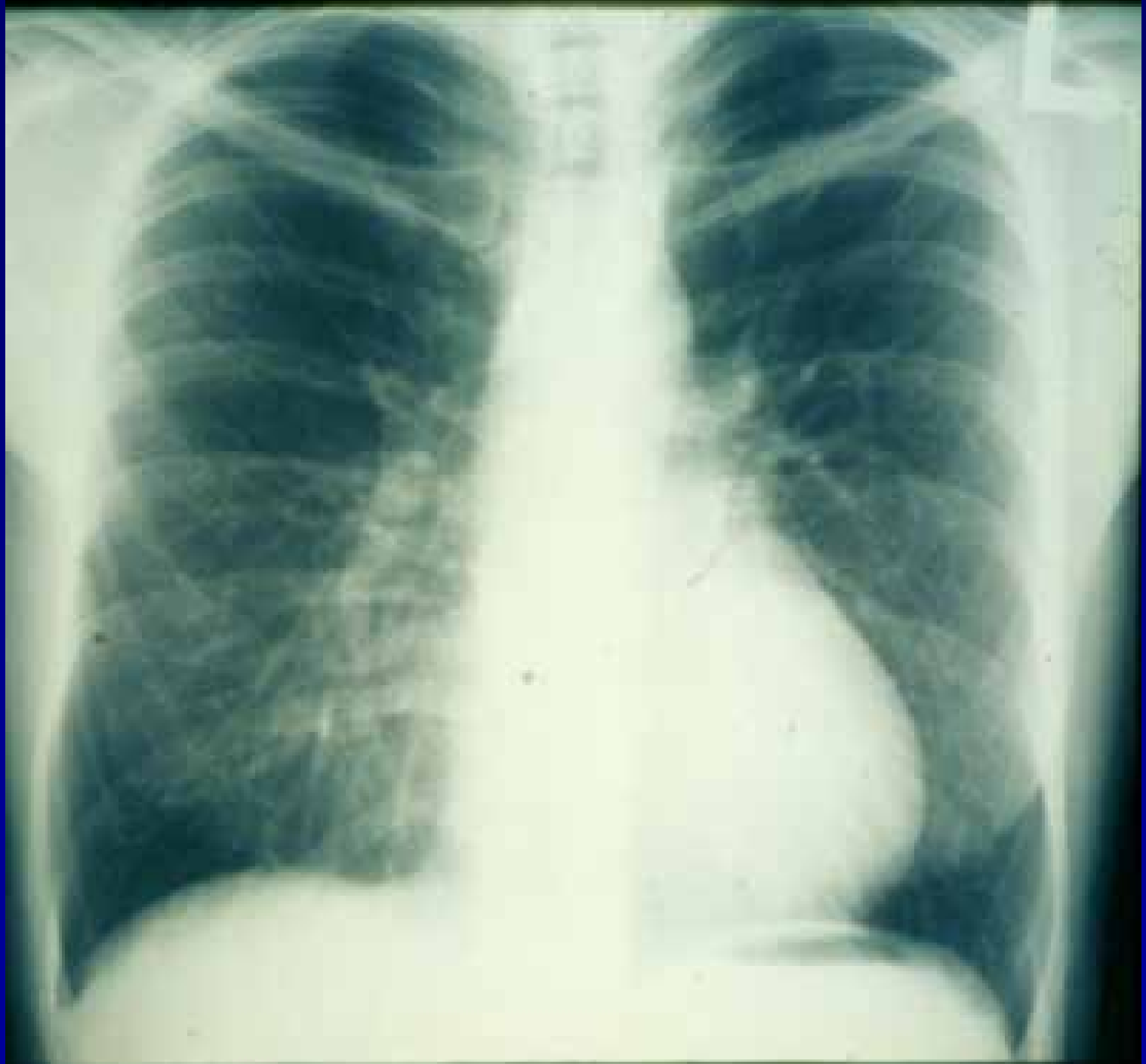
- Advair 500/50 one puff twice daily
- Singulair 10 mg daily
- Nasalide one spray each nostril BID
Albuterol MDI as needed

Additional Pertinent History

- CT Sinus: chronic sinusitis, no air-fluid levels
- Allergy testing + for dust, weeds, oak trees, and cats – no change with allergy shots
- Smoked 1 pack/day for 4 years in college
- Family history for asthma and emphysema

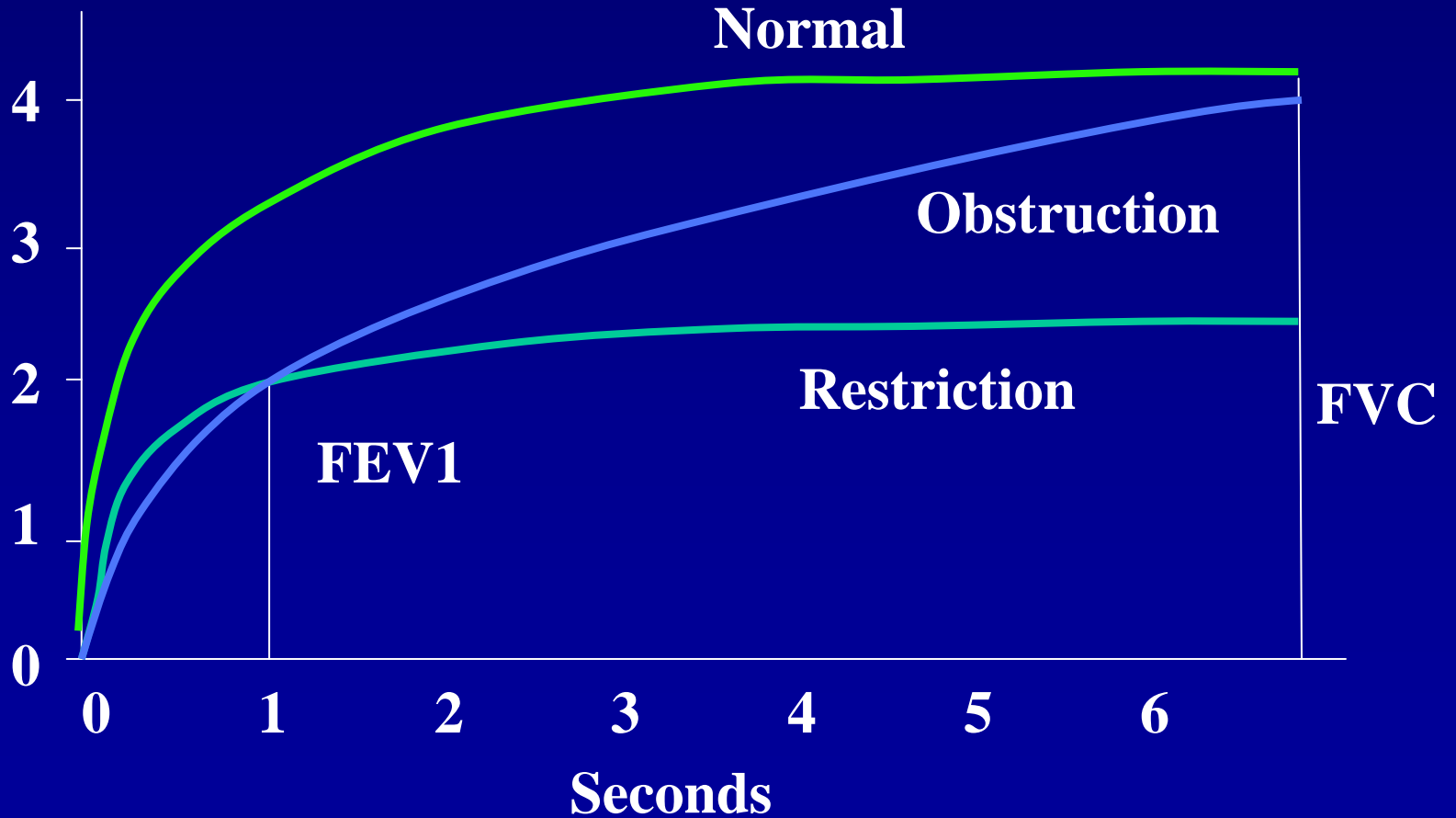
Physical Examination

- Moderately overweight
- No acute distress
- 145/85, HR=96, RR=14, afebrile
- Lungs: diffuse wheeze on forced expiration
- Heart: regular rhythm without murmur
- Ext: no cyanosis, edema, or clubbing

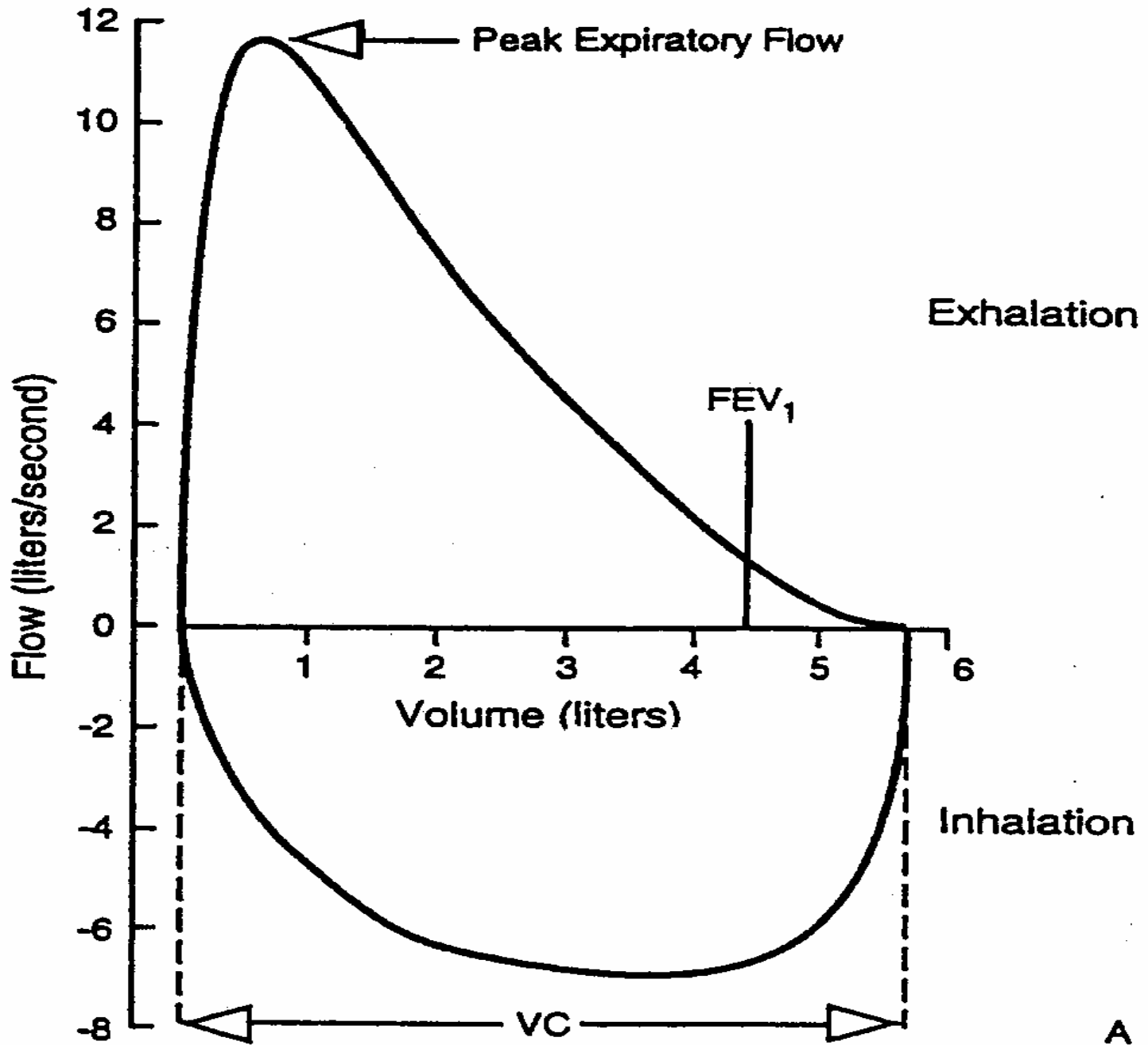


Spirometry

Volume
Liters



Flow Volume Loop



Pulmonary Function Testing

- FVC 4.32 L (85% pred)
- FEV₁ 1.89 L (52% pred)
- FEV₁ improves by 6% following albuterol

CAUSES OF OBSTRUCTION

- Asthma
- Chronic bronchitis
- Emphysema
- Small airway dysfunction
- Bronchiectasis
- Cystic fibrosis
- Upper airway obstruction

Evaluation for Obstructive Defect

- $FEV_1/FVC < 70\%$ predicted
- This is all you need
- Now determine severity of the defect

Severity of Obstructive Disease

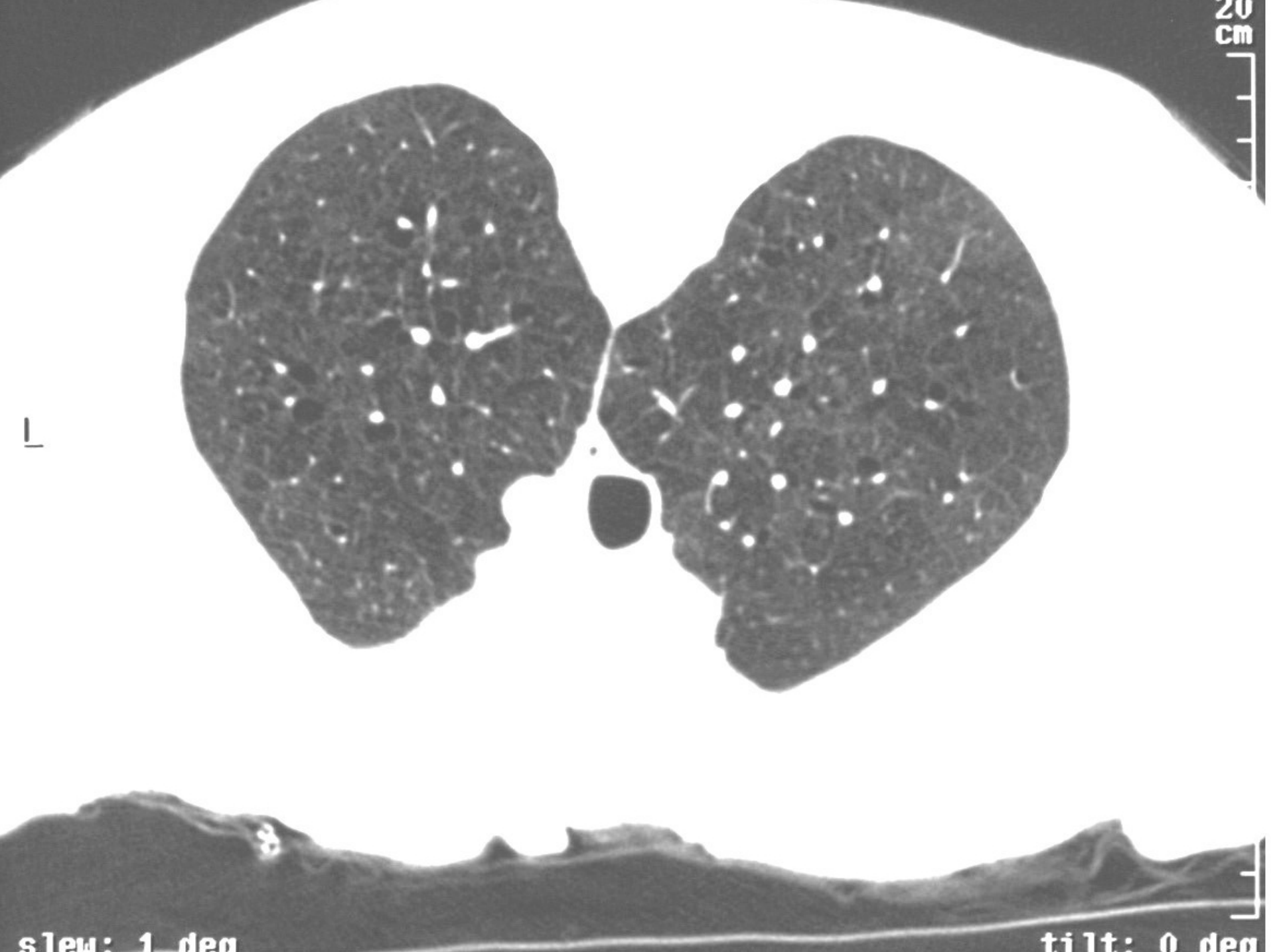
- $FEV_1 > 100\%$ - possible normal variant
- FEV_1 80 – 99% - mild
- FEV_1 50 – 79% - moderate
- FEV_1 34 – 49% - severe
- $FEV_1 < 34\%$ - very severe

Reasons for Uncontrolled Asthma

- **Patient noncompliance**
- **Inadequate inhaler technique**
- **Uncontrolled aeroallergen burden**
(TDI-toluene diisocyanate, pets, dust mites)
- **Food allergy**
- **Wrong diagnosis**
CHF, VCD, ABPA, Churg-Strauss
- **Sinus Disease**
- **Gastroesophageal Reflux Disease**
- **Paradoxical Response to Medications**
(eg. Corticosteroid allergy)
- **Medications**
(eg. Beta-blockers, ASA)

Asthma vs. COPD

	Asthma	COPD
Familial	+++	++
Inflammatory	++++	+++
Bronchospastic	++++	+
“Reversible”	++++	+
Progressive	+	+++



20
cm

L

slew: 1 deg

tilt: 0 deg

Therapy at Each Stage of COPD

Old (2001)	0: At Risk	I: Mild	II: Moderate		III: Severe
			IIA	IIB	
New (2003)	0: AtRisk	I: Mild	II: Moderate	III: Severe	IV: Very Severe
Characteristics	<ul style="list-style-type: none"> • Chronic Symptoms • Exposure to risk factors • Normal spirometry 	<ul style="list-style-type: none"> • $FEV_1/FVC < 70\%$ • $FEV_1 \geq 80\%$ • With or without symptoms 	<ul style="list-style-type: none"> • $FEV_1/FVC < 70\%$ • $50\% \leq FEV_1 < 80\%$ • With or without symptoms 	<ul style="list-style-type: none"> • $FEV_1/FVC < 70\%$ • $30\% \leq FEV_1 < 50\%$ • With or without symptoms 	<ul style="list-style-type: none"> • $FEV_1/FVC < 70\%$ • $FEV_1 < 30\%$ or $FEV_1 < 50\%$ predicted plus chronic respiratory failure

Avoidance of risk factor(s); influenza vaccination

Add short-acting bronchodilator when needed

Add regular treatment with one or more long-acting bronchodilators
Add rehabilitation

Add inhaled glucocorticosteroids if repeated exacerbations

Add long-term oxygen if chronic respiratory failure
Consider surgical treatments

AATD: Recommendations from the AAT Deficiency Task Force

- Genetic testing is recommended for
 - Absent alpha-1 peak on SPEP
 - Early onset pulmonary emphysema (regardless of smoking history)
 - Family members of known AATD patients
 - Dyspnea and cough occurring in multiple family members in same or different generations
 - Liver disease of unknown cause
 - All subjects with COPD
 - Adults with bronchiectasis without evident etiology
 - Patients with asthma whose spirometry fails to return to normal with therapy

AATD, alpha-1 antitrypsin deficiency

– Unexplained panniculitis and anti-proteinase 3 vasculitis