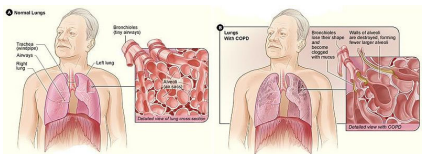
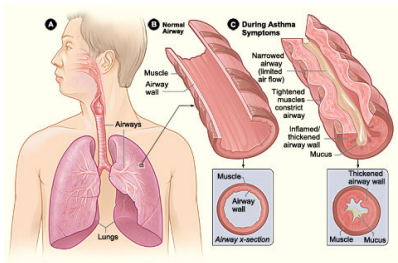


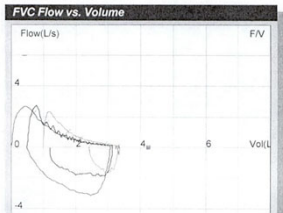
Obstructive Lung Disease: COPD



Obstructive Lung Disease: Asthma

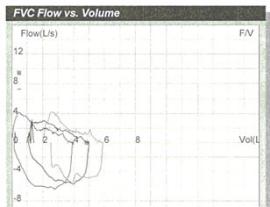


Obstructive Lung Disease



This patient has COPD. Note the concave ("scooped out") nature to the expiratory limb of the flow-volume loop

Obstructive Lung Disease



This patient has asthma. Note the less steep slope of the expiratory limb of the flow-volume loop. The expiratory limb is irregular indicating he had difficulty exhaling with force

Causes Of Obstruction

- Chronic obstructive pulmonary disease
 - Emphysema
 - Chronic bronchitis
- Asthma
- Bronchiectasis
- Bronchiolitis & bronchiolitis obliterans

Obstructive Pattern

Results			
Result	Pred	Best	%Prd
FVC (L)	4.25	3.07	72%
FEV1 (L)	3.28	1.60	49%
FEV1/FVC	0.78	0.52	67%
FEF25-75% (L/s)	2.93	0.70	24%
PEFR (L/s)	8.75	2.68	31%
Vext %	---	2.13	---

Obstructive Pattern

Results			
Result	Pred	Best	%Prd
FVC (L)	4.25	▯3.07	72%
FEV1 (L)	3.28	▯1.60	49%
FEV1/FVC	0.78	▯0.52	67%
FEF25-75% (L/s)	2.93	▯0.70	24%
PEFR (L/s)	8.75	▯2.68	31%
Vext %	---	2.13	---

In this case, the FEV1/FVC is low (0.52 or 52%) and the computer has identified it as low by the square mark to the left of the value. Therefore, this patient is obstructed. To determine how obstructed, we next look at the FEV1.

There are two commonly used scales of obstruction severity:

Global Initiative on Obstructive Lung			
America	FEV1 (% predicted)	Obstruction	Obstruction
	> 70%	Mild	Mild
	60-69%	Moderate	Moderate
	50-59%	Moderately Severe	Severe
	35-49%	Severe	Very Severe
	< 35%	Very Severe	

Remember, the ATS defines obstruction as an FEV1/FVC ratio of less than the predicted for that patient's age and this number will vary from patient to patient. The GOLD defines obstruction as anyone with an FEV1/FVC ratio of less than 70% regardless of age

Obstructive Pattern

Results			
Result	Pred	Best	%Prd
FVC (L)	4.25	▯3.07	72%
FEV1 (L)	3.28	▯1.60	49%
FEV1/FVC	0.78	▯0.52	67%
FEF25-75% (L/s)	2.93	▯0.70	24%
PEFR (L/s)	8.75	▯2.68	31%
Vext %	---	2.13	---

In this case, the FEV1 is 49% of predicted so the patient would be defined as having severe obstruction by either the ATS or the GOLD criteria.

Obstructive Pattern

Results			
Result	Pred	Best	%Prd
FVC (L)	4.89	4.10	84%
FEV1 (L)	3.80	2.63	69%
FEV1/FVC	0.78	0.64	82%
FEF25-75% (L/s)	3.38	1.52	54%
PEFR (L/s)	9.60	4.84	50%
Vext %	---	2.61	---

In this case, the FEV1 is 69% of predicted so the patient would be defined as having moderate obstruction by either the ATS or the GOLD criteria.

Obstructive Pattern

Results			
Result	Pred	Best	%Prd
FVC (L)	4.78	2.24	47%
FEV1 (L)	3.74	1.09	29%
FEV1/FVC	0.78	0.49	63%
FEF25-75% (L/s)	3.39	0.54	16%
PEFR (L/s)	9.47	1.99	21%
Vext %	---	1.11	---

In this case, the FEV1/FVC ratio is low at 0.49 (49% of predicted). It is marked as abnormal by the computer with the square mark to the left of the value. The FEV1 is 29% of predicted which makes this very severe obstruction by either the ATS or GOLD criteria. The computer interpreted this as mild obstruction, however.

Obstructive Pattern

Results			
Result	Pred	Best	%Prd
FVC (L)	2.45	1.90	78%
FEV1 (L)	1.90	1.13	59%
FEV1/FVC	0.77	0.59	77%
FEF25-75% (L/s)	1.73	0.51	30%
PEFR (L/s)	4.93	2.10	43%
Vext %	---	2.61	---

In this case, the FEV1/FVC ratio is low at 0.59 (59% of predicted). It is marked as abnormal by the computer with the square mark to the left of the value. The FEV1 is 1.13 L (59% of predicted) which makes this moderate obstruction by GOLD criteria but moderately severe obstruction by ATS criteria. The computer interpreted this as mild obstruction.

Obstructive Pattern

Results			
Result	Pred	Best	%Prd
FVC (L)	2.02	1.27	63%
FEV1 (L)	1.55	0.78	50%
FEV1/FVC	0.77	0.61	80%
FEF25-75% (L/s)	1.40	0.46	33%
PEFR (L/s)	4.18	1.71	41%
Vent %	—	2.47	—

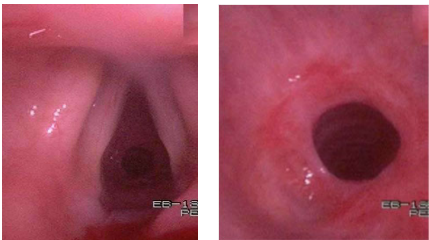
In this case, the FEV1/FVC ratio is low at 0.61 (61% of predicted). It is marked as abnormal by the computer with the square mark to the left of the value. The FEV1 is 0.78 L (50% of predicted) which makes this moderate obstruction by GOLD criteria but moderately severe obstruction by ATS criteria.

Obstructive Pattern

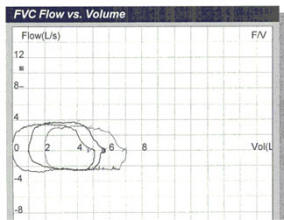
Results			
Result	Pred	Best	%Prd
FVC (L)	3.63	1.62	45%
FEV1 (L)	2.64	0.87	33%
FEV1/FVC	0.74	0.54	72%
FEF25-75% (L/s)	2.02	0.44	22%
PEFR (L/s)	7.56	1.61	21%

In this case, the FEV1/FVC ratio is low at 0.54 (54% of predicted). It is marked as abnormal by the computer with the square mark to the left of the value. The FEV1 is 0.87 L (33% of predicted) which makes this severe obstruction by GOLD criteria but very severe obstruction by ATS criteria. The computer interpretation was mild obstruction.

Tracheostenosis

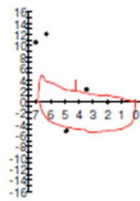


Tracheostenosis



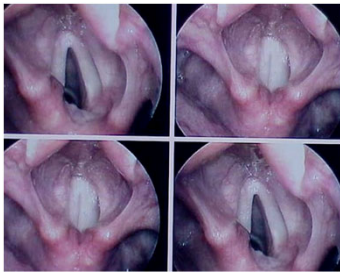
This patient has granulomatosis with angiitis (Wegener's granulomatosis) with subglottic stenosis. Note the flattening of both the inspiratory and expiratory limbs.

Tracheostenosis

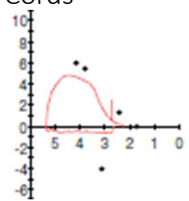


This patient also has granulomatosis with angiitis (Wegener's granulomatosis) with subglottic stenosis. The inspiratory and expiratory limbs are somewhat flattened but more subtle than the previous case.

Vocal Cord Paralysis



Paralyzed Vocal Cords



This patient has a history of recurrent laryngeal nerve damage during a mediastinoscopy. The computer interpretation was normal. The flow-volume loop shows severe inspiratory flattening indicating variable upper airway obstruction

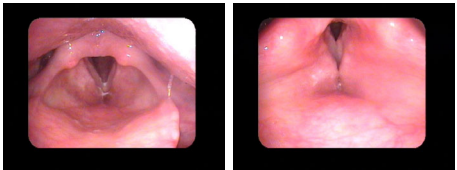
Vocal Cord Dysfunction



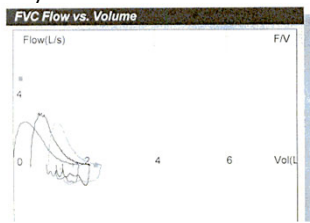
Fully Abducted

Constricted Respiration

Vocal Cord Dysfunction



Vocal Cord Dysfunction



Note the “notching” on the inspiratory limb

Reversible obstruction

	Pre-Bronch				Post-Bronch			
	Pred	LLN	ULN	Actual	%Pred	Actual	%Pred	%Chng
---- SPIROMETRY ----								
FVC (L)	3.55	2.96	4.14	*2.12	*59	*2.20	*62	+3
FEV1 (L)	2.78	2.32	3.24	*1.01	*36	*1.26	*45	+24
FEV1/FVC (%)	79	66	92	*48	*60	*57	*72	+19
FEV1/SVC (%)	79	66	92					
FEF 25-75% (L/sec)	2.69	2.25	3.13	*0.33	*12	*0.60	*22	+81
FEF 25% (L/sec)	11.23	9.38	13.08	*1.06	*9	*1.72	*15	+61
FEF 50% (L/sec)				0.43		0.73		+71
FEF 75% (L/sec)	1.43	1.19	1.67	*0.14	*9	*0.25	*17	+77
FEF Max (L/sec)	7.67	6.40	8.94	*2.53	*33	*2.82	*36	+11
FIF 50% (L/sec)	4.78	3.99	5.57	*1.61	*33	*2.40	*50	+49
FEF50%/FIF50% (%)	90-100	79	119	26		30		+14

22

Reversible obstruction

	Pre-Bronch				Post-Bronch			
	Pred	LLN	ULN	Actual	%Pred	Actual	%Pred	%Chng
---- SPIROMETRY ----								
FVC (L)	3.55	2.96	4.14	*2.12	*59	*2.20	*62	+3
FEV1 (L)	2.78	2.32	3.24	*1.01	*36	*1.26	*45	+24
FEV1/FVC (%)	79	66	92	*48	*60	*57	*72	+19
FEV1/SVC (%)	79	66	92					
FEF 25-75% (L/sec)	2.69	2.25	3.13	*0.33	*12	*0.60	*22	+81
FEF 25% (L/sec)	11.23	9.38	13.08	*1.06	*9	*1.72	*15	+61
FEF 50% (L/sec)				0.43		0.73		+71
FEF 75% (L/sec)	1.43	1.19	1.67	*0.14	*9	*0.25	*17	+77
FEF Max (L/sec)	7.67	6.40	8.94	*2.53	*33	*2.82	*36	+11
FIF 50% (L/sec)	4.78	3.99	5.57	*1.61	*33	*2.40	*50	+49
FEF50%/FIF50% (%)	90-100	79	119	26		30		+14

23

Irreversible obstruction

	Pred	Pre-Bronch			Post-Bronch			Chng
		LLN	ULN	Actual % Pred	Actual	% Pred	% Chng	
---- SPIROMETRY ----								
FVC (L)	2.77	2.31	3.23	2.38	85	2.45	88	+2
FEV1 (L)	2.19	1.83	2.55	*1.12	*51	*1.24	*56	+10
FEV1/FVC (%)	80	67	93	*47	*59	*51	*63	+7
FEV1/SVC (%)	80	67	93					
FEF 25-75% (L/sec)	2.23	1.86	2.60	*0.41	*18	*0.56	*25	+36
FEF 25% (L/sec)	5.45	4.55	6.35	*1.24	*22	*1.47	*27	+18
FEF 50% (L/sec)				0.48		0.70		+46
FEF 75% (L/sec)	1.25	1.04	1.46	*0.18	*14	*0.27	*21	+47
FEF Max (L/sec)	5.87	4.90	6.84	*2.25	*38	*2.36	*40	+4
FIF 50% (L/sec)	3.23	2.70	3.76	*1.61	*49	*1.45	*44	-9
FEF50%/FIF50% (%)	90-100	79	119	30		48		+62

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Irreversible obstruction

	Pred	Pre-Bronch			Post-Bronch			Chng
		LLN	ULN	Actual % Pred	Actual	% Pred	% Chng	
---- SPIROMETRY ----								
FVC (L)	2.77	2.31	3.23	2.38	85	2.45	88	+2
FEV1 (L)	2.19	1.83	2.55	*1.12	*51	*1.24	*56	+10
FEV1/FVC (%)	80	67	93	*47	*59	*51	*63	+7
FEV1/SVC (%)	80	67	93					
FEF 25-75% (L/sec)	2.23	1.86	2.60	*0.41	*18	*0.56	*25	+36
FEF 25% (L/sec)	5.45	4.55	6.35	*1.24	*22	*1.47	*27	+18
FEF 50% (L/sec)				0.48		0.70		+46
FEF 75% (L/sec)	1.25	1.04	1.46	*0.18	*14	*0.27	*21	+47
FEF Max (L/sec)	5.87	4.90	6.84	*2.25	*38	*2.36	*40	+4
FIF 50% (L/sec)	3.23	2.70	3.76	*1.61	*49	*1.45	*44	-9
FEF50%/FIF50% (%)	90-100	79	119	30		48		+62

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Question #1

Reversible obstruction after a bronchodilator is defined as:

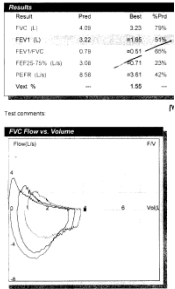
A. Greater than 5% increase in the FEV1/FVC ratio

B. Greater than 12% increase in the FEV1

C. Greater than 12% increase in the FEF 25-75%

D. Greater than 5% decrease in the FEV1/FVC ratio

Question #2



60 year-old man with dyspnea. The most likely cause suggested by the spirometry is:

- A. Moderate obstruction
- B. Tracheostenosis
- C. Poor effort
- D. Vocal cord dysfunction

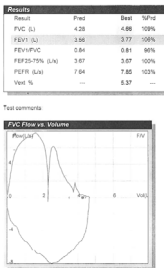
Question #3



46 year-old man with dyspnea on exertion. The most likely cause is:

- A. Very severe asthma
- B. Tracheostenosis
- C. Vocal cord dysfunction
- D. Pulmonary fibrosis

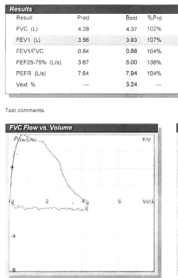
Question #4



The most likely cause of this finding is:

- A. Coughing during exhalation
- B. Tracheostenosis
- C. Vocal cord dysfunction
- D. Chronic obstructive pulmonary disease

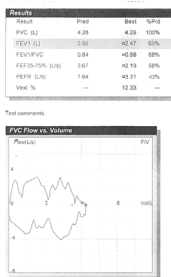
Question #5



65 year-old woman with dyspnea after open-heart surgery. The most likely cause is:

- A. Asthma
- B. Tracheostenosis
- C. Vocal cord paralysis
- D. Bronchiectasis

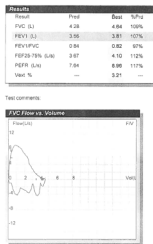
Question #6



50 year-old man with dyspnea requesting disability. The spirometry shows:

- A. Moderate obstruction
- B. Poor effort
- C. Vocal cord paralysis
- D. Normal results

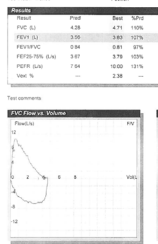
Question #7



34 year-old woman with cough and dyspnea. The spirometry suggests:

- A. Mild obstruction
- B. Tracheostenosis
- C. Vocal cord dysfunction
- D. Normal results

Question #8



42 year-old man with cough and dyspnea. The spirometry suggests:

- A. Mild obstruction
- B. Tracheostenosis
- C. Vocal cord dysfunction
- D. Normal results

Question #9

A normal FEV1 and FVC can vary based on:

- A. Age
- B. Race
- C. Height
- D. All of the above

Question #10

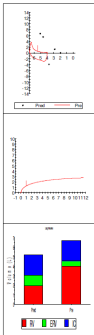
An office spirometry report indicates that the FEV1/FVC ratio is 82% (normal), the FVC is 240% of predicted and the FEV1 is 232% of predicted. The most likely cause of these results is:

- A. Patient did not take a deep breath
- B. Patient received albuterol prior to the test
- C. The patient's height was incorrectly entered as 63 centimeters rather than 63 inches
- D. Patient is a marathon runner

Question # 11

- 20-year-old college student
- Dyspnea and cough since classes started
- Moved from a dorm to an apartment this year

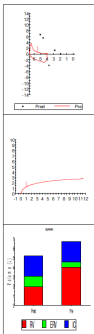
	Pre-Bronch			Post-Bronch		
	Pred	L/N/LN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	3.53	2.95	4.11	*2.74	*77	
FEV1 (L)	2.75	2.30	3.20	*1.25	*45	
FEV1/FVC (%)	79	66	92	*86	+27	
FEV1/SVC (%)	78	65	91	*86	+58	
FEF 25-75% (L/sec)	2.57	2.15	2.99	*0.42	+16	
FEF 25% (L/sec)	5.55	4.63	6.47	*1.23	+22	
FEF 50% (L/sec)				0.50		
FEF 75% (L/sec)	1.29	1.08	1.50	*0.30	+15	
FEF Max (L/sec)	6.64	5.54	7.74	*3.85	+57	
PEF 50% (L/sec)	3.90	3.26	4.54	*2.39	+61	
FEF50%/PEF50% (%)	90-100	79	119	21		
--- LUNG VOLUMES ---						
TLC (Pnib) (L)	5.20	4.16	6.24	*6.71	+128	
SVC (L)	3.53	2.95	4.11	*2.74	+77	
IC (L)	2.18	1.82	2.54	2.14	98	
FRC (Pnib) (L)	2.94	2.35	3.53	*4.52	+153	
ERV (L)	1.09	0.91	1.27	*0.56	+51	
RV (Pnib) (L)	1.96	1.57	2.35	*3.96	+202	
RV/TLC (Pnib) (%)	38	30	46	*59	+155	
Vpait (L)						
--- DIFFUSION ---						
DLCOcc (ml/min/mm)	22.46	17.97	26.95	22.93	102	
DLCOcr (ml/min/mm)	22.46	17.97	26.95	4.50		
DLVA (ml/min/mmHg)	4.46	3.57	5.35	5.09	114	
VA (L)	5.23	4.37	6.09	4.50	86	
IVC (L)				2.41		
BHT (sec)						



Question # 11

- 20-year-old college student
- Dyspnea and cough since classes started
- Moved from a dorm to an apartment this year

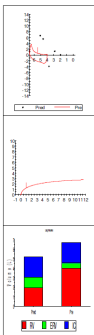
	Pre-Bronch			Post-Bronch		
	Pred	L/N/LN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	3.53	2.95	4.11	*2.74	*77	
FEV1 (L)	2.75	2.30	3.20	*1.25	*45	
FEV1/FVC (%)	79	66	92	*86	+27	
FEV1/SVC (%)	78	65	91	*86	+58	
FEF 25-75% (L/sec)	2.57	2.15	2.99	*0.42	+16	
FEF 25% (L/sec)	5.55	4.63	6.47	*1.23	+22	
FEF 50% (L/sec)				0.50		
FEF 75% (L/sec)	1.29	1.08	1.50	*0.30	+15	
FEF Max (L/sec)	6.64	5.54	7.74	*3.85	+57	
PEF 50% (L/sec)	3.90	3.26	4.54	*2.39	+61	
FEF50%/PEF50% (%)	90-100	79	119	21		
--- LUNG VOLUMES ---						
TLC (Pnib) (L)	5.20	4.16	6.24	*6.71	+128	
SVC (L)	3.53	2.95	4.11	*2.74	+77	
IC (L)	2.18	1.82	2.54	2.14	98	
FRC (Pnib) (L)	2.94	2.35	3.53	*4.52	+153	
ERV (L)	1.09	0.91	1.27	*0.56	+51	
RV (Pnib) (L)	1.96	1.57	2.35	*3.96	+202	
RV/TLC (Pnib) (%)	38	30	46	*59	+155	
Vpait (L)						
--- DIFFUSION ---						
DLCOcc (ml/min/mm)	22.46	17.97	26.95	22.93	102	
DLCOcr (ml/min/mm)	22.46	17.97	26.95	4.50		
DLVA (ml/min/mmHg)	4.46	3.57	5.35	5.09	114	
VA (L)	5.23	4.37	6.09	4.50	86	
IVC (L)				2.41		
BHT (sec)						



Question # 11

- 20-year-old college student
- Dyspnea and cough since classes started
- Moved from a dorm to an apartment this year

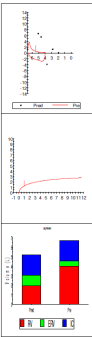
	Pre-Bronch			Post-Bronch		
	Pred	L/N/LN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	3.53	2.95	4.11	*2.74	*77	
FEV1 (L)	2.75	2.30	3.20	*1.25	*45	
FEV1/FVC (%)	79	66	92	*86	+27	
FEV1/SVC (%)	78	65	91	*86	+58	
FEF 25-75% (L/sec)	2.57	2.15	2.99	*0.42	+16	
FEF 25% (L/sec)	5.55	4.63	6.47	*1.23	+22	
FEF 50% (L/sec)				0.50		
FEF 75% (L/sec)	1.29	1.08	1.50	*0.30	+15	
FEF Max (L/sec)	6.64	5.54	7.74	*3.85	+57	
PEF 50% (L/sec)	3.90	3.26	4.54	*2.39	+61	
FEF50%/PEF50% (%)	90-100	79	119	21		
--- LUNG VOLUMES ---						
TLC (Pnib) (L)	5.20	4.16	6.24	*6.71	+128	
SVC (L)	3.53	2.95	4.11	*2.74	+77	
IC (L)	2.18	1.82	2.54	2.14	98	
FRC (Pnib) (L)	2.94	2.35	3.53	*4.52	+153	
ERV (L)	1.09	0.91	1.27	*0.56	+51	
RV (Pnib) (L)	1.96	1.57	2.35	*3.96	+202	
RV/TLC (Pnib) (%)	38	30	46	*59	+155	
Vpait (L)						
--- DIFFUSION ---						
DLCOcc (ml/min/mm)	22.46	17.97	26.95	22.93	102	
DLCOcr (ml/min/mm)	22.46	17.97	26.95	4.50		
DLVA (ml/min/mmHg)	4.46	3.57	5.35	5.09	114	
VA (L)	5.23	4.37	6.09	4.50	86	
IVC (L)				2.41		
BHT (sec)						



Question # 11

- 20-year-old college student
- Dyspnea and cough since classes started
- Moved from a dorm to an apartment this year

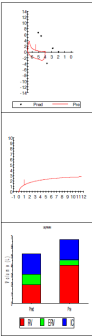
	Pre-Bronch			Post-Bronch		
	Pred	L/N/LN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	3.53	2.95	4.11	+2.74	+73	
FEV1 (L)	2.75	2.30	3.20	+1.35	+49	
FEV1/FVC (%)	79	66	92	+26	+39	
FEV1/SVC (%)	78	65	91	+26	+39	
FEF 25-75% (L/sec)	2.57	2.15	2.99	+0.42	+16	
FEF 25% (L/sec)	5.55	4.63	6.47	+1.23	+22	
FEF 50% (L/sec)				0.50		
FEF 75% (L/sec)	1.29	1.08	1.50	+0.30	+15	
FEF Max (L/sec)	6.64	5.54	7.74	+3.85	+57	
FEF 50% (L/sec)	3.90	3.26	4.54	+2.39	+61	
FEF50%/FEF50% (%)	90-100	79	119	21		
--- LUNG VOLUMES ---						
TLC (Pnib) (L)	5.20	4.16	6.24	+6.71	+129	
SVC (L)	3.53	2.95	4.11	+2.74	+77	
RC (L)	2.18	1.82	2.54	2.14	98	
FRC (Pnib) (L)	2.94	2.35	3.53	+4.52	+153	
ERV (L)	1.09	0.91	1.27	+0.56	+54	
RV (Pnib) (L)	1.96	1.57	2.35	+3.96	+203	
RV/TLC (Pnib) (%)	38	30	46	+9	+23	
Vpant (L)						
--- DIFFUSION ---						
DLCOcc (ml/min/mm)	22.46	17.97	26.95	22.93	102	
DLCOcc (ml/min/mm)	22.46	17.97	26.95	4.50		
DLVA (ml/min/mmHg)	4.46	3.57	5.35	5.09	114	
VA (L)	5.23	4.37	6.09	4.50	86	
IVC (L)				2.41		
BHT (sec)						



Question # 11

- 20-year-old college student
- Dyspnea and cough since classes started
- Moved from a dorm to an apartment this year

	Pre-Bronch			Post-Bronch		
	Pred	L/N/LN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	3.53	2.95	4.11	+2.74	+73	
FEV1 (L)	2.75	2.30	3.20	+1.35	+49	
FEV1/FVC (%)	79	66	92	+26	+39	
FEV1/SVC (%)	78	65	91	+26	+39	
FEF 25-75% (L/sec)	2.57	2.15	2.99	+0.42	+16	
FEF 25% (L/sec)	5.55	4.63	6.47	+1.23	+22	
FEF 50% (L/sec)				0.50		
FEF 75% (L/sec)	1.29	1.08	1.50	+0.30	+15	
FEF Max (L/sec)	6.64	5.54	7.74	+3.85	+57	
FEF 50% (L/sec)	3.90	3.26	4.54	+2.39	+61	
FEF50%/FEF50% (%)	90-100	79	119	21		
--- LUNG VOLUMES ---						
TLC (Pnib) (L)	5.20	4.16	6.24	+6.71	+129	
SVC (L)	3.53	2.95	4.11	+2.74	+77	
RC (L)	2.18	1.82	2.54	2.14	98	
FRC (Pnib) (L)	2.94	2.35	3.53	+4.52	+153	
ERV (L)	1.09	0.91	1.27	+0.56	+54	
RV (Pnib) (L)	1.96	1.57	2.35	+3.96	+203	
RV/TLC (Pnib) (%)	38	30	46	+9	+23	
Vpant (L)						
--- DIFFUSION ---						
DLCOcc (ml/min/mm)	22.46	17.97	26.95	22.93	102	
DLCOcc (ml/min/mm)	22.46	17.97	26.95	4.50		
DLVA (ml/min/mmHg)	4.46	3.57	5.35	5.09	114	
VA (L)	5.23	4.37	6.09	4.50	86	
IVC (L)				2.41		
BHT (sec)						

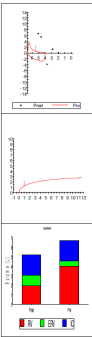


Question # 11

- 20-year-old college student
- Dyspnea and cough since classes started
- Moved from a dorm to an apartment this year

• Asthma

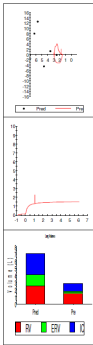
	Pre-Bronch			Post-Bronch		
	Pred	L/N/LN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	3.53	2.95	4.11	+2.74	+73	
FEV1 (L)	2.75	2.30	3.20	+1.35	+49	
FEV1/FVC (%)	79	66	92	+26	+39	
FEV1/SVC (%)	78	65	91	+26	+39	
FEF 25-75% (L/sec)	2.57	2.15	2.99	+0.42	+16	
FEF 25% (L/sec)	5.55	4.63	6.47	+1.23	+22	
FEF 50% (L/sec)				0.50		
FEF 75% (L/sec)	1.29	1.08	1.50	+0.30	+15	
FEF Max (L/sec)	6.64	5.54	7.74	+3.85	+57	
FEF 50% (L/sec)	3.90	3.26	4.54	+2.39	+61	
FEF50%/FEF50% (%)	90-100	79	119	21		
--- LUNG VOLUMES ---						
TLC (Pnib) (L)	5.20	4.16	6.24	+6.71	+129	
SVC (L)	3.53	2.95	4.11	+2.74	+77	
RC (L)	2.18	1.82	2.54	2.14	98	
FRC (Pnib) (L)	2.94	2.35	3.53	+4.52	+153	
ERV (L)	1.09	0.91	1.27	+0.56	+54	
RV (Pnib) (L)	1.96	1.57	2.35	+3.96	+203	
RV/TLC (Pnib) (%)	38	30	46	+9	+23	
Vpant (L)						
--- DIFFUSION ---						
DLCOcc (ml/min/mm)	22.46	17.97	26.95	22.93	102	
DLCOcc (ml/min/mm)	22.46	17.97	26.95	4.50		
DLVA (ml/min/mmHg)	4.46	3.57	5.35	5.09	114	
VA (L)	5.23	4.37	6.09	4.50	86	
IVC (L)				2.41		
BHT (sec)						



Question # 12

- 50-year-old man
- History of ALS
- Dyspnea for 2 years

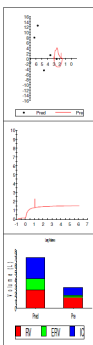
	Pred	Pre-Bronch		Post-Bronch	
		LLN	LLN	Actual %Pred	Actual %Pred %Chng
--- SPIROMETRY ---					
PVC (L)	4.33	3.62	5.04	+1.48	+54
FEV1 (L)	3.15	2.63	3.67	+1.26	+41
FEV1/FVC (%)	73	61	85	+87	+119
FEV1/SVC (%)	73	61	85	+94	+129
FEF 25-75% (L/sec)	2.32	1.94	2.70	+1.69	+72
FEF 25% (L/sec)	12.62	10.54	14.70	+3.23	+25
FEF 50% (L/sec)			2.42		
FEF 75% (L/sec)	1.36	1.14	1.58	+0.57	+42
FEF Max (L/sec)	8.04	6.71	9.37	+4.05	+50
PIF 50% (L/sec)	4.37	3.65	5.09	+3.13	+71
FEF50%/PIF50% (%)	90-100	79	119	77	
--- LUNG VOLUMES ---					
TLC (Peth) (L)	7.09	5.67	8.51	+2.91	+40
SVC (L)	4.33	3.62	5.04	+1.37	+31
IC (L)	2.96	2.47	3.45	+1.12	+37
FRC (Peth) (L)	3.79	3.03	4.55	+1.73	+45
ERV (L)	1.48	1.24	1.72	+0.19	+13
RV (Peth) (L)	2.54	2.03	3.05	+1.53	+60
RV/TLC (Peth) (%)	37	30	44	+53	+142
Vpant (L)					
--- DIFFUSION ---					
DLCOinc (ml/min/mm)	25.42	20.34	30.50	+16.04	+63
DLCOcor (ml/min/mm)	25.42	20.34	30.50		
DLVA (ml/min/mmHg)	3.81	3.05	4.57	+6.42	+168
VA (L)	6.87	5.74	8.00	+2.50	+56
IVC (L)			1.42		
BHT (sec)					



Question # 12

- 50-year-old man
- History of ALS
- Dyspnea for 2 years

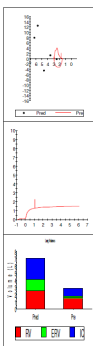
	Pred	Pre-Bronch LLN LLN	Actual	Post-Bronch Actual %Pred %Chng
--- SPIROMETRY ---				
PVC (L)	4.33	3.62 5.04	+1.48	+34
FEV1 (L)	3.15	2.63 3.67	+1.26	+41
FEV1/FVC (%)	73	61 85	+87	+119
FEV1/SVC (%)	73	61 85	+94	+129
FEF 25-75% (L/sec)	2.32	1.94 2.70	+1.69	+72
FEF 25% (L/sec)	12.62	10.54 14.70	+3.23	+25
FEF 50% (L/sec)			2.42	
FEF 75% (L/sec)	1.36	1.14 1.58	+0.57	+42
FEF Max (L/sec)	8.04	6.71 9.37	+4.05	+50
PIF 50% (L/sec)	4.37	3.65 5.09	+3.13	+71
FEF50%/PIF50% (%)	90-100	79 119	77	
--- LUNG VOLUMES ---				
TLC (Peth) (L)	7.09	5.67 8.51	+2.91	+40
SVC (L)	4.33	3.62 5.04	+1.37	+31
IC (L)	2.96	2.47 3.45	+1.12	+37
FRC (Peth) (L)	3.79	3.03 4.55	+1.73	+45
ERV (L)	1.48	1.24 1.72	+0.19	+13
RV (Peth) (L)	2.54	2.03 3.05	+1.53	+60
RV/TLC (Peth) (%)	37	30 44	+53	+142
Vpant (L)				
--- DIFFUSION ---				
DLCOinc (ml/min/mmHg)	25.42	20.34 30.50	+16.04	+63
DLCOcor (ml/min/mmHg)	25.42	20.34 30.50		
DLVA (ml/min/mmHg)	3.81	3.05 4.57	+6.42	+168
VA (L)	6.87	5.74 8.00	+2.50	+56
IVC (L)			1.42	
BHT (sec)				



Question # 12

- 50-year-old man
- History of ALS
- Dyspnea for 2 years

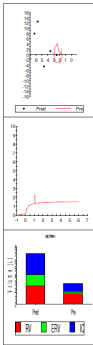
	Pred	Pre-Bronch		Post-Bronch	
		LLN	LLN	Actual %Pred	Actual %Pred %Chng
--- SPIROMETRY ---					
PVC (L)	4.33	3.62	5.04	+1.48	+54
FEV1 (L)	3.15	2.63	3.67	+1.26	+41
FEV1/FVC (%)	73	61	85	+87	+119
FEV1/SVC (%)	73	61	85	+94	+129
FEF 25-75% (L/sec)	2.32	1.94	2.70	+1.69	+72
FEF 25% (L/sec)	12.62	10.54	14.70	+3.23	+25
FEF 50% (L/sec)			2.42		
FEF 75% (L/sec)	1.36	1.14	1.58	+0.57	+42
FEF Max (L/sec)	8.04	6.71	9.37	+4.05	+50
PIF 50% (L/sec)	4.37	3.65	5.09	+3.13	+71
FEF50%/PIF50% (%)	90-100	79	119	77	
--- LUNG VOLUMES ---					
TLC (Peth) (L)	7.09	5.67	8.51	+2.91	+40
SVC (L)	4.33	3.62	5.04	+1.37	+31
IC (L)	2.96	2.47	3.45	+1.12	+37
FRC (Peth) (L)	3.79	3.03	4.55	+1.73	+45
ERV (L)	1.48	1.24	1.72	+0.19	+13
RV (Peth) (L)	2.54	2.03	3.05	+1.53	+60
RV/TLC (Peth) (%)	37	30	44	+53	+142
Vpant (L)					
--- DIFFUSION ---					
DLCOinc (ml/min/mm)	25.42	20.34	30.50	+16.04	+63
DLCOcor (ml/min/mm)	25.42	20.34	30.50		
DLVA (ml/min/mmHg)	3.81	3.05	4.57	+6.42	+168
VA (L)	6.87	5.74	8.00	+2.50	+56
IVC (L)			1.42		
BHT (sec)					



Question # 12

- 50-year-old man
- History of ALS
- Dyspnea for 2 years

	Pre-Bronch			Post-Bronch		
	Pred	LLN/ULN	Actual %Pred	Actual	%Pred	%Change
--- SPIROMETRY ---						
FVC (L)	4.33	3.62 5.04	+1.48	*54		
FEV1 (L)	3.15	2.63 3.67	+1.26	*41		
FEV1/FVC (%)	73	61 85	+17	*119		
FEV1/SVC (%)	73	61 85	+17	*129		
FEF 25-75% (L/sec)	2.32	1.84 2.70	+1.69	*72		
FEF 25% (L/sec)	12.62	10.5414.70	+3.23	*25		
FEF 50% (L/sec)			2.42			
FEF 75% (L/sec)	1.36	1.14 1.58	+0.57	*42		
FEF Max (L/sec)	8.04	6.71 9.37	+4.05	*50		
PEF 50% (L/sec)	4.37	3.65 5.09	+3.13	*71		
FEF50%/PEF50% (%)	90-100	79 119	77			
--- LUNG VOLUMES ---						
TLC (Peth) (L)	7.09	5.67 8.51	+2.91	*40		
SVC (L)	4.33	3.62 5.04	+1.37	*71		
IC (L)	2.96	2.47 3.45	+1.12	*37		
FRC (Peth) (L)	3.79	3.03 4.55	+1.73	*45		
ERV (L)	1.48	1.24 1.72	+0.19	*13		
RV (Peth) (L)	2.54	2.03 3.05	+1.53	*60		
RV/TLC (Peth) (%)	37	30 44	+53	*142		
Vpant (L)						
--- DIFFUSION ---						
DLCOinc (ml/min/mm)	25.42	20.3430.50	+16.04	*60		
DLCOcor (ml/min/mm)	25.42	20.3430.50				
DLVA (ml/min/mmHg)	3.81	3.05 4.57	+6.42	*100		
VA (L)	6.87	5.74 8.00	+2.50	*56		
IVC (L)			1.42			
BHT (sec)						

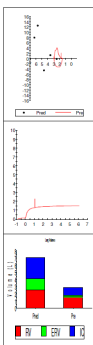


Question # 12

- 50-year-old man
- History of ALS
- Dyspnea for 2 years

- Neuromuscular weakness

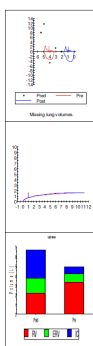
	Pre-Bronch			Post-Bronch		
	Pred	LLN/ULN	Actual %Pred	Actual	%Pred	%Change
--- SPIROMETRY ---						
FVC (L)	4.33	3.62 5.04	+1.48	*54		
FEV1 (L)	3.15	2.63 3.67	+1.26	*41		
FEV1/FVC (%)	73	61 85	+17	*119		
FEV1/SVC (%)	73	61 85	+17	*129		
FEF 25-75% (L/sec)	2.32	1.84 2.70	+1.69	*72		
FEF 25% (L/sec)	12.62	10.5414.70	+3.23	*25		
FEF 50% (L/sec)			2.42			
FEF 75% (L/sec)	1.36	1.14 1.58	+0.57	*42		
FEF Max (L/sec)	8.04	6.71 9.37	+4.05	*50		
PEF 50% (L/sec)	4.37	3.65 5.09	+3.13	*71		
FEF50%/PEF50% (%)	90-100	79 119	77			
--- LUNG VOLUMES ---						
TLC (Peth) (L)	7.09	5.67 8.51	+2.91	*40		
SVC (L)	4.33	3.62 5.04	+1.37	*71		
IC (L)	2.96	2.47 3.45	+1.12	*37		
FRC (Peth) (L)	3.79	3.03 4.55	+1.73	*45		
ERV (L)	1.48	1.24 1.72	+0.19	*13		
RV (Peth) (L)	2.54	2.03 3.05	+1.53	*60		
RV/TLC (Peth) (%)	37	30 44	+53	*142		
Vpant (L)						
--- DIFFUSION ---						
DLCOinc (ml/min/mm)	25.42	20.3430.50	+16.04	*60		
DLCOcor (ml/min/mm)	25.42	20.3430.50				
DLVA (ml/min/mmHg)	3.81	3.05 4.57	+6.42	*100		
VA (L)	6.87	5.74 8.00	+2.50	*56		
IVC (L)			1.42			
BHT (sec)						



Question # 13

- 65-year-old woman
- Dyspnea for 3 years
- Frequent bronchitis
- Daily sputum production
- Non-smoker
- Moist crackles on exam

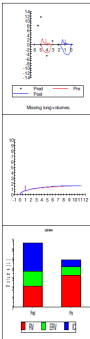
	Pre-Bronch			Post-Bronch		
	Pred	LLN/ULN	Actual %Pred	Actual	%Pred	%Change
--- SPIROMETRY ---						
FVC (L)	3.80	3.17 4.43	+1.59	*41	+1.60	+2
FEV1 (L)	2.96	2.47 3.45	+0.71	*23	+0.68	+23
FEV1/FVC (%)	78	65 91	+45	+57	+43	+54
FEV1/SVC (%)	78	65 91	+45	+55		
FEF 25-75% (L/sec)	2.78	2.32 3.24	+0.24	*8	+0.27	+9
FEF 25% (L/sec)	11.75	9.8113.69	+0.71	*6	+0.53	+4
FEF 50% (L/sec)			0.24	0.41		+68
FEF 75% (L/sec)	1.54	1.29 1.79	+0.22	*14	+0.14	+8
FEF Max (L/sec)	8.06	6.73 9.39	+2.37	+20	+2.05	+25
PEF 50% (L/sec)	4.73	3.05 5.51	+3.44	*22	+4.11	+86
FEF50%/PEF50% (%)	90-100	79 119	7	10		+40
--- LUNG VOLUMES ---						
TLC (Peth) (L)	6.69	5.35 8.03	+4.93	*73		
SVC (L)	3.80	3.17 4.43	+1.64	*43		
IC (L)	2.98	2.49 3.47	+0.75	*25		
FRC (Peth) (L)	3.46	2.77 4.15	4.06	117		
ERV (L)	1.49	1.24 1.74	+0.76	*51		
RV (Peth) (L)	2.15	1.72 2.58	+3.30	*153		
RV/TLC (Peth) (%)	33	26 40	+67	*202		
Vpant (L)						
--- DIFFUSION ---						
DLCOinc (ml/min/mm)	22.48	17.9826.98	+5.86	*26		
DLCOcor (ml/min/mm)	22.48	17.9826.98				
DLVA (ml/min/mmHg)	4.34	3.47 5.21	+1.95	*45		
VA (L)	6.53	5.45 7.61	+3.00	*45		
IVC (L)			1.45			
BHT (sec)						



Question # 13

- 65-year-old woman
- Dyspnea for 3 years
- Frequent bronchitis
- Daily sputum production
- Non-smoker
- Moist crackles on exam

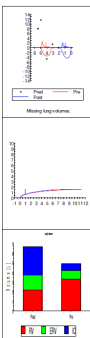
	Pre-Bronch			Post-Bronch		
	Pretd	LNLS	UNLS	Actual vs Pretd	Actual vs Pretd vs Change	
--- SPIROMETRY ---						
FVC (L)	3.80	3.17	4.43	+1.59	*41	+1.60 *42 +1
FEV1 (L)	2.96	2.47	3.45	+0.71	*23	+0.68 *23 -3
FEV1/FVC (%)	78	65	91	+25	*57	+43 *54 -4
FEV1/SVC (%)	78	65	91	+25	*55	
FEF 25-75% (L/sec)	2.78	2.32	3.24	+0.24	*8	+0.27 *9 +12
FEF 25% (L/sec)	11.75	9.81	13.69	+0.71	*6	+0.53 *4 -25
FEF 50% (L/sec)				0.24		0.41 +68
FEF 75% (L/sec)	1.54	1.29	1.79	+0.22	*14	+0.14 *8 -37
FEF Max (L/sec)	8.06	6.73	9.39	+2.37	*29	+2.05 *25 -13
FEF 50% (L/sec)	4.73	3.95	5.51	+3.44	*72	4.11 86 +19
FEF50%/FEF50% (%)	90-100	79	119	7	10	+40
--- LUNG VOLUMES						
TLC (Peth) (L)	6.69	5.35	8.03	+4.93	*73	
SVC (L)	3.80	3.17	4.43	+1.64	*43	
IC (L)	2.98	2.49	3.47	+0.75	*25	
FRC (Peth) (L)	3.46	2.77	4.15	4.06	117	
ERV (L)	1.49	1.24	1.74	+0.76	*51	
RV (Peth) (L)	2.15	1.72	2.58	+3.30	*153	
RV/TLC (Peth) (%)	33	26	40	+67	*202	
Vpant (L)						
--- DIFFUSION ---						
DLCOmc (ml/min/mm)	22.48	17.98	26.98	+5.86	*26	
DLCOcc (ml/min/mm)	22.48	17.98	26.98			
DLVA (ml/min/mmHg)	4.34	3.47	5.21	+1.95	*45	
VA (L)	6.53	5.45	7.61	+3.00	*45	
IVC (L)				1.45		
BHT (sec)						



Question # 13

- 65-year-old woman
- Dyspnea for 3 years
- Frequent bronchitis
- Daily sputum production
- Non-smoker
- Moist crackles on exam

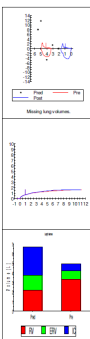
	Pre-Bronch			Post-Bronch		
	Pretd	LNLS	UNLS	Actual vs Pretd	Actual vs Pretd vs Change	
--- SPIROMETRY ---						
FVC (L)	3.80	3.17	4.43	+1.59	*41	+1.60 *42 +1
FEV1 (L)	2.96	2.47	3.45	+0.71	*23	+0.68 *23 -3
FEV1/FVC (%)	78	65	91	+25	*57	+43 *54 -4
FEV1/SVC (%)	78	65	91	+25	*55	
FEF 25-75% (L/sec)	2.78	2.32	3.24	+0.24	*8	+0.27 *9 +12
FEF 25% (L/sec)	11.75	9.81	13.69	+0.71	*6	+0.53 *4 -25
FEF 50% (L/sec)				0.24		0.41 +68
FEF 75% (L/sec)	1.54	1.29	1.79	+0.22	*14	+0.14 *8 -37
FEF Max (L/sec)	8.06	6.73	9.39	+2.37	*29	+2.05 *25 -13
FEF 50% (L/sec)	4.73	3.95	5.51	+3.44	*72	4.11 86 +19
FEF50%/FEF50% (%)	90-100	79	119	7	10	+40
--- LUNG VOLUMES						
TLC (Peth) (L)	6.69	5.35	8.03	+4.93	*73	
SVC (L)	3.80	3.17	4.43	+1.64	*43	
IC (L)	2.98	2.49	3.47	+0.75	*25	
FRC (Peth) (L)	3.46	2.77	4.15	4.06	117	
ERV (L)	1.49	1.24	1.74	+0.76	*51	
RV (Peth) (L)	2.15	1.72	2.58	+3.30	*153	
RV/TLC (Peth) (%)	33	26	40	+67	*202	
Vpant (L)						
--- DIFFUSION ---						
DLCOmc (ml/min/mm)	22.48	17.98	26.98	+5.86	*26	
DLCOcc (ml/min/mm)	22.48	17.98	26.98			
DLVA (ml/min/mmHg)	4.34	3.47	5.21	+1.95	*45	
VA (L)	6.53	5.45	7.61	+3.00	*45	
IVC (L)				1.45		
BHT (sec)						



Question # 13

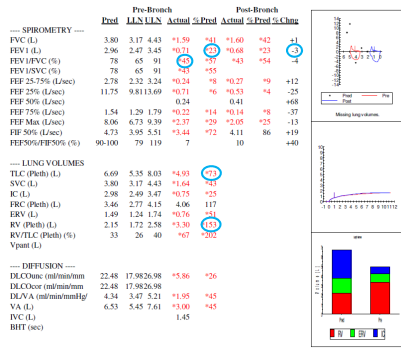
- 65-year-old woman
- Dyspnea for 3 years
- Frequent bronchitis
- Daily sputum production
- Non-smoker
- Moist crackles on exam

	Pre-Bronch			Post-Bronch		
	Pretd	LNLS	UNLS	Actual vs Pretd	Actual vs Pretd vs Change	
--- SPIROMETRY ---						
FVC (L)	3.80	3.17	4.43	+1.59	*41	+1.60 *42 +1
FEV1 (L)	2.96	2.47	3.45	+0.71	*23	+0.68 *23 -3
FEV1/FVC (%)	78	65	91	+25	*57	+43 *54 -4
FEV1/SVC (%)	78	65	91	+25	*55	
FEF 25-75% (L/sec)	2.78	2.32	3.24	+0.24	*8	+0.27 *9 +12
FEF 25% (L/sec)	11.75	9.81	13.69	+0.71	*6	+0.53 *4 -25
FEF 50% (L/sec)				0.24		0.41 +68
FEF 75% (L/sec)	1.54	1.29	1.79	+0.22	*14	+0.14 *8 -37
FEF Max (L/sec)	8.06	6.73	9.39	+2.37	*29	+2.05 *25 -13
FEF 50% (L/sec)	4.73	3.95	5.51	+3.44	*72	4.11 86 +19
FEF50%/FEF50% (%)	90-100	79	119	7	10	+40
--- LUNG VOLUMES						
TLC (Peth) (L)	6.69	5.35	8.03	+4.93	*73	
SVC (L)	3.80	3.17	4.43	+1.64	*43	
IC (L)	2.98	2.49	3.47	+0.75	*25	
FRC (Peth) (L)	3.46	2.77	4.15	4.06	117	
ERV (L)	1.49	1.24	1.74	+0.76	*51	
RV (Peth) (L)	2.15	1.72	2.58	+3.30	*153	
RV/TLC (Peth) (%)	33	26	40	+67	*202	
Vpant (L)						
--- DIFFUSION ---						
DLCOmc (ml/min/mm)	22.48	17.98	26.98	+5.86	*26	
DLCOcc (ml/min/mm)	22.48	17.98	26.98			
DLVA (ml/min/mmHg)	4.34	3.47	5.21	+1.95	*45	
VA (L)	6.53	5.45	7.61	+3.00	*45	
IVC (L)				1.45		
BHT (sec)						



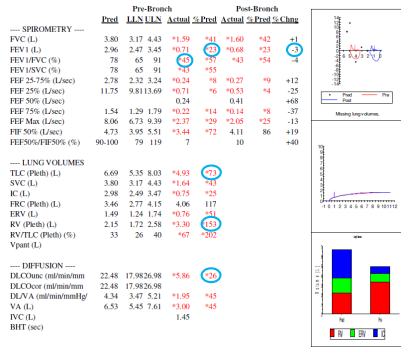
Question # 13

- 65-year-old woman
- Dyspnea for 3 years
- Frequent bronchitis
- Daily sputum production
- Non-smoker
- Moist crackles on exam



Question # 13

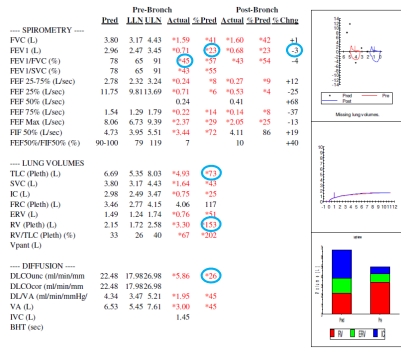
- 65-year-old woman
- Dyspnea for 3 years
- Frequent bronchitis
- Daily sputum production
- Non-smoker
- Moist crackles on exam



Question # 13

- 65-year-old woman
- Dyspnea for 3 years
- Frequent bronchitis
- Daily sputum production
- Non-smoker
- Moist crackles on exam

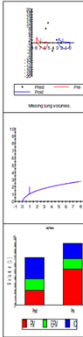
- Bronchiectasis



Question # 14

- 55-year-old man
- Dyspnea for 5 years
- Smokes 1 pack a day

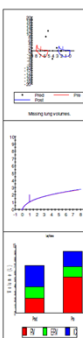
	Pre-Bronch			Post-Bronch		
	Pref	LLN/ULN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	4.08	3.41 4.75	+2.67	+65	+2.77	+67 +3
FEV1 (L)	3.20	2.67 3.73	+1.04	+32	+1.05	+32 +1
FEV1/FVC (%)	79	66 92	+39	+49	+38	+48 -2
FEV1/SVC (%)	78	65 91	+28	+35		
FEF 25-75% (L/sec)	3.05	2.55 3.55	+0.39	+12	+0.40	+13 +2
FEF 25% (L/sec)	11.97	9.99/13.95	+0.81	+6	+0.90	+7 +11
FEF 50% (L/sec)			0.43		0.42	-1
FEF 75% (L/sec)	1.73	1.44 2.02	+0.25	+14	+0.26	+14 +0
FEF Max (L/sec)	8.55	7.14 9.96	+3.13	+36	+2.51	+29 -19
FBF 50% (L/sec)	4.81	4.02 5.60	+3.29	+68	+3.71	+77 +12
FEF50%/FBF50% (%)	90-100	79 119	13	11		-12
--- LUNG VOLUMES						
TLC (Psth) (L)	6.98	5.58 8.38	+9.07	+129		
SVC (L)	4.08	3.41 4.75	3.76	92		
IC (L)	3.17	2.65 3.69	+2.19	+69		
FRC (Psth) (L)	3.61	2.89 4.33	+6.81	+188		
ERV (L)	1.59	1.33 1.85	1.50	94		
RV (Psth) (L)	2.17	1.74 2.60	+5.31	+244		
RV/TLC (Psth) (%)	32	26 38	+59	+183		
Vpant (L)						
--- DIFFUSION ---						
DLCOsc (ml/min/mm)	26.94	21.55/32.33	+15.57	+57		
DLCOsc (ml/min/mm)	26.94	21.55/32.33	+15.24	+56		
DLVA (ml/min/mmHg)	4.35	3.48 5.22	+2.68	+61		
VA (L)	6.82	5.69 7.95	+5.69	+83		
IVC (L)			3.67			
BHT (sec)						



Question # 14

- 55-year-old man
- Dyspnea for 5 years
- Smokes 1 pack a day

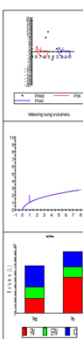
	Pre-Bronch			Post-Bronch		
	Pref	LLN/ULN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	4.08	3.41 4.75	+2.67	+65	+2.77	+67 +3
FEV1 (L)	3.20	2.67 3.73	+1.04	+32	+1.05	+32 +1
FEV1/FVC (%)	79	66 92	+39	+49	+38	+48 -2
FEV1/SVC (%)	78	65 91	+28	+35		
FEF 25-75% (L/sec)	3.05	2.55 3.55	+0.39	+12	+0.40	+13 +2
FEF 25% (L/sec)	11.97	9.99/13.95	+0.81	+6	+0.90	+7 +11
FEF 50% (L/sec)			0.43		0.42	-1
FEF 75% (L/sec)	1.73	1.44 2.02	+0.25	+14	+0.26	+14 +0
FEF Max (L/sec)	8.55	7.14 9.96	+3.13	+36	+2.51	+29 -19
FBF 50% (L/sec)	4.81	4.02 5.60	+3.29	+68	+3.71	+77 +12
FEF50%/FBF50% (%)	90-100	79 119	13	11		-12
--- LUNG VOLUMES						
TLC (Psth) (L)	6.98	5.58 8.38	+9.07	+129		
SVC (L)	4.08	3.41 4.75	3.76	92		
IC (L)	3.17	2.65 3.69	+2.19	+69		
FRC (Psth) (L)	3.61	2.89 4.33	+6.81	+188		
ERV (L)	1.59	1.33 1.85	1.50	94		
RV (Psth) (L)	2.17	1.74 2.60	+5.31	+244		
RV/TLC (Psth) (%)	32	26 38	+59	+183		
Vpant (L)						
--- DIFFUSION ---						
DLCOsc (ml/min/mm)	26.94	21.55/32.33	+15.57	+57		
DLCOsc (ml/min/mm)	26.94	21.55/32.33	+15.24	+56		
DLVA (ml/min/mmHg)	4.35	3.48 5.22	+2.68	+61		
VA (L)	6.82	5.69 7.95	+5.69	+83		
IVC (L)			3.67			
BHT (sec)						



Question # 14

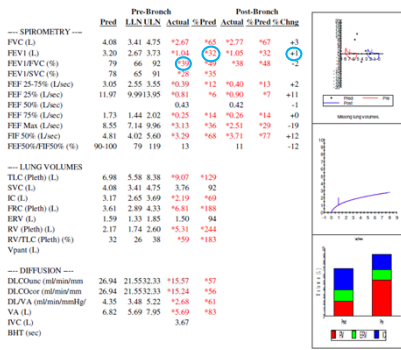
- 55-year-old man
- Dyspnea for 5 years
- Smokes 1 pack a day

	Pre-Bronch			Post-Bronch		
	Pref	LLN/ULN	Actual %Pred	Actual	%Pred %Chng	
--- SPIROMETRY ---						
FVC (L)	4.08	3.41 4.75	+2.67	+65	+2.77	+67 +3
FEV1 (L)	3.20	2.67 3.73	+1.04	+32	+1.05	+32 +1
FEV1/FVC (%)	79	66 92	+39	+49	+38	+48 -2
FEV1/SVC (%)	78	65 91	+28	+35		
FEF 25-75% (L/sec)	3.05	2.55 3.55	+0.39	+12	+0.40	+13 +2
FEF 25% (L/sec)	11.97	9.99/13.95	+0.81	+6	+0.90	+7 +11
FEF 50% (L/sec)			0.43		0.42	-1
FEF 75% (L/sec)	1.73	1.44 2.02	+0.25	+14	+0.26	+14 +0
FEF Max (L/sec)	8.55	7.14 9.96	+3.13	+36	+2.51	+29 -19
FBF 50% (L/sec)	4.81	4.02 5.60	+3.29	+68	+3.71	+77 +12
FEF50%/FBF50% (%)	90-100	79 119	13	11		-12
--- LUNG VOLUMES						
TLC (Psth) (L)	6.98	5.58 8.38	+9.07	+129		
SVC (L)	4.08	3.41 4.75	3.76	92		
IC (L)	3.17	2.65 3.69	+2.19	+69		
FRC (Psth) (L)	3.61	2.89 4.33	+6.81	+188		
ERV (L)	1.59	1.33 1.85	1.50	94		
RV (Psth) (L)	2.17	1.74 2.60	+5.31	+244		
RV/TLC (Psth) (%)	32	26 38	+59	+183		
Vpant (L)						
--- DIFFUSION ---						
DLCOsc (ml/min/mm)	26.94	21.55/32.33	+15.57	+57		
DLCOsc (ml/min/mm)	26.94	21.55/32.33	+15.24	+56		
DLVA (ml/min/mmHg)	4.35	3.48 5.22	+2.68	+61		
VA (L)	6.82	5.69 7.95	+5.69	+83		
IVC (L)			3.67			
BHT (sec)						



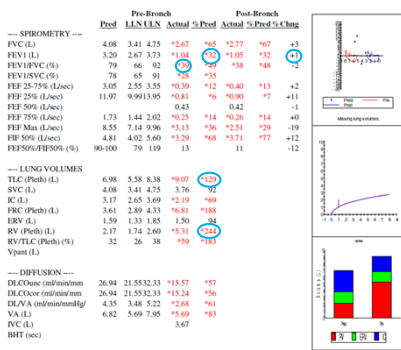
Question # 14

- 55-year-old man
- Dyspnea for 5 years
- Smokes 1 pack a day



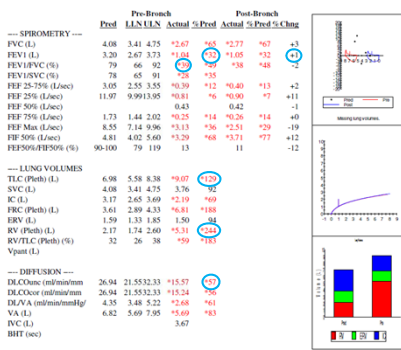
Question # 14

- 55-year-old man
- Dyspnea for 5 years
- Smokes 1 pack a day



Question # 14

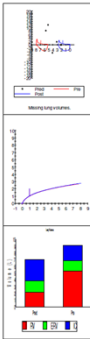
- 55-year-old man
- Dyspnea for 5 years
- Smokes 1 pack a day



Question # 14

- 55-year-old man
- Dyspnea for 5 years
- Smokes 1 pack a day
- Emphysema

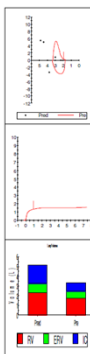
	Pred	Pre-Bronch		Post-Bronch	
		LLN	Actual %Pred	Actual	%Pred %Chng
--- SPIROMETRY ---					
FVC (L)	4.08	3.41	4.75	+2.67	+67
FEV1 (L)	3.20	2.67	3.73	+1.04	+32
FEV1/FVC (%)	79	66	92	+26	+38
FEV1/VC (%)	78	65	91	+26	+35
FEF 25-75% (L/sec)	3.05	2.55	3.55	+0.39	+12
FEF 25% (L/sec)	11.97	9.99	13.95	+0.81	+6
FEF 50% (L/sec)				0.43	+7
FEF 75% (L/sec)	1.73	1.44	2.02	+0.25	+14
FEF Max (L/sec)	8.55	7.14	9.96	+3.13	+36
FEF Max (L/sec)	4.81	4.02	5.60	+3.29	+68
FEF50%/FEF50% (%)	90-100	79	119	13	+11
--- LUNG VOLUMES ---					
TLC (Peth) (L)	6.98	5.58	8.38	+9.07	+12
SVC (L)	4.08	3.41	4.75	3.76	+9
IC (L)	3.17	2.65	3.69	+2.19	+69
FRC (Peth) (L)	3.61	2.89	4.33	+6.81	+188
ERV (L)	1.59	1.33	1.85	1.50	+8
RV (Peth) (L)	2.17	1.74	2.60	+5.31	+249
RV/TLC (Peth) (%)	32	26	38	+9	+183
Vpant (L)					
--- DIFFUSION ---					
DLCOsc (ml/min/mm)	26.94	21.55	32.33	+15.57	+72
DLCOsc (ml/min/mm)	26.94	21.55	32.33	+15.24	+70
DLVA (ml/min/mmHg)	4.35	3.48	5.22	+2.68	+61
VA (L)	6.82	5.69	7.95	+5.69	+83
PVC (L)					
BHT (sec)				3.67	



Question # 15

- 70-year-old woman
- Dyspnea for 6 months
- Non-smoker
- Dry crackles on exam

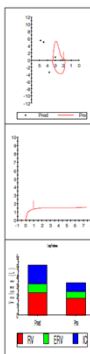
	Pred	LLN	Actual	Actual %Pred	Post-Bronch %Pred %Chng
--- SPIROMETRY ---					
FVC (L)	2.93	2.45	3.41	+1.57	+53
FEV1 (L)	2.20	1.84	2.56	+1.35	+61
FEV1/FVC (%)	75	63	87	86	+14
FEV1/VC (%)	75	63	87	86	+14
FEF 25-75% (L/sec)	1.76	1.47	2.05	1.87	+6
FEF 25% (L/sec)	5.06	4.23	5.89	5.24	+10
FEF 50% (L/sec)				2.96	
FEF 75% (L/sec)	0.83	0.69	0.97	+0.62	+74
FEF Max (L/sec)	5.44	4.54	6.34	5.28	+9
FEF 50% (L/sec)	3.39	2.83	3.95	3.70	+9
FEF50%/FEF50% (%)	90-100	79	119	80	
--- LUNG VOLUMES ---					
TLC (Peth) (L)	5.13	4.10	6.16	+3.29	+64
SVC (L)	2.93	2.45	3.41	+1.57	+53
IC (L)	1.89	1.58	2.20	+0.86	+45
FRC (Peth) (L)	2.94	2.35	3.53	+2.33	+79
ERV (L)	0.95	0.79	1.11	+0.61	+63
RV (Peth) (L)	2.29	1.83	2.75	+1.72	+75
RV/TLC (Peth) (%)	45	36	54	52	+16
Vpant (L)					
--- DIFFUSION ---					
DLCOsc (ml/min/mm)	20.32	16.26	24.38	+7.53	+37
DLCOsc (ml/min/mm)	20.32	16.26	24.38		
DLVA (ml/min/mmHg)	4.21	3.37	5.05	+2.64	+62
VA (L)	5.14	4.29	5.99	+2.85	+55
PVC (L)				1.37	
BHT (sec)					



Question # 15

- 70-year-old woman
- Dyspnea for 6 months
- Non-smoker
- Dry crackles on exam

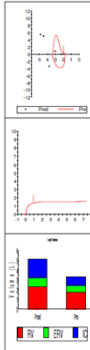
		Pre-Bronch		Post-Bronch	
	Pred	LLN	Actual	%Pred	%Pred %Chng
--- SPIROMETRY ---					
FVC (L)	2.93	2.45	3.41	+1.57	+53
FEV1 (L)	2.20	1.84	2.56	+1.35	+61
FEV1/FVC (%)	75	63	87	86	+14
FEV1/VC (%)	75	63	87	86	+14
FEF 25-75% (L/sec)	1.76	1.47	2.05	1.87	+6
FEF 25% (L/sec)	5.06	4.23	5.89	5.24	+10
FEF 50% (L/sec)				2.96	
FEF 75% (L/sec)	0.83	0.69	0.97	+0.62	+74
FEF Max (L/sec)	5.44	4.54	6.34	5.28	+9
FEF 50% Max (L/sec)	3.39	2.83	3.95	3.70	+9
FEF50%/FEF50% (%)	90-100	79	119	80	
--- LUNG VOLUMES ---					
TLC (Peth) (L)	5.13	4.10	6.16	+3.29	+64
SVC (L)	2.93	2.45	3.41	+1.57	+53
IC (L)	1.89	1.58	2.20	+0.86	+45
FRC (Peth) (L)	2.94	2.35	3.53	+2.33	+79
ERV (L)	0.95	0.79	1.11	+0.61	+63
RV (Peth) (L)	2.29	1.83	2.75	+1.72	+75
RV/TLC (Peth) (%)	45	36	54	52	+16
Vpant (L)					
--- DIFFUSION ---					
DLCOsc (ml/min/mm)	20.32	16.26	24.38	+7.53	+37
DLCOsc (ml/min/mm)	20.32	16.26	24.38		
DLVA (ml/min/mmHg)	4.21	3.37	5.05	+2.64	+62
VA (L)	5.14	4.29	5.99	+2.85	+55
PVC (L)				1.37	
BHT (sec)					



Question # 15

- 70-year-old woman
- Dyspnea for 6 months
- Non-smoker
- Dry crackles on exam

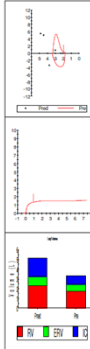
	Pre-Bronch			Post-Bronch		
	Pred	LLN/ULN	Actual %Pred	Actual	%Pred	%Chg
--- SPIROMETRY ---						
PVC (L)	2.93	2.45 3.41	+1.57	+53		
FEV1 (L)	2.20	1.84 2.56	+1.35	+61		
FEV1/FVC (%)	75	63 87	86	114		
FEV1/SVC (%)	75	63 87	86	114		
FEF 25-75% (L/sec)	1.76	1.47 2.05	1.87	106		
FEF 25% (L/sec)	5.06	4.23 5.89	5.24	103		
FEF 50% (L/sec)			2.96			
FEF 75% (L/sec)	0.83	0.69 0.97	+0.62	+74		
FEF Max (L/sec)	5.44	4.54 6.34	5.28	97		
FEF 50% (L/sec)	3.39	2.83 3.95	3.70	109		
FEF50%/FEF50% (%)	90-100	79 119	80			
--- LUNG VOLUMES						
TLC (Peth) (L)	5.13	4.10 6.16	+3.29	+60		
SVC (L)	2.93	2.45 3.41	+1.57	+53		
IC (L)	1.89	1.58 2.20	+0.86	+45		
FRC (Peth) (L)	2.94	2.35 3.53	+2.33	+79		
ERV (L)	0.95	0.79 1.11	+0.61	+63		
RV (Peth) (L)	2.29	1.83 2.75	+1.72	+75		
RV/TLC (Peth) (%)	45	36 54	52	116		
Vpant (L)						
--- DIFFUSION ---						
DLCOsc (ml/min/mm)	20.32	16.26/24.38	+7.53	+37		
DLCCor (ml/min/mm)	20.32	16.26/24.38				
DLVA (ml/min/mmHg)	4.21	3.37 5.05	+2.64	+62		
VA (L)	5.14	4.29 5.99	+2.85	+55		
VC (L)			1.37			
BHT (sec)						



Question # 15

- 70-year-old woman
- Dyspnea for 6 months
- Non-smoker
- Dry crackles on exam

	Pre-Bronch			Post-Bronch		
	Pred	LLN/ULN	Actual %Pred	Actual	%Pred	%Chg
--- SPIROMETRY ---						
PVC (L)	2.93	2.45 3.41	+1.57	+53		
FEV1 (L)	2.20	1.84 2.56	+1.35	+61		
FEV1/FVC (%)	75	63 87	86	114		
FEV1/SVC (%)	75	63 87	86	114		
FEF 25-75% (L/sec)	1.76	1.47 2.05	1.87	106		
FEF 25% (L/sec)	5.06	4.23 5.89	5.24	103		
FEF 50% (L/sec)			2.96			
FEF 75% (L/sec)	0.83	0.69 0.97	+0.62	+74		
FEF Max (L/sec)	5.44	4.54 6.34	5.28	97		
FEF 50% (L/sec)	3.39	2.83 3.95	3.70	109		
FEF50%/FEF50% (%)	90-100	79 119	80			
--- LUNG VOLUMES						
TLC (Peth) (L)	5.13	4.10 6.16	+3.29	+60		
SVC (L)	2.93	2.45 3.41	+1.57	+53		
IC (L)	1.89	1.58 2.20	+0.86	+45		
FRC (Peth) (L)	2.94	2.35 3.53	+2.33	+79		
ERV (L)	0.95	0.79 1.11	+0.61	+63		
RV (Peth) (L)	2.29	1.83 2.75	+1.72	+75		
RV/TLC (Peth) (%)	45	36 54	52	116		
Vpant (L)						
--- DIFFUSION ---						
DLCOsc (ml/min/mm)	20.32	16.26/24.38	+7.53	+37		
DLCCor (ml/min/mm)	20.32	16.26/24.38				
DLVA (ml/min/mmHg)	4.21	3.37 5.05	+2.64	+62		
VA (L)	5.14	4.29 5.99	+2.85	+55		
VC (L)			1.37			
BHT (sec)						



Question # 15

- 70-year-old woman
- Dyspnea for 6 months
- Non-smoker
- Dry crackles on exam

• Idiopathic pulmonary fibrosis

	Pre-Bronch			Post-Bronch		
	Pred	LLN/ULN	Actual %Pred	Actual	%Pred	%Chg
--- SPIROMETRY ---						
PVC (L)	2.93	2.45 3.41	+1.57	+53		
FEV1 (L)	2.20	1.84 2.56	+1.35	+61		
FEV1/FVC (%)	75	63 87	86	114		
FEV1/SVC (%)	75	63 87	86	114		
FEF 25-75% (L/sec)	1.76	1.47 2.05	1.87	106		
FEF 25% (L/sec)	5.06	4.23 5.89	5.24	103		
FEF 50% (L/sec)			2.96			
FEF 75% (L/sec)	0.83	0.69 0.97	+0.62	+74		
FEF Max (L/sec)	5.44	4.54 6.34	5.28	97		
FEF 50% (L/sec)	3.39	2.83 3.95	3.70	109		
FEF50%/FEF50% (%)	90-100	79 119	80			
--- LUNG VOLUMES						
TLC (Peth) (L)	5.13	4.10 6.16	+3.29	+60		
SVC (L)	2.93	2.45 3.41	+1.57	+53		
IC (L)	1.89	1.58 2.20	+0.86	+45		
FRC (Peth) (L)	2.94	2.35 3.53	+2.33	+79		
ERV (L)	0.95	0.79 1.11	+0.61	+63		
RV (Peth) (L)	2.29	1.83 2.75	+1.72	+75		
RV/TLC (Peth) (%)	45	36 54	52	116		
Vpant (L)						
--- DIFFUSION ---						
DLCOsc (ml/min/mm)	20.32	16.26/24.38	+7.53	+37		
DLCCor (ml/min/mm)	20.32	16.26/24.38				
DLVA (ml/min/mmHg)	4.21	3.37 5.05	+2.64	+62		
VA (L)	5.14	4.29 5.99	+2.85	+55		
VC (L)			1.37			
BHT (sec)						

