



Phân tích kết quả dao động ký hô hấp qua các ca minh họa

ThS.BS. Trần Quốc Tài

Bệnh viện Đại học Y Dược TP. HCM



Ca lâm sàng 1:

- H.M.K, 10 tuổi, nam
- Đến khám vì khó thở tái đi tái lại trong 1 năm
- Hiện ho nhiều, đàm trắng, khò khè thường xuyên về đêm, tăng lên khi thay đổi thời tiết, lạnh
- c-ACT 12 điểm
- Tiền căn:
 - Gia đình không có hen
 - Chưa từng nhập cấp cứu
- Khám lâm sàng: CN 46, CC 147

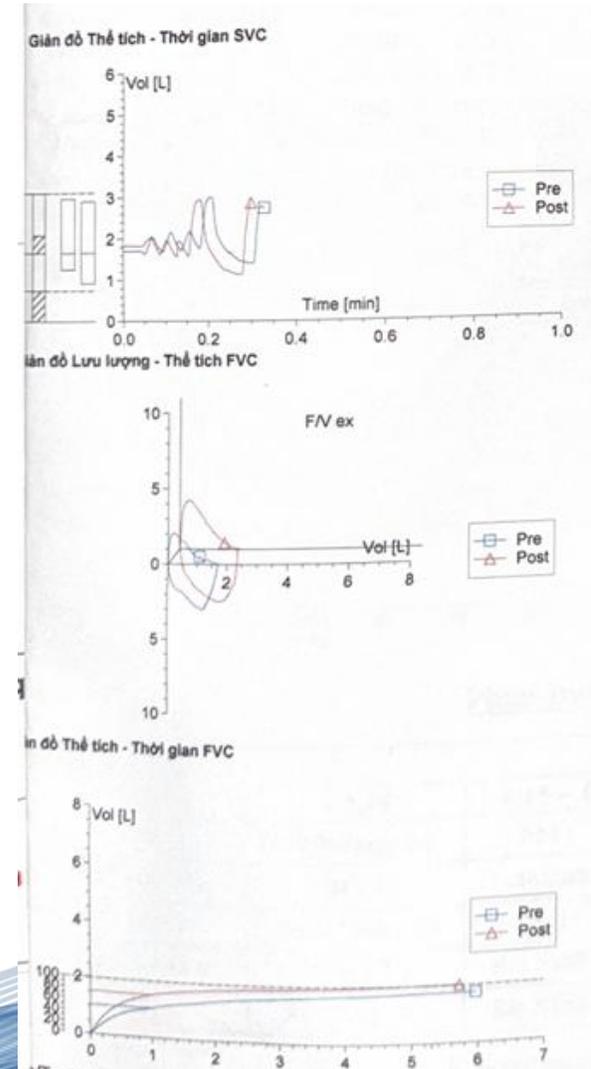
Ca lâm sàng 1:



KẾT QUẢ ĐO HÔ HẤP KÝ (Spirometry Result)

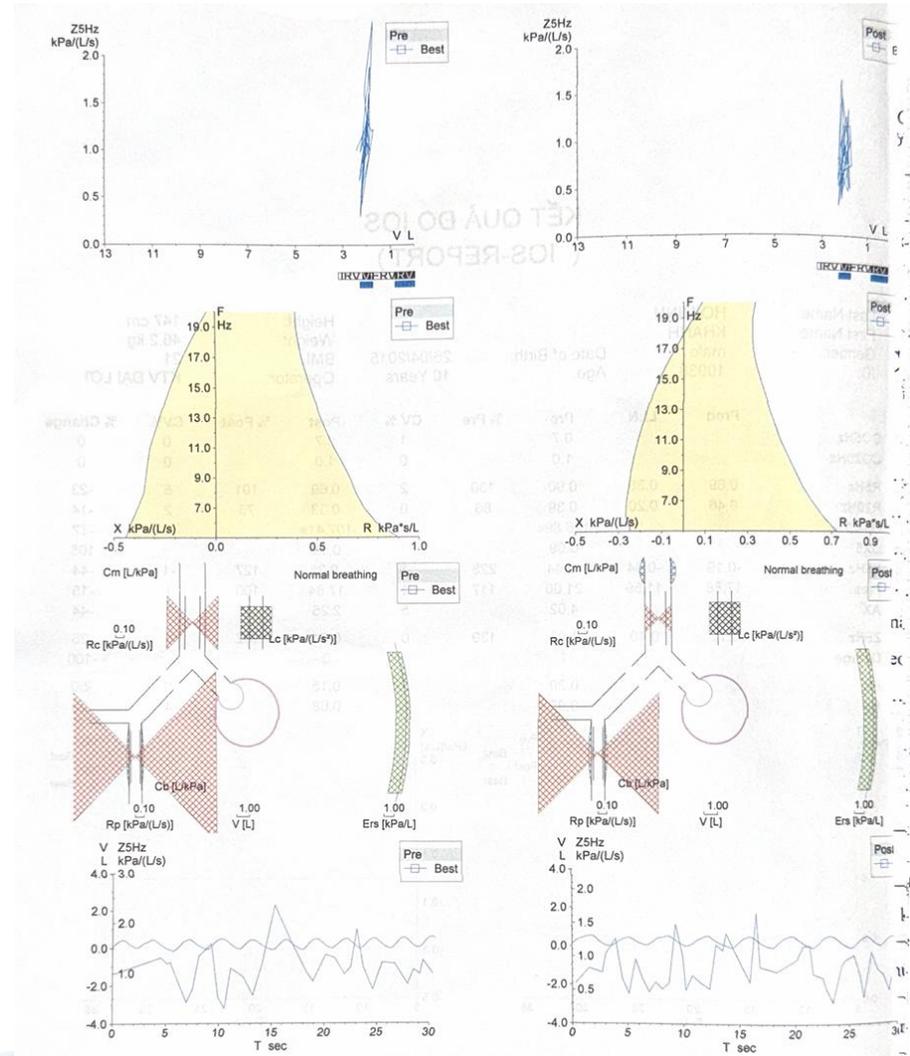
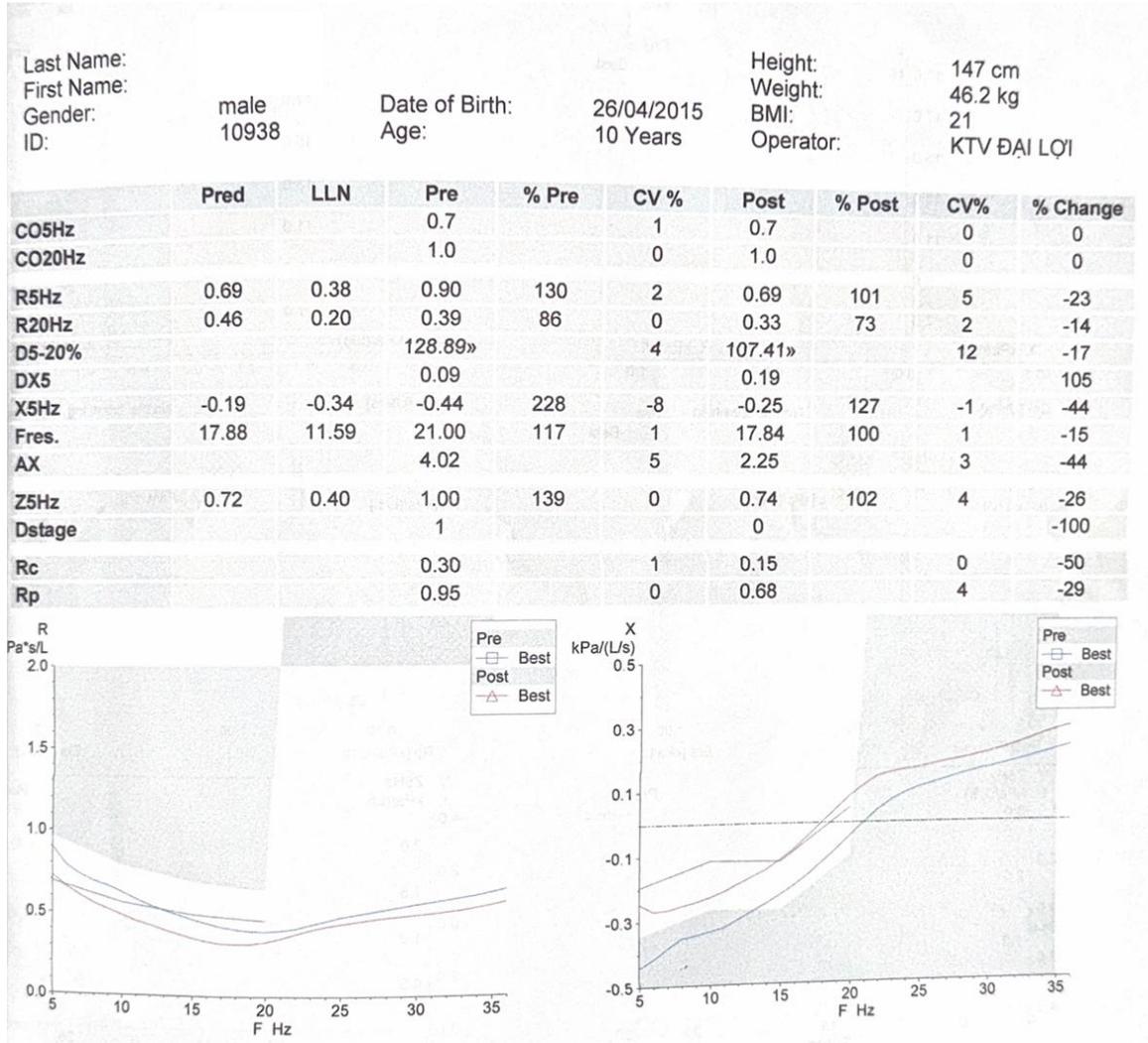
Last Name: _____ Height: 147 cm
 First Name: _____ Weight: 46.2 kg
 Gender: male Date of Birth: 26/04/2015 BMI: 21
 ID: 10938 Age: 10 Years Operator: KTV ĐẠI LỢI
 Pred. Module: Stand DE#GLI Race: SEAsia

	Pred	LLN	Pre	% Pre	Z-Score	Post	% Post	Z-Score	% Change
VC MAX	2.38	1.91	1.73	73	-2.30	2.00	84	-1.33	16
VC	2.38	1.91	1.73	73	-2.30	2.00	84	-1.33	16
FEV 1	2.08	1.68	1.05	50	-4.19	1.51	72	-2.35	44
FEV 1 % VC MAX	88.09	78.71	60.63	69	-3.89	75.41	86	-2.14	24
FEV 1 % FVC	88.09	78.71	60.63	69	-3.89	75.41	86	-2.14	24
MMEF 75/25	2.56	1.76	0.57	22	-5.12	1.21	47	-3.03	111
PEF	5.06	3.64	2.08	41	-4.19	3.26	64	-2.53	57





Ca lâm sàng 1:





Ca lâm sàng 1:

- Sau 1 tháng điều trị Seretide 25/125 sáng 2 nhất, chiều 2 nhất
- Hiện người bệnh ổn, c-ACT 19 điểm

Ca lâm sàng 1:



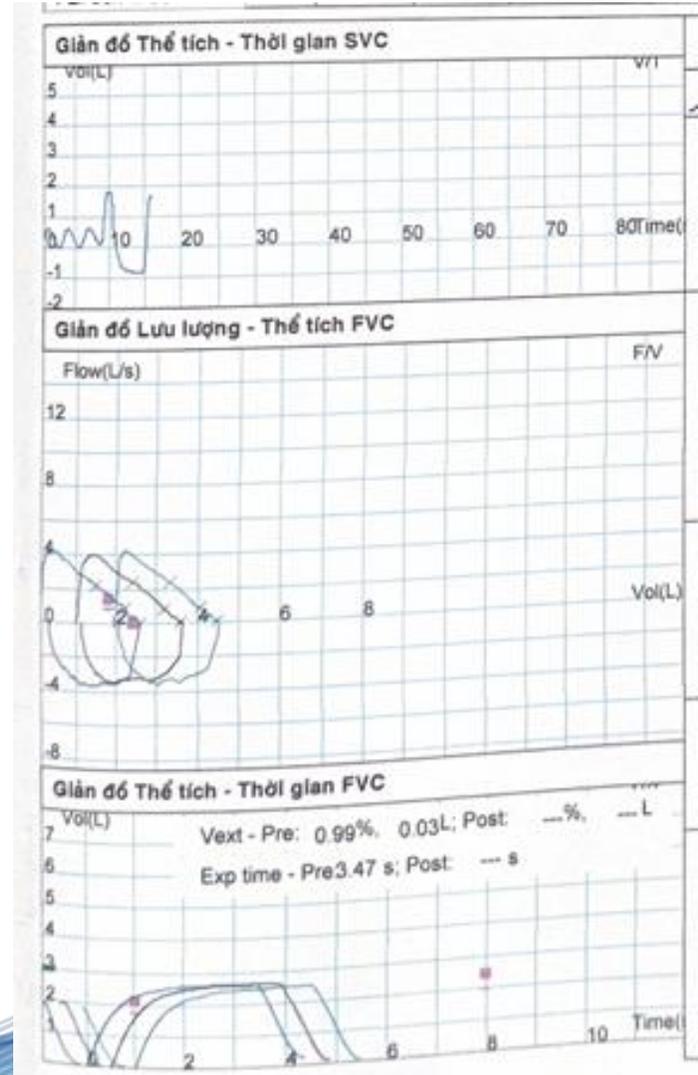
Họ và tên / Name: ID: 17597 Giới tính / Sex: Male Tuổi / Age: 10
 Chiều cao / Height (cm): 148.0 Ngày sinh / Birthdate: 26/04/2015 Trị số tham khảo / Reference values: Quanjer GLI 2012
 Cân nặng / Weight (kg): 46.5 Ngày đo / Test date: 28/12/2025 08:58 AM Dân tộc / Ethnic group: SE Asian

Mức độ phối hợp / Coordination: Không tốt / Poor 0 1 2 3 4 5 Rất tốt / Excellent

Ghi chú / Comment:

Chất lượng đo / Test quality: Pre - A , Post -
 Kỹ thuật viên / Technician: KTV. DAI LOI

Parameter	LLN	Pre-Bronchodilator			Post-Bronchodilator			Change	
		Best	%Prd	Z-score	Best	%Prd	Z-score	%Chg	Chg (L)
SVC (L)	1.95	2.63	108%	---	---	---	---	---	---
FVC (L)	1.95	2.63	108%	0.72	---	---	---	---	---
FEV1 (L)	1.72	2.27	107%	0.59	---	---	---	---	---
FEV1/FVC	0.79	0.86		-0.30	---	---	---		
FEV1/SVC	0.79	0.86			---	---	---		
FEF25-75% (L/s)	1.79	2.34	90%	-0.53	---	---	---		
PEFR (L/s)		4.25			---	---	---		
FEF50/FIF50		0.72			---	---	---		

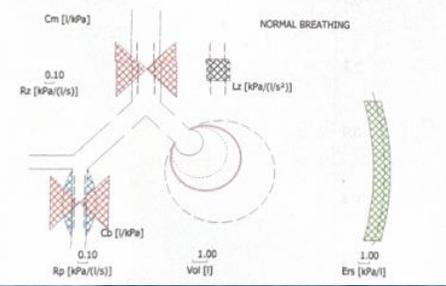
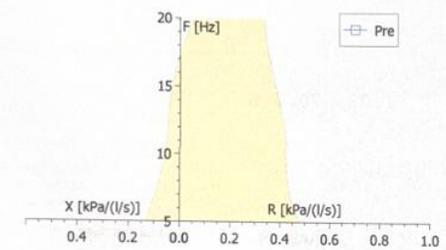
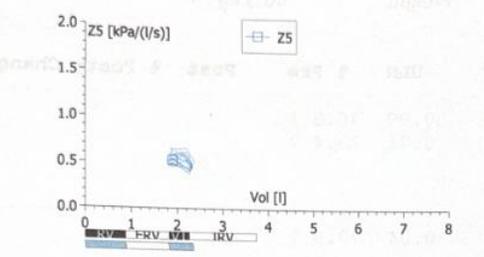
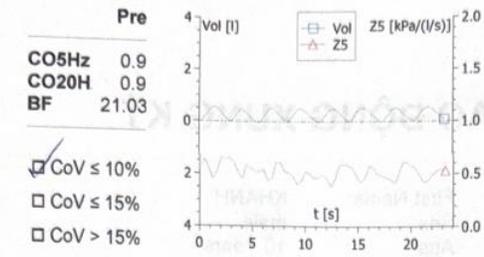
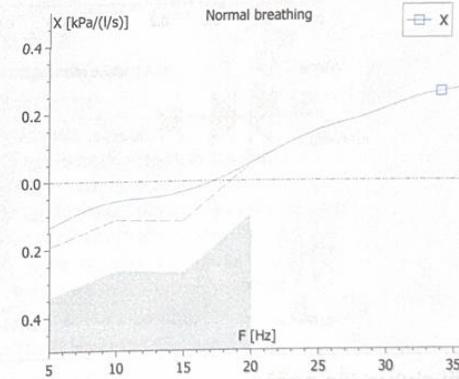
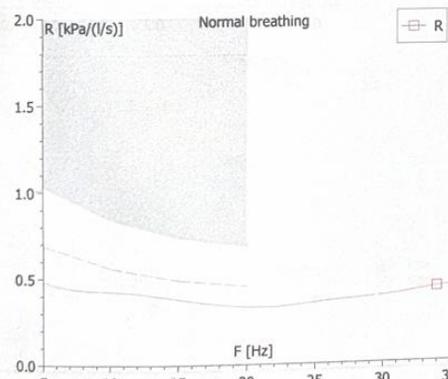


Ca lâm sàng 1:



Last Name:
 Identification: 114001
 Date of Birth: 26/04/2015
 Height: 148 cm
 Operator: KTV. DUONG
 First Name:
 Sex: male
 Age: 10 Years
 Weight: 46.5 kg

	Pre	LLN	Pred	ULN	% Pre	Post	% Post	Change
R5Hz	0.48	0.38	0.69	0.99	70.2 %			
R20Hz	0.33	0.19	0.45	0.71	73.4 %			
DR5R20	30.94							
Di5-20	0.15							
X5Hz	-0.14	-0.34	-0.19	-0.04	70.9 %			
DX5	0.07							
Fres.	17.37							
AX	0.73							
Dstage	0							
Z5Hz	0.50	0.40	0.72	1.03	70.0 %			
Rc	0.31							
Rp	0.30							





Ca lâm sàng 2:

- T.H.P.T, nữ, 41 tuổi
- Đến tái khám hen
- Hiện đang điều trị Seretide 25/125 2 nhát không thường xuyên. 1 tuần nay khó thở, ho ít, không chảy mũi, không đau họng
- ACT 14 điểm
- Tiền căn:
 - Hen từ nhỏ, 1 năm nay không nhập viện/CC. Yếu tố khởi phát: khói thuốc, lạnh, cảm cúm
 - Viêm da cơ địa
 - Ba bị viêm mũi dị ứng
- Khám lâm sàng: M 91, HA 130/90, BMI 25,6. Phổi không ran
- X-Quang ngực bình thường

Ca lâm sàng 2:



Last Name:
First Name:
Gender:
ID:

female
8976

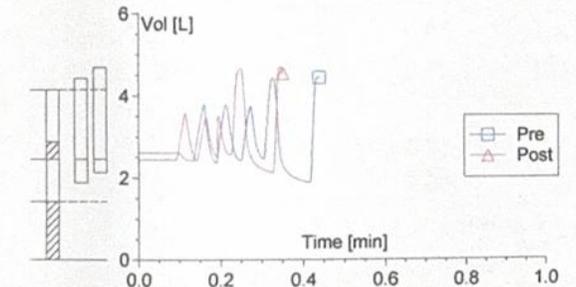
Date of Birth:
Age:

20/06/1983
41 Years

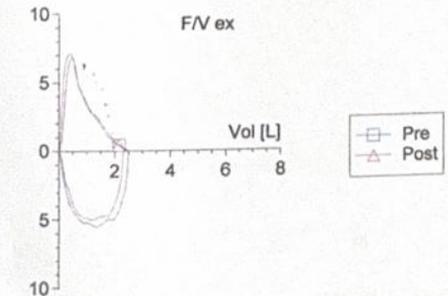
Height: 153 cm
Weight: 60.0 kg
BMI: 26
Operator: KTV TÔ RÍ

	Pred	LLN	Pre	% Pre	Z-Score	Post	% Post	Z-Score	% Change
VC MAX	2.74	2.16	2.55	93 ✓	-0.52	2.57	94	-0.47	1
FVC	2.74	2.16	2.48	91	-0.72	2.47	90	-0.73	-0
FEV 1	2.32	1.81	2.13	92 ✓	-0.62	2.08	90	-0.78	-2 ✓
FEV 1 % VC MAX	84.96	75.34 ✓	83.56 ✓	98	-0.26	81.05	95	-0.71	-3
FEV 1 % FVC	84.96	75.34	86.05	101	0.21	84.19	99	-0.14	-2
MMEF 75/25	2.75	1.70	2.23	81	-0.78	1.95	71	-1.23	-13
PEF	6.08	4.59	6.82	112	0.83	7.14	118	1.18	5 ✓

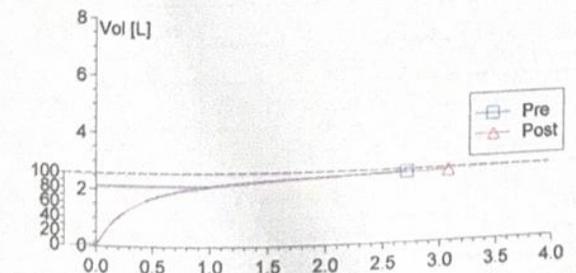
Biểu đồ Thể tích - Thời gian SVC



Biểu đồ Lưu lượng - Thể tích FVC



Biểu đồ Thể tích - Thời gian FVC

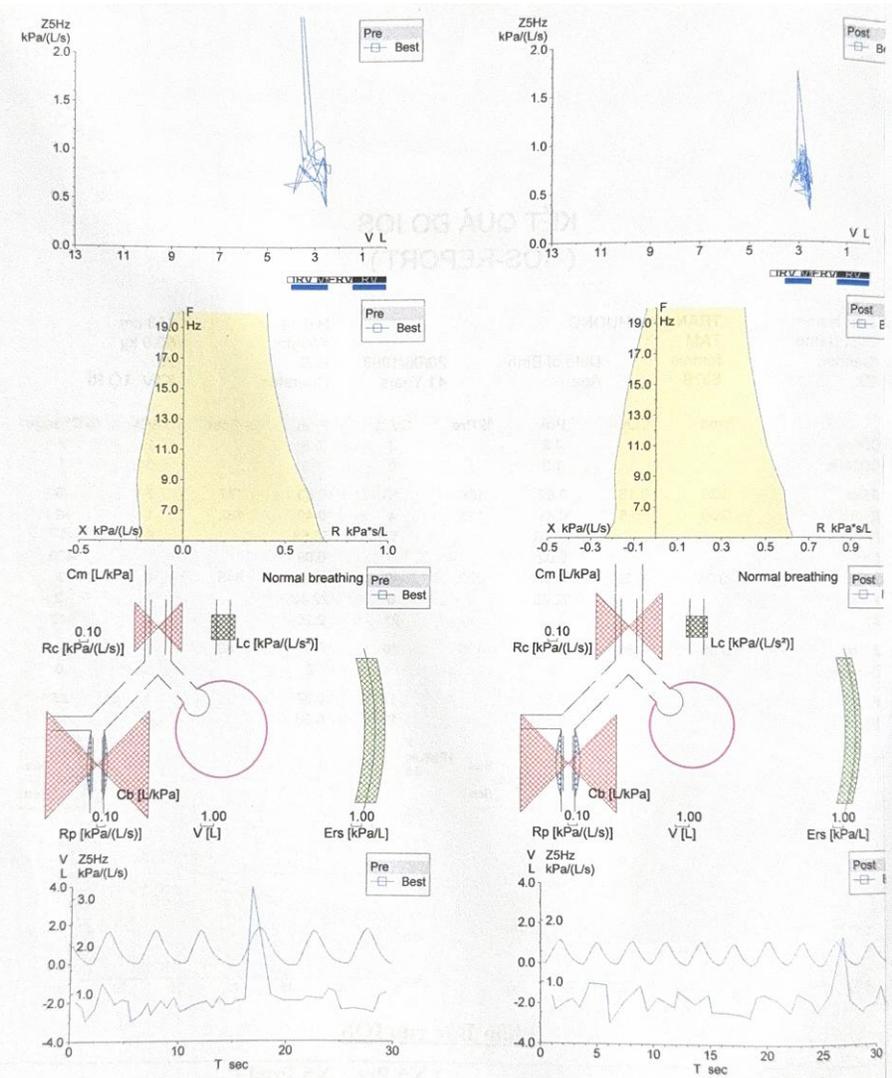
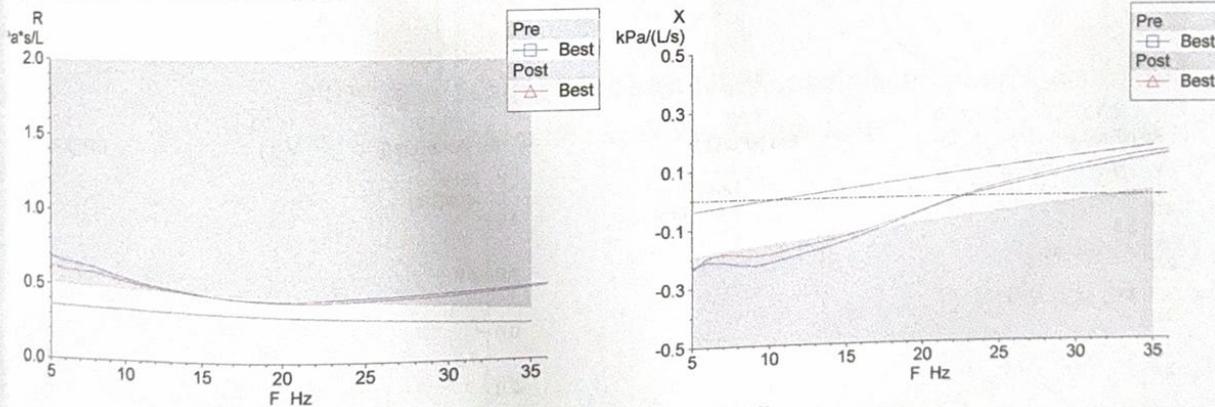




Ca lâm sàng 2:

Last Name:
 First Name:
 Gender: female
 ID: 8976
 Date of Birth: 20/06/1983
 Age: 41 Years
 Height: 153 cm
 Weight: 60.0 kg
 BMI: 26
 Operator: KTV TÔ RÍ

	Pred	LLN	Pre	% Pre	CV %	Post	% Post	CV%	% Change
CO5Hz			0.8		3	0.8		1	2
CO20Hz			1.0		0	1.0		0	1
R5Hz	0.36	0.18	0.69	189	10	0.63	172	2	-9
R20Hz	0.30	0.16	0.41	135	4	0.40	132	1	-2
D5-20%			68.29		17	56.53		8	-17
DX5			0.02			0.09			433
X5Hz	-0.04	-0.22	-0.23	623	-9	-0.24	645	-9	3
Fres.			22.89		6	22.49		1	-2
AX			2.57		21	2.25		4	-12
Z5Hz	0.36	0.36	0.72	198	10	0.67	183	3	-8
Dstage			2			2			0
Rc			0.27		17	0.37		1	35
Rp			0.58		16	0.53		4	-9



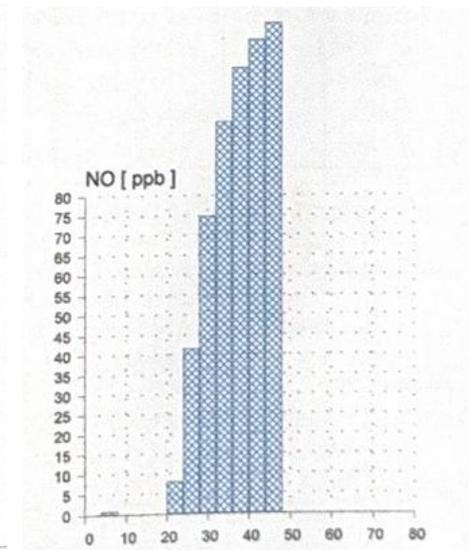
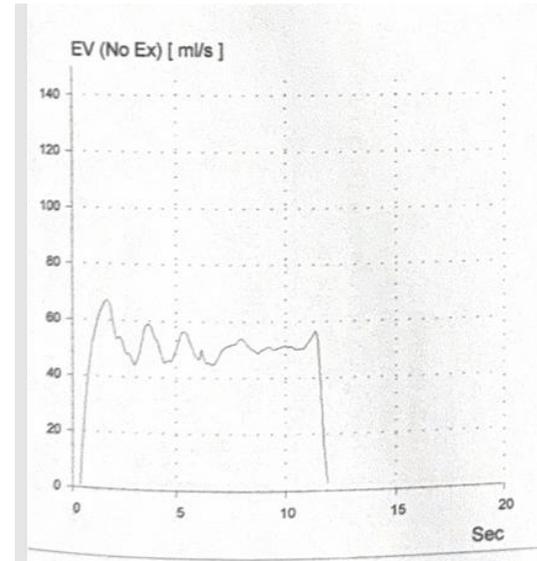


Ca lâm sàng 2:

ĐO NỒNG ĐỘ NITRIC OXIDE TRONG KHÍ THỞ RA (FRACTIONAL EXHALED NITRIC OXIDE - FENO)

L Name :		Sex :	M
F Name :		Age :	41
Identity number :	2715	Height (cm) :	153
Date of birth :	20/06/1983	Weight (kg) :	60
Physiologist :	05/11/2024 2:07:45 PM		

	Test 1	Test 2	Mean	Reference Range
NO Exhaled(ppb)	121.5	120.1	120.8	< 20 (children), < 25 (adults)
EV (No Ex)(ml/sec)	50.9	50.4	50.6	45 - 55
Press.NO(cmH2O)	9.8	9.3	9.6	5 - 20
NO Exhale(nL/min)	370.7	363.4	367.0	
Washout(L)	0.3	0.3	0.3	
Conf.Index(%)	99.7	97.0	98.4	
Flow Index(%)	96.0	95.1	95.6	





Ca lâm sàng 2:

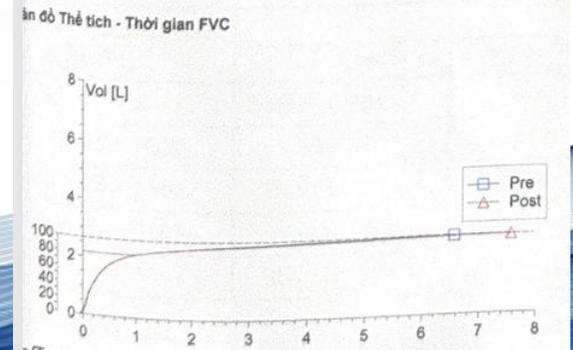
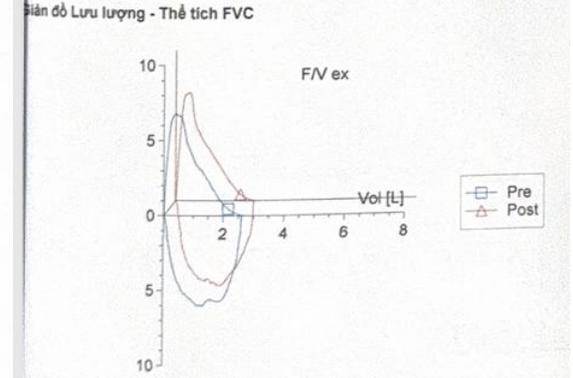
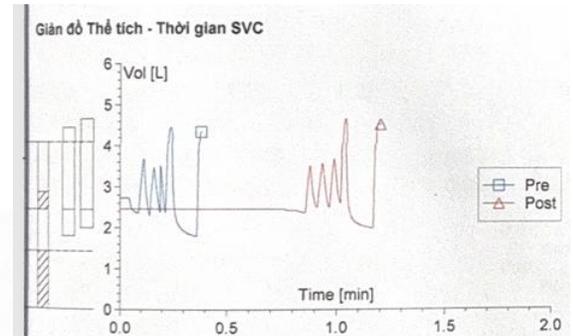
- Người bệnh tái khám sau 1 năm, điều trị Seretide 50/500 không liên tục, 10 ngày nay ho nhiều, khò khè, khó thở, xịt đều 1 nhát x 2/ngày
- ACT 16 điểm

Ca lâm sàng 2:



Last Name: _____ Height: 152 cm
 First Name: _____ Weight: 61.4 kg
 Gender: female Date of Birth: 20/06/1983
 ID: 10974 Age: 42 Years
 Pred. Module: Stand DE#GLI Race: SEAsia BMI: 27
 Operator: KTV TÔ RÍ

	Pred	LLN	Pre	% Pre	Z-Score	Post	% Post	Z-Score	% Change
VC MAX	2.68	2.11	2.66	99	-0.07	2.67	100	-0.03	1
FVC	2.68	2.11	2.65	99	-0.10	2.65	99	-0.10	0
FEV 1	2.27	1.77	2.16	95	-0.38	2.16	95	-0.38	-0
FEV 1 % VC MAX	84.79	75.18	81.25	96	-0.64	80.82	95	-0.72	-1
FEV 1 % FVC	84.79	75.18	81.62	96	-0.58	81.61	96	-0.58	-0
MMEF 75/25	2.69	1.65	2.17	81	-0.78	2.14	80	-0.83	-1
PEF	5.99	4.51	6.83	114	0.93	7.24	121	1.39	6

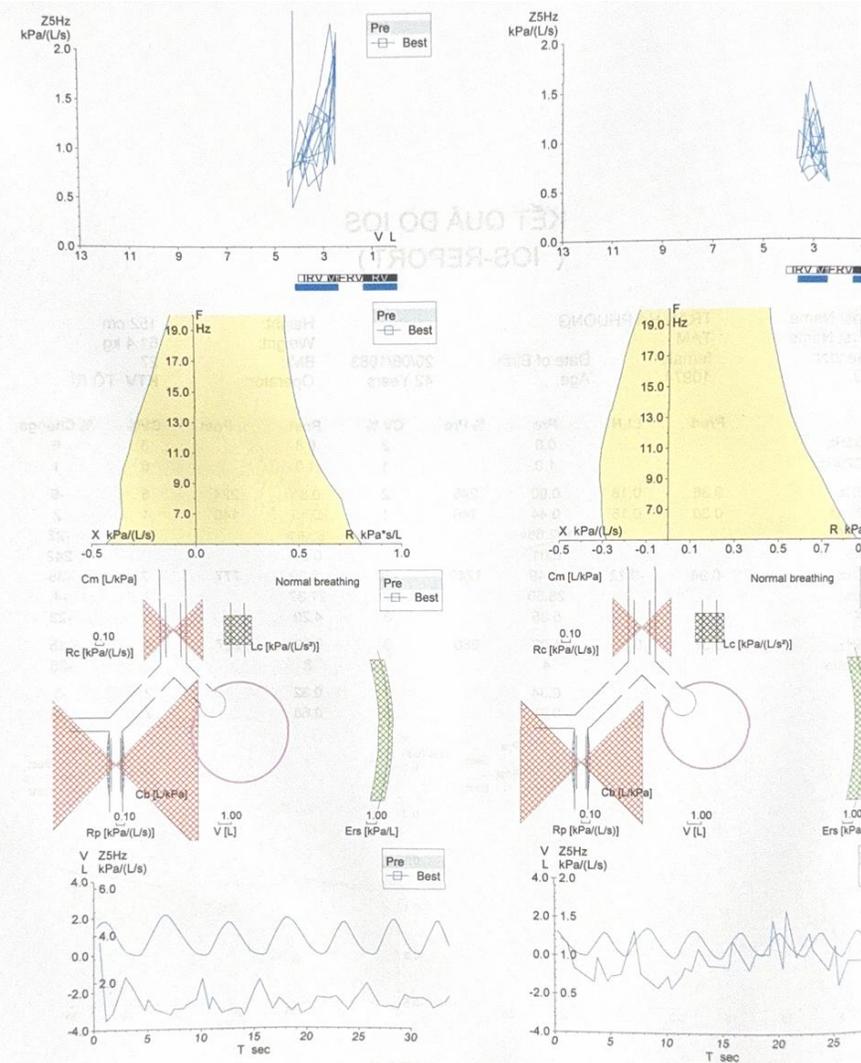
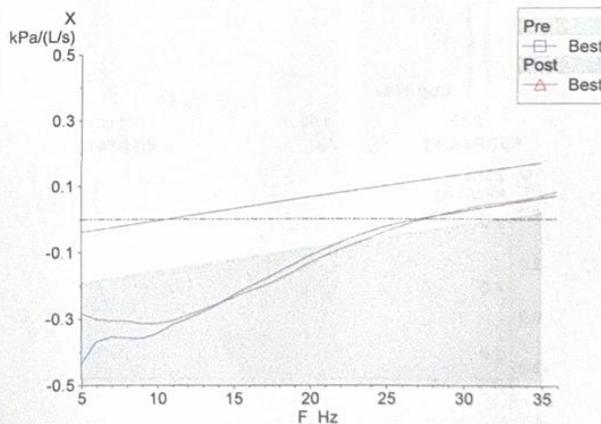
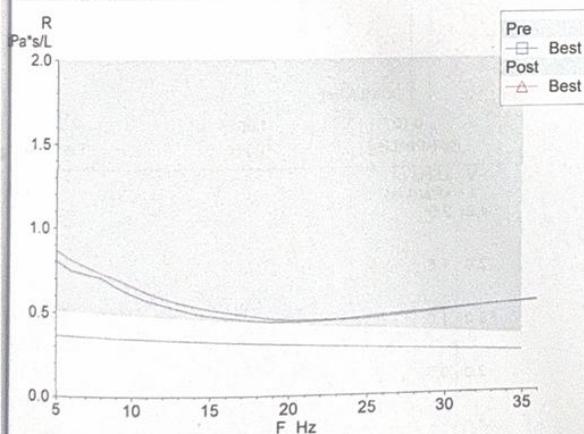


Ca lâm sàng 2:



Last Name: Height: 152 cm
 First Name: Weight: 61.4 kg
 Gender: female Date of Birth: 20/06/1983
 ID: 10974 Age: 42 Years BMI: 27
 Operator: KTV TÔ RÍ

	Pred	LLN	Pre	% Pre	CV %	Post	% Post	CV%	% Change
CO5Hz			0.8		2	0.8		3	6
CO20Hz			1.0		1	1.0		0	1
R5Hz	0.36	0.18	0.90	246	2	0.81	224	5	-9
R20Hz	0.30	0.16	0.44	146	1	0.45	149	1	2
D5-20%			102.66»		7	80.41		11	-22
DX5			0.01			0.04			242
X5Hz	-0.04	-0.22	-0.49	1249	-20	-0.30	777	-7	-38
Fres.			28.50		7	27.37		1	-4
AX			5.35		8	4.20		5	-22
Z5Hz	0.37	0.37	1.02	280	3	0.87	237	4	-15
Dstage			4			3			-25
Rc			0.34		1	0.32		2	-5
Rp			0.95		5	0.68		7	-28



Ca lâm sàng 2:

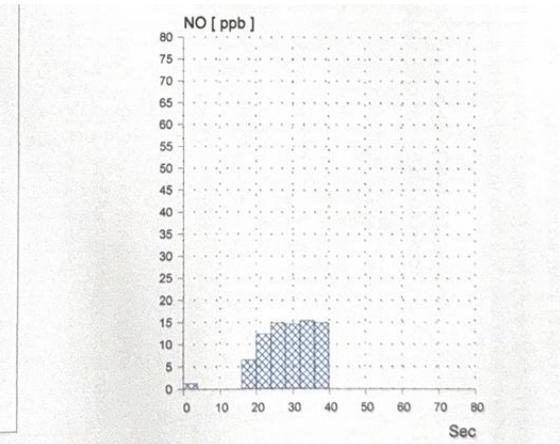
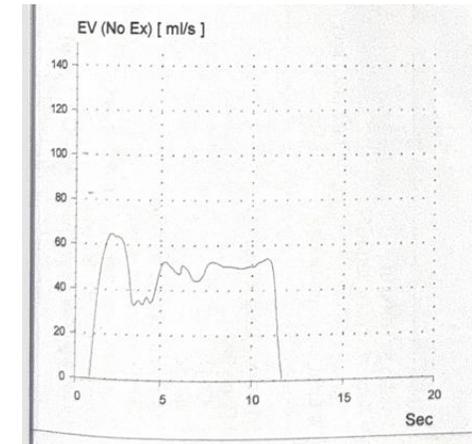


ĐO NỒNG ĐỘ NITRIC OXIDE TRONG KHÍ THỞ RA (FRACTIONAL EXHALED NITRIC OXIDE - FENO)

L Name :		Sex :	F
F Name :		Age :	42
Identity number :	4516	Height (cm) :	152
Date of birth :	20/06/1983	Weight (kg) :	61.4
Operator :		B.M.I. :	26.6

Physiologist : **16/11/2025 7:35:19 AM**

	Test 1	Test 2	Mean	Reference Range
NO Exhaled(ppb)	16.1	15.2	15.7	< 20 (children), < 25 (adults)
EV (No Ex)(ml/sec)	49.7	50.0	49.9	45 - 55
Press.NO(cmH2O)	8.8	9.3	9.0	5 - 20
VNO Exhale(nL/min)	48.1	45.6	46.9	
Washout(L)	0.4	0.3	0.3	
Conf.Index(%)	94.7	94.9	94.8	
Flow Index(%)	94.1	95.1	94.6	





Ca lâm sàng 3:

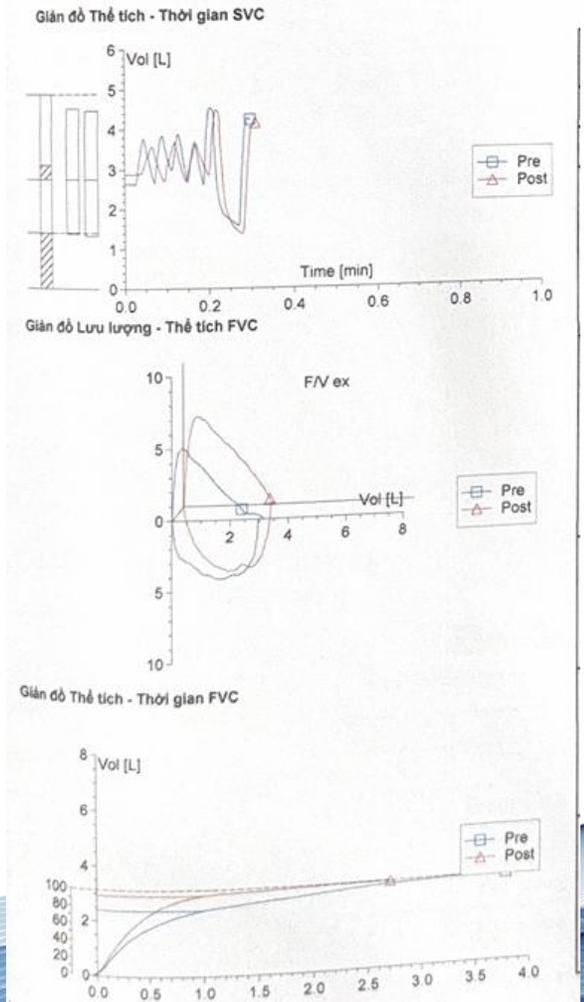
- T.T.V., nữ, 21 tuổi
- Đến khám vì ho 1 tháng
- Cách 1 tháng, ho đờm xanh nhiều, không sốt → hiện ho khan, tăng lên khi ngủi mùi lạ, lạnh, về đêm
- Ngứa họng, đau tức ngực trước xương ức, khó thở, sổ mũi xanh, không khò khè
- Tiền căn:
 - Mẹ bị hen
 - Sau COVID-19, ho tái đi tái lại 2 đợt/năm, mỗi đợt kéo dài 3-4 tuần
 - Chưa từng nhập viện/CC
- Khám lâm sàng: M 84, HA 110/70, BMI 18,3. Họng đỏ. Không ran phổi

Ca lâm sàng 3:



Last Name:
 First Name:
 Gender: female
 ID: 10730
 Pred. Module: Stand DE#GLI
 Date of Birth: 18/12/2003
 Age: 21 Years
 Race: SEAsia
 Height: 167 cm
 Weight: 51.0 kg
 BMI: 18
 Operator: KTV LIEN

	Pred	LLN	Pre	% Pre	Z-Score	Post	% Post	Z-Score	% Change
VC MAX	3.48	2.75	3.15	90	-0.74	3.15	90	-0.74	0
FVC	3.48	2.75	3.14	90	-0.76	3.11	89	-0.82	-1
FEV 1	3.12	2.46	2.40	77	-1.80	2.93	94	-0.46	22
FEV 1 % VC MAX	90.03	80.07	76.13	85	-2.18	93.18	103	0.62	22
FEV 1 % FVC	90.03	80.07	76.39	85	-2.14	94.23	105	0.83	23
MMEF 75/25	3.89	2.64	2.00	51	-2.60	3.82	98	-0.09	91
PEF	7.33	5.84	5.07	69	-2.50	6.28	86	-1.16	24

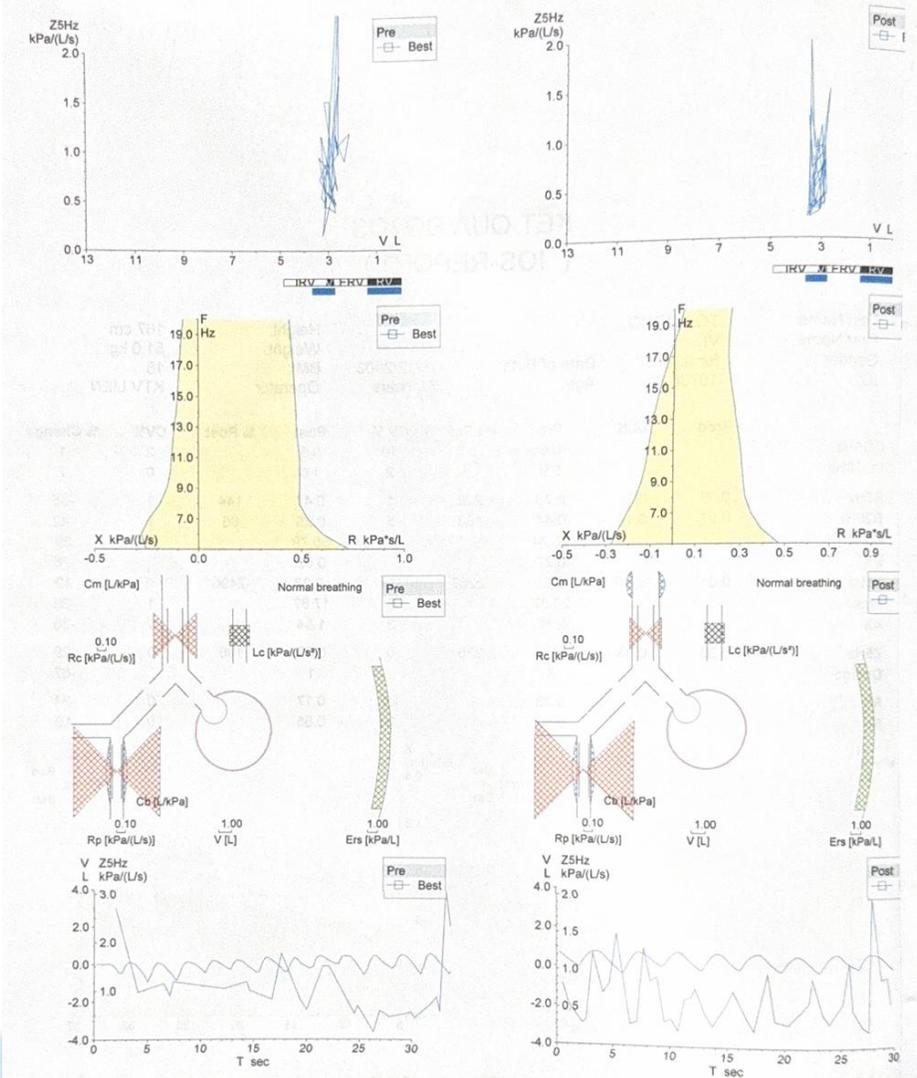
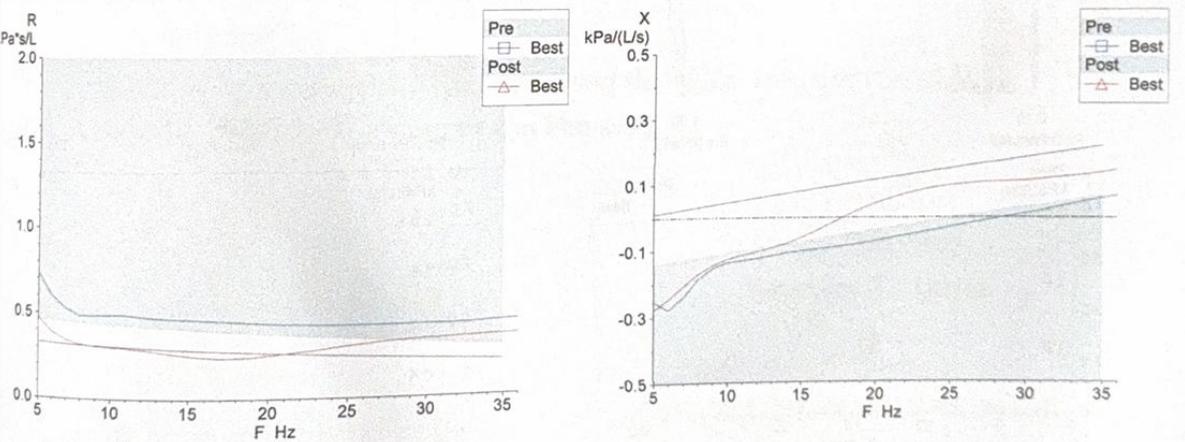




Ca lâm sàng 3:

Last Name:
 First Name:
 Gender: female
 ID: 10730
 Date of Birth: 18/12/2003
 Age: 21 Years
 Height: 167 cm
 Weight: 51.0 kg
 BMI: 18
 Operator: KTV LIEN

	Pred	LLN	Pre	% Pre	CV %	Post	% Post	CV%	% Change
CO5Hz			0.6		10	0.6		2	1
CO20Hz			0.9		2	1.0		0	7
R5Hz	0.33	0.17	0.73	222	1	0.47	144	1	-35
R20Hz	0.27	0.14	0.44	163	5	0.25	95	1	-42
D5-20%			66.74		10	85.79		1	29
DX5			0.27			0.06			-76
X5Hz	0.01	-0.15	-0.25	-2267	-11	-0.28	-2496	-3	10
Fres.			28.67		8	17.87		1	-38
AX			2.42		3	1.54		1	-36
Z5Hz	0.33	0.33	0.77	235	0	0.55	166	0	-29
Dstage			3			1			-67
Rc			0.25		24	0.17		0	-31
Rp			0.50		0	0.55		0	10



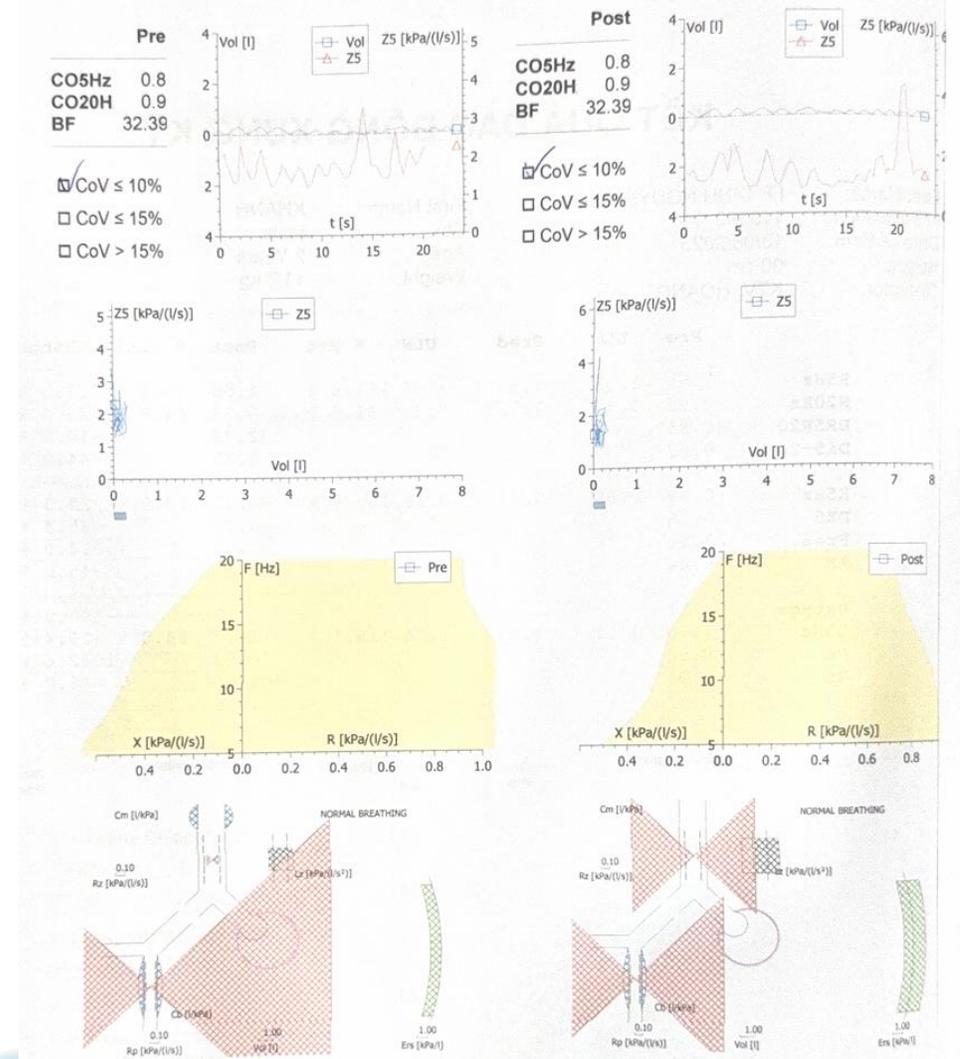
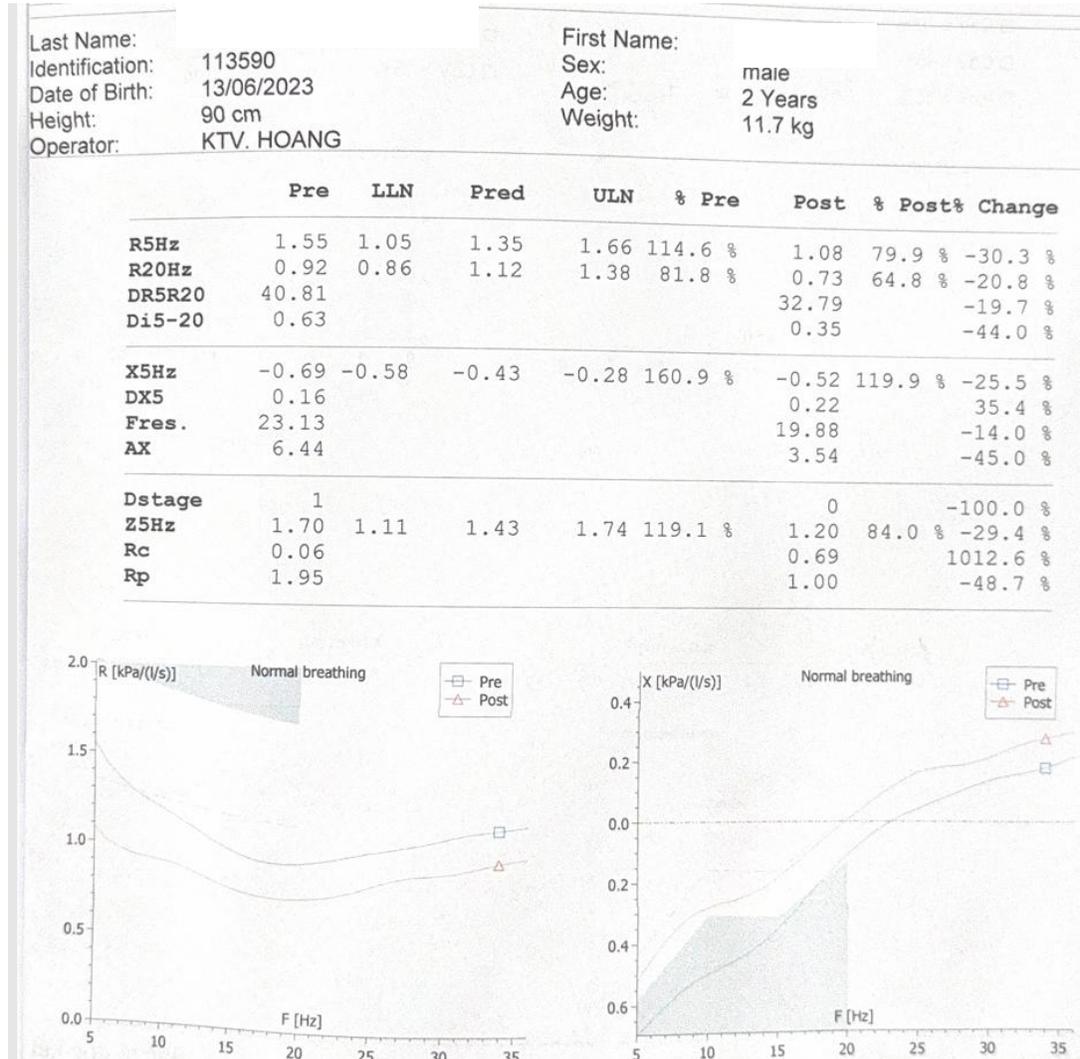


Ca lâm sàng 4:

- L.Đ.N.D.K.; nam; 2,5 tuổi
- Đến khám vì ho đàm trắng, sốt, không khò khè
- Chẩn đoán hen từ sau sinh, ho và khò khè tái lại mỗi 1-2 tháng, chưa điều trị duy trì
- Tiền căn:
 - Sinh thường, 40w, 3kg
- Khám lâm sàng: họng đỏ, loét rải rác lưỡi, niêm mạc miệng, không khò khè



Ca lâm sàng 4:

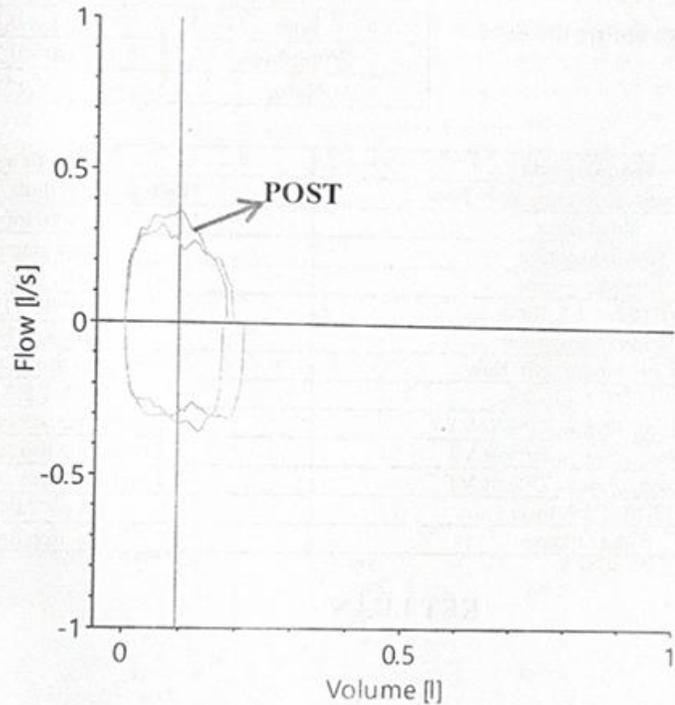


Ca lâm sàng 4:



Last name	Age	2.5 years	BMI	14.4
First name	Height	90.0 cm	Visit ID	
Date of birth 13/6/2023	Weight	11.7 kg	Smoker	
Patient Id 0440	Gender	male	Diagnosis	

Pre: 30/11/2025 9:44 AM LFX 1.10.1 Ambient 30.6 °C 996 hPa 54.2 % 30/11/2025 10:18 AM LFX 1.10
 Post 30/11/2025 10:16 AM LFX 1.10.1 Ambient 30.7 °C 996 hPa 55 % Ref. module: GLJ 20



		Pred	Pre	Pre % Pred	Post	% Pred	Z-Score	% Change
TPTEF	[sec]	-	0.32	-	0.25	-		-22 %
T TOT	[sec]	-	1.48	-	1.47	-		0 %
T IN	[sec]	-	0.73	-	0.65	-		-11 %
T EX	[sec]	-	0.75	-	0.83	-		10 %
TPTEF / T EX	[]	-	0.43	-	0.30	-		-29 %
MV	[L/min]	-	7.16	-	6.93	-		-3 %
PTEF	[mL/s]	-	294	-	321	-		9 %
TE/TOT	[]	-	0.51	-	0.56	-		11 %
TEF 25	[mL/s]	-	244	-	219	-		-10 %
TEF 50	[mL/s]	-	270	-	296	-		10 %



Ca lâm sàng 4:

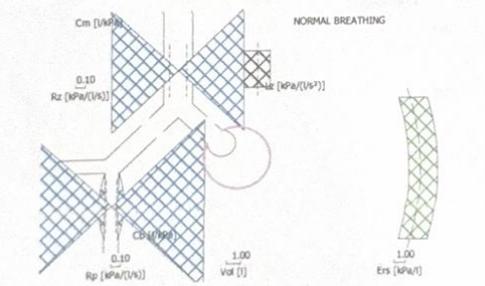
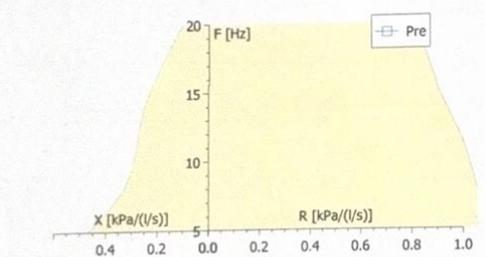
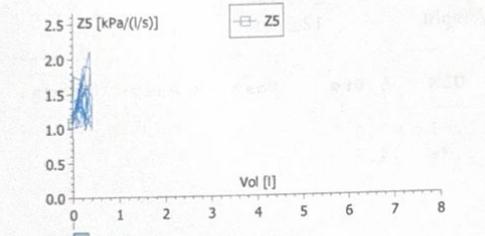
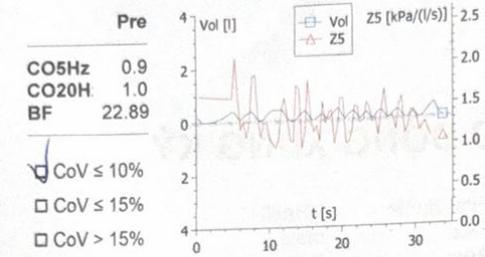
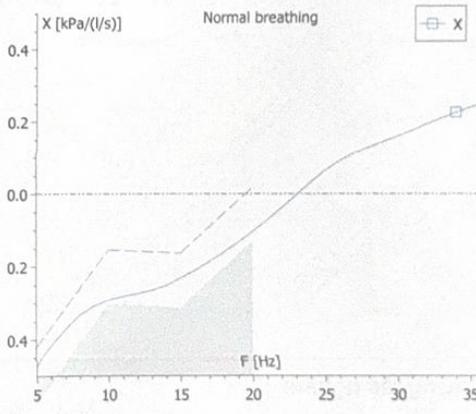
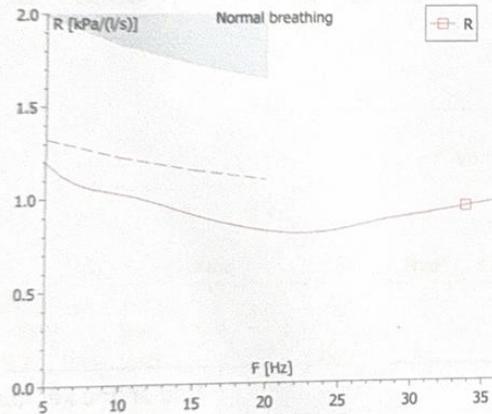
- Sau 1 tháng điều trị Flixotide 125 mcg 1 nhát/ngày
- Ho cải thiện nhiều, c-ACT 24 điểm
- Còn hắt hơi, chảy mũi đục, hay nằm sấp

Ca lâm sàng 4:



Last Name: Identification: 114413 First Name: Sex: male
 Date of Birth: 13/06/2023 Age: 2 Years
 Height: 91 cm Weight: 12.2 kg
 Operator: KTV DAU

	Pre	LLN	Pred	ULN	% Pre	Post	% Post	Change
R5Hz	1.20	1.01	1.32	1.63	90.6 %			
R20Hz	0.82	0.83	1.10	1.36	74.7 %			
DR5R20	31.71							
Di5-20	0.38							
X5Hz	-0.47	-0.57	-0.42	-0.27	111.7 %			
DX5	0.03							
Fres.	23.10							
AX	4.17							
Dstage	0							
Z5Hz	1.29	1.08	1.39	1.71	92.4 %			
Rc	0.68							
Rp	0.95							

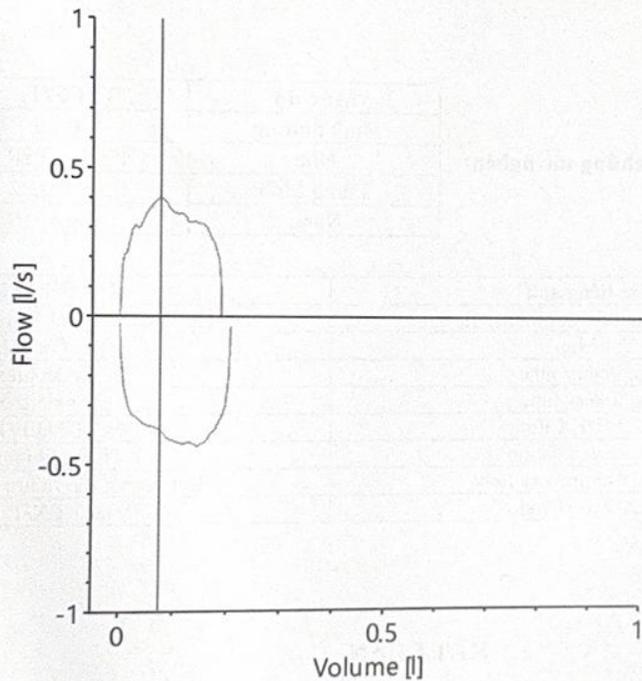




Ca lâm sàng 4:

Last name	Age	2.6 years	BMI	14.7
First name	Height	91.0 cm	Visit ID	
Date of birth 13/6/2023	Weight	12.2 kg	Smoker	
Patient Id 0568	Gender	male	Diagnosis	

Measured 28/1/2026 2:07 PM LFX 1.10.1 Ambient 29.1 °C 996 hPa 59.9 % 28/1/2026 2:37 PM LFX 1.10.1
Ref. module: GLI 2012

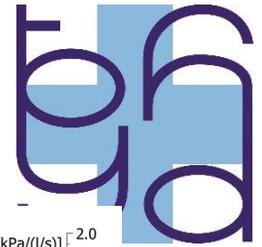


		Pred	Pre
TPTEF	[sec]	-	0.27
T TOT	[sec]	-	1.29
T IN	[sec]	-	0.62
T EX	[sec]	-	0.67
TPTEF / T EX	[]	-	0.41
MV	[L/min]	-	9.63
PTEF	[mL/s]	-	393
TE/TOT	[]	-	0.52
TEF 25	[mL/s]	-	327
TEF 50	[mL/s]	-	375

Ca lâm sàng 5:



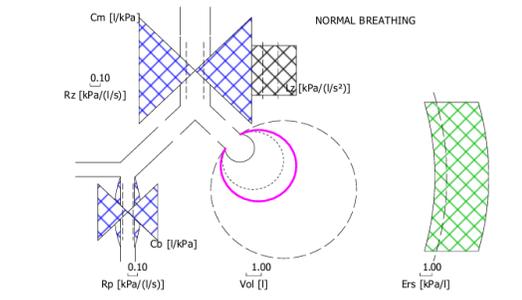
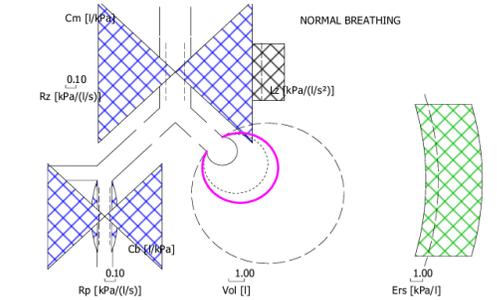
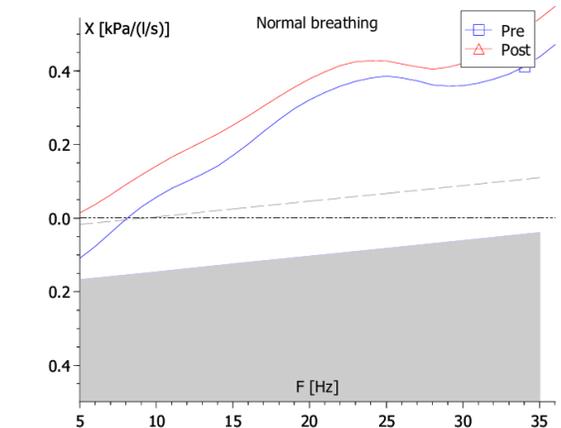
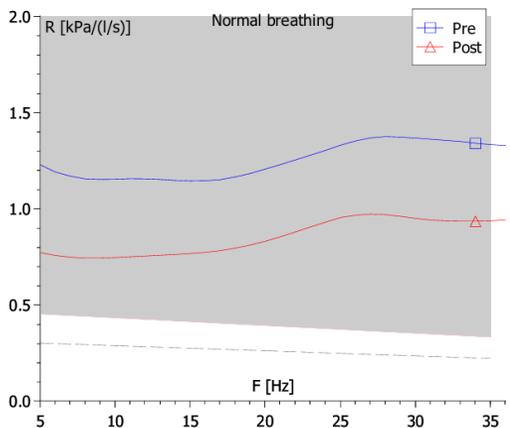
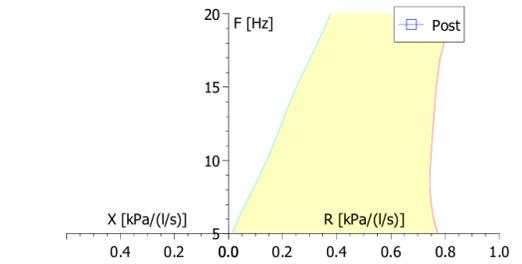
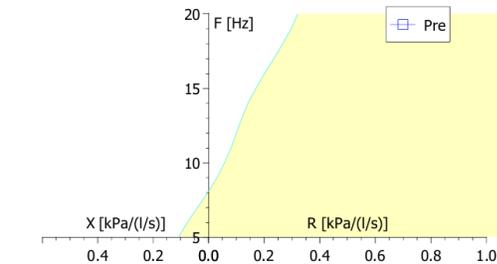
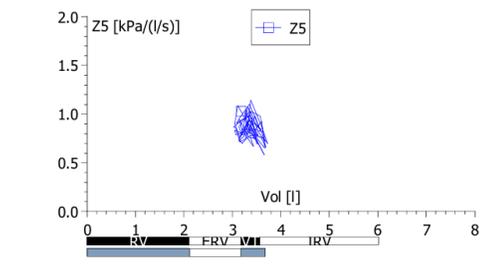
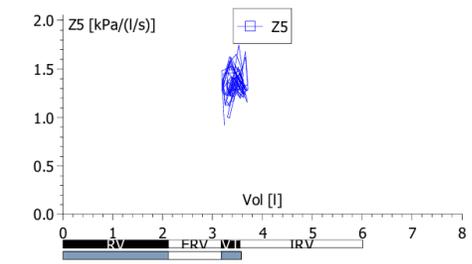
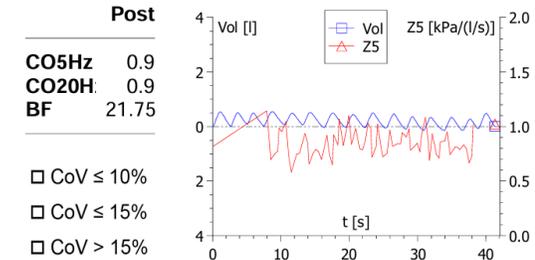
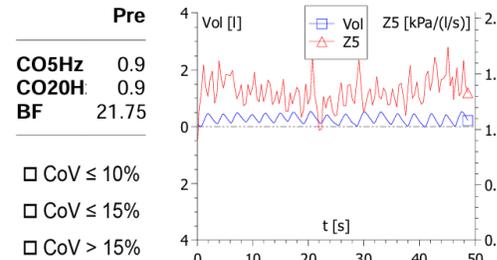
Ca lâm sàng 5:



Last Name: LE VAN
 Identification: 113573
 Date of Birth: 20/05/1962
 Height: 169 cm
 Operator: KTV. DAU

First Name: HON
 Sex: male
 Age: 63 Years
 Weight: 54.1 kg

	Pre	LLN	Pred	ULN	% Pre	Post	% Post	% Change
R5Hz	1.23	0.30	0.30	0.30	406.1 %	0.77	255.4 %	-37.1 %
R20Hz	1.21	0.26	0.26	0.26	459.8 %	0.83	317.0 %	-31.1 %
DR5R20	1.79					0.00		-100.0 %
Di5-20	0.02							
X5Hz	-0.11	-0.02	-0.02	-0.02	584.1 %	0.01	-69.3 %	-111.9 %
DX5	0.03					0.01		-80.1 %
Fres.	8.12					4.24		-47.8 %
AX	0.18					0.00		-97.2 %
Dstage	4					3		-25.0 %
Z5Hz	1.23	0.30	0.30	0.30	406.9 %	0.77	255.0 %	-37.3 %
Rc	0.74					0.57		-23.4 %
Rp	0.55					0.30		-45.5 %

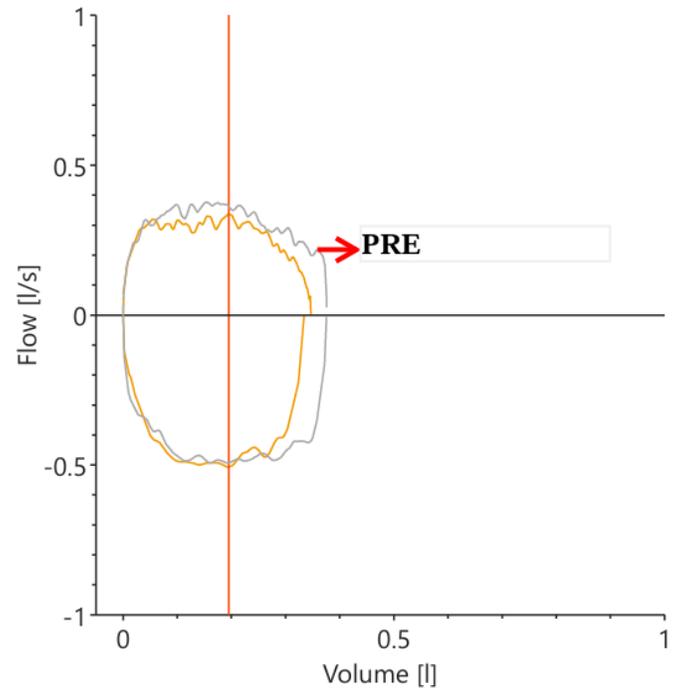




Ca lâm sàng 5:

Last name	LE VAN	Age	63.5 years	BMI	18.9
First name	HON	Height	169.0 cm	Visit ID	
Date of birth	20/5/1962	Weight	54.1 kg	Smoker	
Patient Id	0437	Gender	male	Diagnosis	

Pre: 29/11/2025 9:29 AM LFX 1.10.1	Ambient: 28.2 °C 996 hPa 50.2 %	29/11/2025 10:16 AM LFX 1.10.1
Post: 29/11/2025 10:08 AM LFX 1.10.1	Ambient: 27.1 °C 995 hPa 49.4 %	Ref. module: GLI 2012



		Pred	Pre	Pre % Pred	Post	% Pred	Z-Score	% Change
TPTEF	[sec]	-	0.48	-	0.56	-		15 %
T TOT	[sec]	-	2.29	-	2.62	-		15 %
T IN	[sec]	-	1.04	-	1.14	-		9 %
T EX	[sec]	-	1.25	-	1.49	-		19 %
TPTEF / T EX	[]	-	0.39	-	0.38	-		-3 %
MV	[L/min]	-	9.46	-	9.14	-		-3 %
PTEF	[mL/s]	-	372	-	377	-		2 %
TE/TOT	[]	-	0.54	-	0.57	-		4 %
TEF 25	[mL/s]	-	290	-	267	-		-8 %
TEF 50	[mL/s]	-	340	-	336	-		-1 %