POST ACUTE HIGH FLOW OXYGEN THERAPY : OUR CENTER EXPERIENCE

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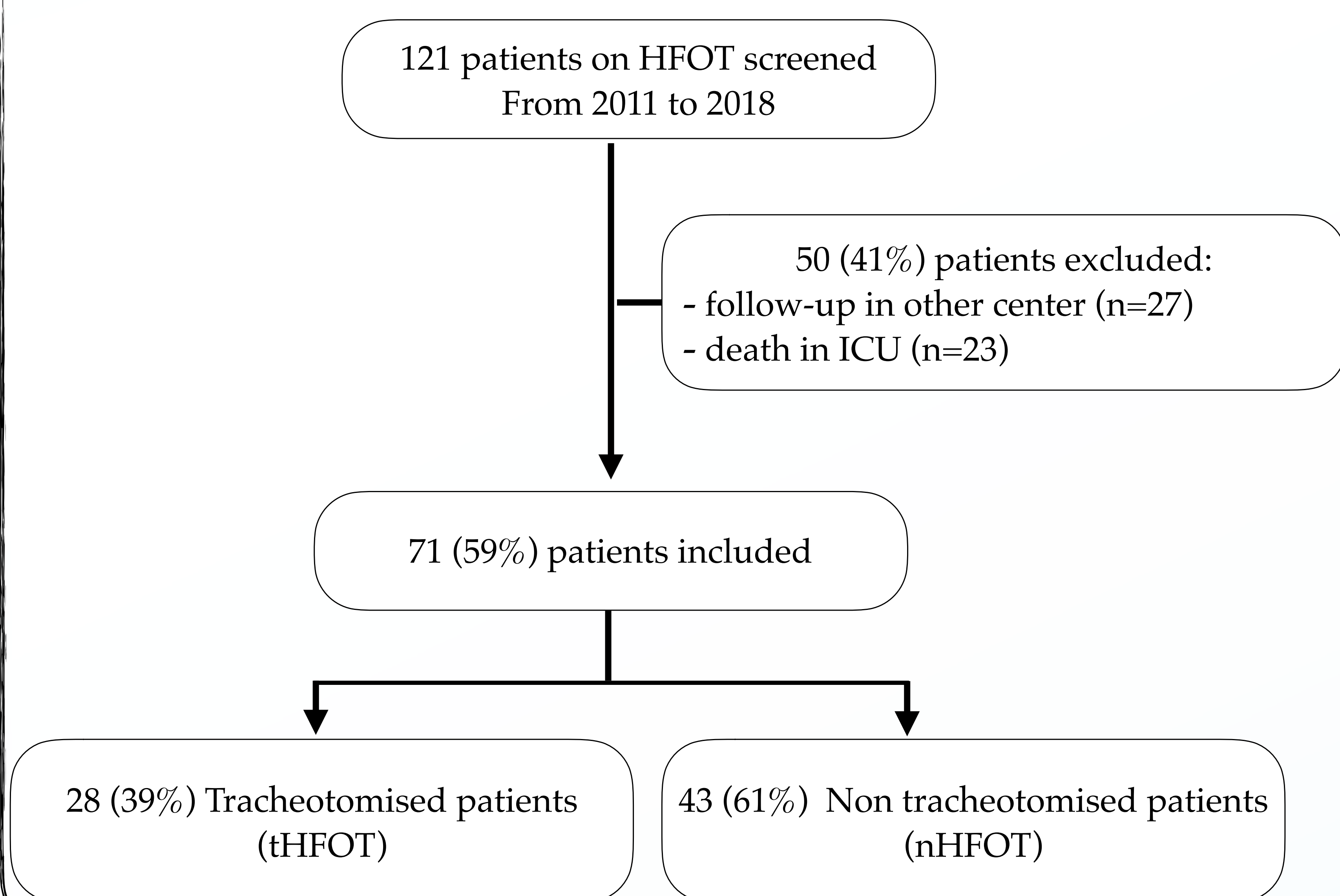
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INTRODUCTION

High-flow oxygen therapy (HFOT) is increasingly used during acute respiratory failure management. Few data support its use at home for managing chronic respiratory failure. The primary aim of our study was to describe the long-term HFOT pattern of use in our center. The secondary aims were to describe the outcome of patients initiated on home HFOT and the associated costs for HFOT home delivery.

METHOD

We conducted a retrospective single-center study that included all patients initiated on HFOT between January 2011 and April 2018 in our Pulmonary center. We performed a medical review of all electronic medical records and included all patients having HFOT prescribed at home or in a post-acute rehabilitation unit. Patients were divided in two groups: hypoxemic respiratory failure treated with nasal HFOT (nHFOT), tracheotomised patients treated with tracheal HFOT (tHFOT).
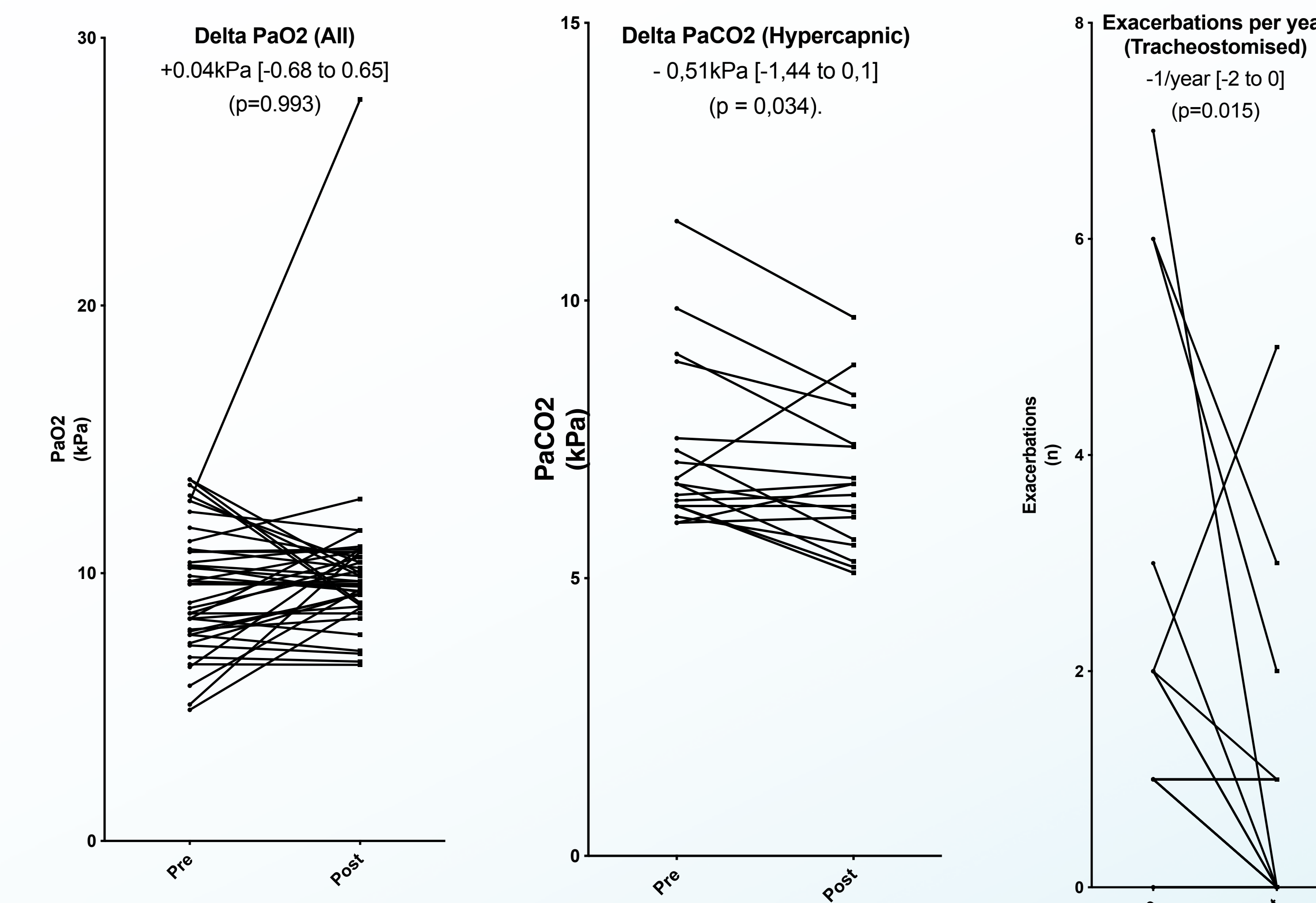
FLOW CHART

121 patients on HFOT screened From 2011 to 2018

50 (41%) patients excluded:
- follow-up in other center (n=27)
- death in ICU (n=23)

71 (59%) patients included

28 (39%) Tracheotomised patients (tHFOT)

43 (61%) Non tracheotomised patients (nHFOT)

PATIENTS

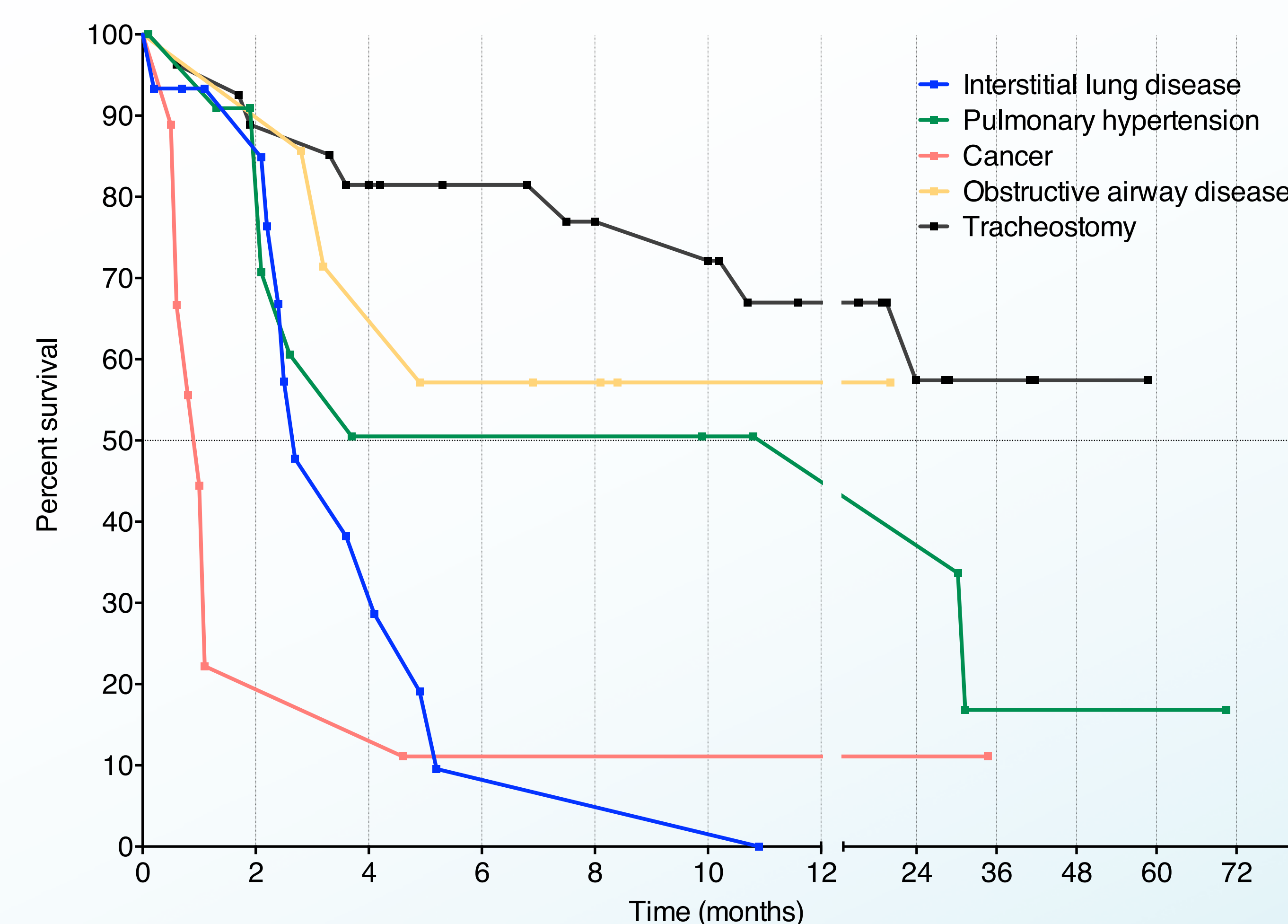|	Total population (n = 71)	nHFOT (n = 43)	tHFOT (n = 28)
Patients characteristics			
Age (year)	67 [55.5 - 73.5]	70.1 ± 14.4	55.0 ± 15.1
Gender (male) (n (%))	52 (73,1)	36 (83.7)	17 (60.7)
BMI (kg/m²) (n = 71)	24 [21,6 - 27,2]	25.4 ±4.8	24.2 ±5.9
Tobacco (P-Y) (n = 71)	28 [0 - 40]	30.8 ± 29.7	22.0 ±23.6
Mechanical ventilation (n, (%))	29 (40,8)	12 (28%)	19 (68%)
Lung function tests			
FEV1 (L) (n = 42)	2 [0.8 - 2.3]	1.9 ± 0.8	1.2 ± 0.7
FEV1 (%) (n = 46)	52 (73,1)	68.8 ± 27.6	35.0 ± 20.1
FVC (L) (n = 43)	2 [1.2 - 3.0]	2.3 ± 1.1	1.9 ± 1.0
FVC (%) (n = 46)	65 [47.5 - 82.6]	76.0 ± 23.0	45.2 ± 26.6
FEV1 / FCV (n = 43)	75 [60.6 - 80.0]	69.9 ± 17.6	65.8 ± 20.8
TLC (L) (n = 38)	5 [4.2 - 6.8]	5.6 ± 1.9	5.1 ± 2.1
TLC (%) (n = 40)	89 [74.8 - 109.3]	91.0 ± 25.1	91.5 ± 38.0
KCO (%) (n = 24)	58 [39.0 - 71]	54.2 [30.4 - 73.03]	67.4 [50.5 - 100.3]
Echocardiography			
TRV (m/sec) (n = 28)	3 [2.8 - 3.8]	3.6 ±0.6	2.2 ±1.3
PASP (mmHg) (n = 25)	62 [46.0 - 77.0]	59.7 ±18.63	41.4 ± 13.99
LVEF (%) (n = 24)	55 [47.8 - 60.0]	56.1 ±10.8	52.1 ± 9.3

PROBABILITY OF SURVIVAL
in month according to the underlying disease (p<0.001)

Legend: Interstitial lung disease, Pulmonary hypertension, Cancer, Obstructive airway disease, Tracheostomy

HFO SETTINGS

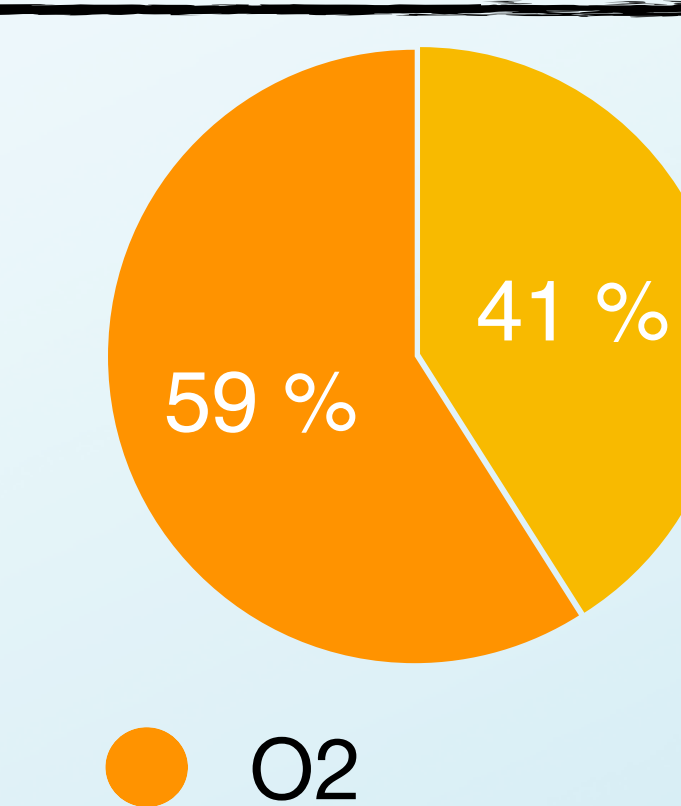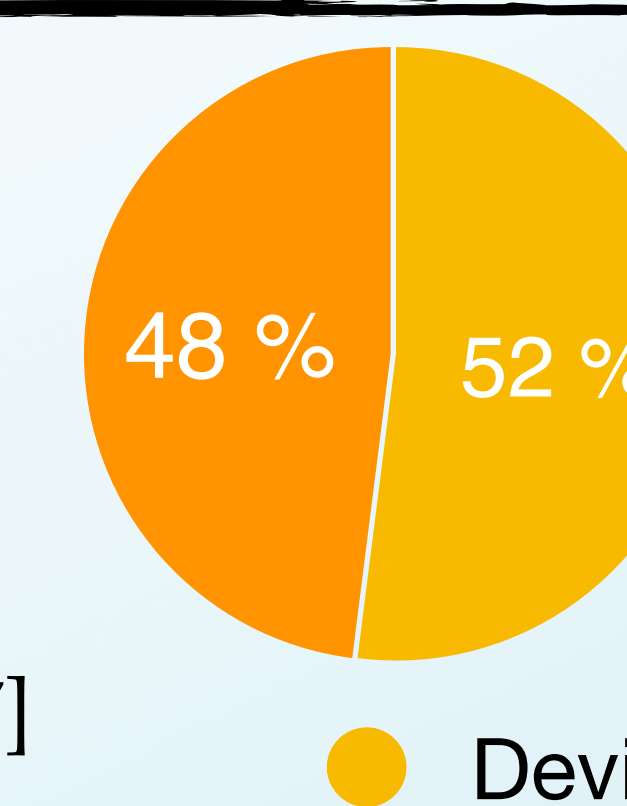|	Total population (n = 71)	nHFOT (n = 43)	tHFOT (n = 28)
Airflow, L/min (n = 51)	25 [15 - 40]	24.7 ±11.2	32.4 ±12
FiO₂,% (n = 57)	41 [29 - 63]	62.9 ±19.7	28.5 ± 9.9
O₂ flow, L/min (n = 63)	6 [3 - 15]	12.9 ±7.6	2.3 ±2.7
Length of stay at home, weeks	29.3 [11.6 to 73.3]	15.7 [0.3 to 35.1]	65.9 [30.7 to 122]

OUTCOME UNDER HFO

Delta PaO2 (All) +0.04kPa [-0.68 to 0.65] (p=0.993)

Delta PaCO2 (Hypercapnic) - 0,51kPa [-1,44 to 0,1] (p = 0,034).

Exacerbations per year (Tracheostomised) -1/year [-2 to 0] (p=0.015)

COSTS

tHFO :
Total cost :
4499 dollars [2574 to 11157]

nHFO :
Total cost :
1923 dollars [1319 to 3570]

Device — O2

CONCLUSION

HFOT is a feasible technology at home and in post-acute rehabilitation facilities. It allows patients with end-stage hypoxemic lung disease to return home. Its use may be considered in tracheotomised patients with severe exacerbations. These results are achieved at reasonable costs.