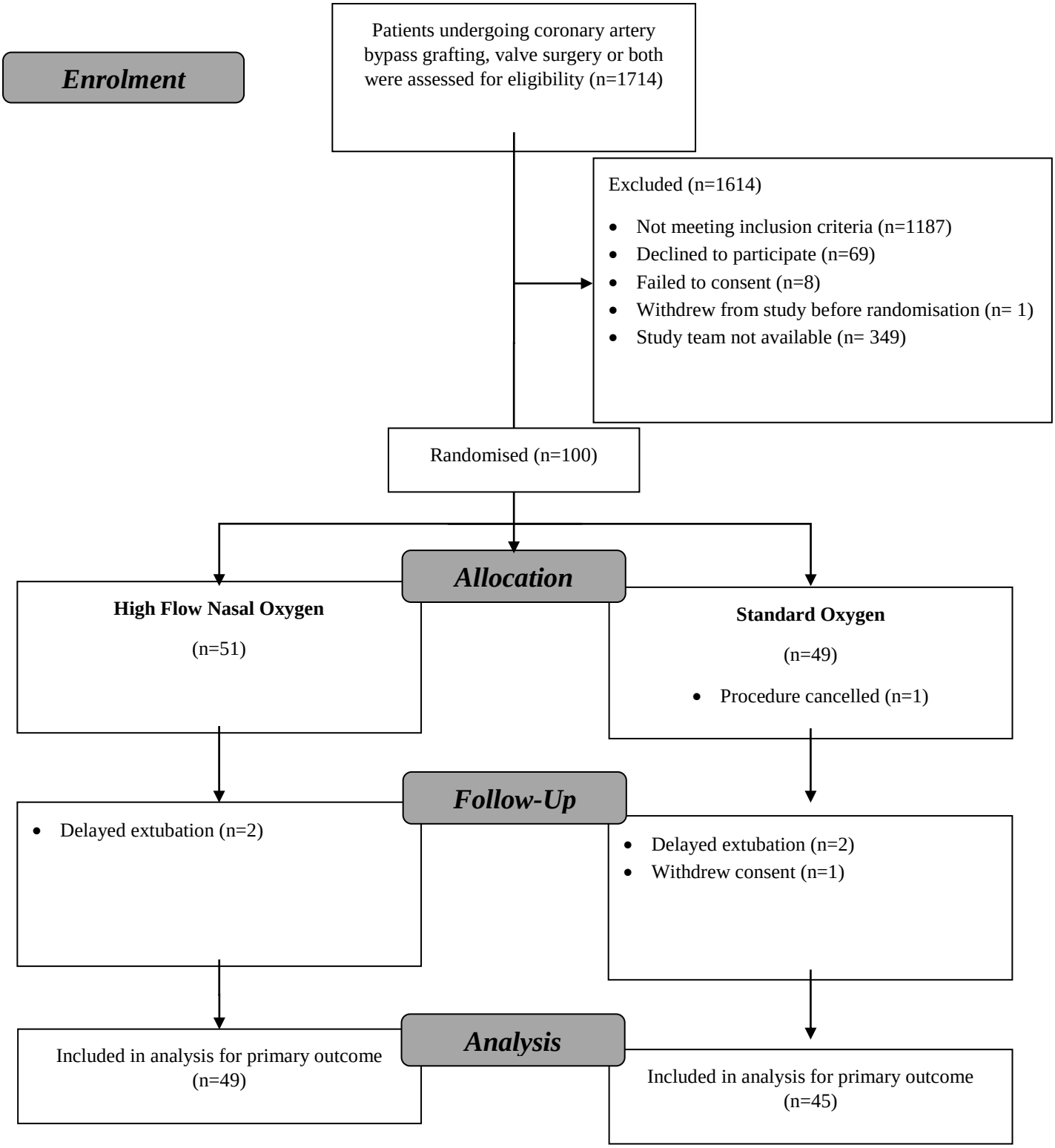
Participant flow



Baseline Characteristics

Characteristic	HFNO	SO
	n = 49	**n = 45**
Age – years		
Mean (SD)	67.3 (9.3)	69.1 (11.1)
Sex – no. (%)		
Female	19 (38.8)	17 (37.8)
Male	30 (61.2)	28 (62.2)
Comorbidities – no. (%)[*]		
COPD[†]	14 (28.6)	15 (33.3)
Asthma[†]	18 (36.7)	19 (42.2)
Smoker	10 (20.4)	10 (22.2)
BMI $\geq$35kg.m^{-2}	13 (26.5)	12 (26.7)
Recent LRTI[‡]	0 (0)	0 (0)
BMI – kg.m^{-2}		
Mean (SD)	32 (5.5)	30.2 (6.6)
Median (IQR) [range]	31.0 (28.1, 35.4) [22.4, 51.4]	28.4 (25.5, 35.6)[18.2, 46.7]

Pre-operative Hb – g.l^{-1}		
Median (IQR) [range]	137 (129 – 145) [111, 156]	131 (127, 141) [85, 166]
Creatinine – µmol.l^{-1}		
Median (IQR) [range]	80 (71 – 90) [52, 141]	83 (74, 96) [38, 180]
Logistic EUROScore[§]		
Median (IQR) [range]	4 (3.0, 7) [1.0, 30]	4 (30, 10) [1, 26]
Six-Minute Walk Test (metres)		
Median (IQR) [range]	334.4 (283.0, 397.1) [108.0, 481.0]	348.2 (275.0, 392.5) [130, 596]
FEV1 – liters		
Median (IQR) [range]	2.3 (1.8 – 2.7) [0.8, 3.8]	2.0 (1.6, 2.4) [1.0, 3.9]
FEV1 - % of predicted value		
Median (IQR) [range]	87 (72, 101) [41, 127]	81 (68, 89) [42, 147]
FVC – liters		
Median (IQR) [range]	3.3 (2.4, 3.7) [1.5, 5.2]	3.0 (2.4, 3.5) [1.5, 5.4]
FVC - % of predicted value		
Median (IQR) [range]	89 (81, 107) [49, 138]	92 (77, 104) [41, 169]
Procedure – no. (%)		
CABG	17 (34.7)	14 (31.1)

Valve(s)	24 (49)	18 (40)
CABG + Valve(s)	8 (16.3)	13 (28.9)
Surgery Time – minutes		
Median (IQR) [range]	197 (176, 225) [100, 327]	202 (169, 274) [55, 470]

Definitions of abbreviations: BMI = body mass index; CABG = coronary artery bypass graft; COPD = chronic obstructive pulmonary disease; EUROscore = European System for Cardiac Operative Risk Evaluation; Hb = hemoglobin; HFNO = high-flow nasal oxygen; FEV1= forced expiratory volume during the 1st second; FVC = forced vital capacity; GMD = difference of geometric mean; HFNO = high-flow nasal oxygen; ICU = intensive care unit; IQR = interquartile range; LRTI = lower respiratory tract infection; NA= not applicable; SD = standard deviation; SO = standard oxygen

Outcome measures	HFNO		SO		P-value
	N=49		N=45		
Total Length of Stay (days)					
Median (IQR)[range]	7.0	(6, 9) [4, 30]	9.0	(7, 16) [4, 120]	0.0116
Geometric Mean	7.7		11.0		
GMR (95% CI)	0.71	(0.56, 0.89)			0.0035
Nos (%) LOS>10 days	9	(18.6)	17	(38.6)	
Risk Ratio (95% CI)	0.49	(0.24, 0.97)			0.0343
ICU Length of Stay (days)					
Median (IQR)[range]	1.0	(1, 2) [1, 15]	1.0	(1, 2) [1, 23]	0.949
Geometric Mean	1.7		1.6		
GMR (95% CI)	1.03	(0.76-1.40)			0.835
Readmission to ICU					
Nos. (%) Readmitted	1	(2.0)	7	(15.6)	0.026
Total days	22		41		
Median (IQR)[range]	22	(NA) [NA]	5	(2, 9) [2, 13]	
Nos. (%) Deaths	1	(2.0)	1	(2.2)	1.00
Six Minute Walk Test (metres)					
Nos. (%) Attempted Test	25	(51.0)	20	(44.4)	
Mean (SD)	207.3	(98.9)	186.1	(114.9)	
Median (IQR)[range]	214	(116, 280) [40, 380]	165	(98, 251) [60, 510]	
Mean difference (95% CI)	21.3	(-44.0, 86.6)			0.51

Lung Function					
Nos. (%) with spirometry	33	(67.3)	33	(73.3)	
FVC (Litres)					
Mean (SD)	2.0	(0.7)	1.9	(0.6)	
Median (IQR)[range]	1.9	(1.6, 2.3) [0.8, 3.8]	1.9	(1.5, 2.3) [0.9, 3.5]	
Mean difference (95% CI)	0.1	(-0.2, 0.4)			0.58
FVC (%)					
Mean (SD)	58.9	(15.7)	59.9	(18.6)	
Median (IQR)[range]	57.0	(45.0, 66.0) [31.0, 102.0]	57.0	(47.0, 69.0) [34.0, 123.0]	
Mean difference (95% CI)	-1.0	(-9.5, 7.5)			0.81
FEV 1 (Litres)					
Mean (SD)	1.4	(0.5)	1.3	(0.5)	
Median (IQR)[range]	1.5	(1.1, 1.7) [0.7, 2.5]	1.2	(1.1, 1.5) [0.5, 2.7]	
Mean difference (95% CI)	0.2	(-0.1, 0.4)			0.19
FEV 1 (%)					
Mean (SD)	53.8	(14.4)	52.4	(15.6)	
Median (IQR)[range]	54.0	(42.0, 64.0) [29.0, 81.0]	53.0	(39.0, 65.0) [18.0, 83.0]	
Mean difference (95% CI)	1.4	(-6.0, 8.8)			0.71

Definitions of abbreviations: CI = confidence interval; FEV1= forced expiratory volume during the 1st second; FVC = forced vital capacity; GMR = geometric mean ratio; HFNO = high-flow nasal oxygen; ICU = intensive care unit; IQR = interquartile range; NA= not applicable; SD = standard deviation; SO = standard oxygen

Adverse events

	Standard oxygen n=49	**HFNO n=51**	***p* value**
Return to operating room	3	2	0.628
Atrial fibrillation	5	1	0.101
Pacemaker insertion	4	1	0.190
Renal replacement therapy	3	3	1.000
Sternal wound infection	1	0	0.479
Delirium	4	2	0.421