

1    **Oe-MRI study summary data tables**

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3    The report enclosed contains two study summary tables

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5    **Table 1:** Clinical characteristics of the study participants

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7    **Table 2:** Lung physiology and whole lung median Oe-MRI values pre and post FP/FORM

Study ID	Age	Sex	Smoking	Atopy (yes=1,no=0)	GINA step	Prescribed ICS dose µg/day (BDP equivalent)	Exacerbations (in the previous year)	FEV <sub>1</sub> % pred <sup>a</sup>	FEV <sub>1</sub> /FVC <sup>a</sup>	FEV <sub>1</sub> /FVC > LLN <sup>a</sup> (Y/N)	Reversibility (FEV <sub>1</sub> diff mls, %)	Sputum eosinophils (%)	ACQ-6	AQLQ
1	62	M	N,0	1	IV	800	0	80	0.69	Y	650, 25	5.5	1.30	4.87
2	51	M	N, 0	0	IV*	800	0	63	0.57	N	190, 11	0.5	1.00	5.91
3	69	M	N, 0	1	IV*	800	1	63	0.55	N	280, 18	4.5	1.30	6.33
4	59	M	X, 6	1	IV	800	0	92	0.71	Y	500, 17	2.25	0.67	6.54
5	64	M	N, 0	1	IV	800	0	88	0.70	Y	180, 7	0	0.83	6.41
6	67	F	N, 0	1	IV*	800	1	67	0.71	Y	0, 0	5.25	0.33	6.56
7	55	F	N, 0	1	IV*	800	1	95	0.75	Y	0, 0	0	1.17	4.04
8	63	M	N, 0	1	III	400	0	81	0.60	N	330, 15	0	0.17	6.89
9	40	F	N, 0	1	IV*	800	2	86	0.65	N	260, 13	0	4.00	2.37
10	65	F	N, 0	1	IV*	800	0	96	0.66	Y	240, 13	2	2.67	5.31
11	43	F	N, 0	1	IV*	800	1	89	0.72	Y	240, 9	5	1.33	4.69
12	46	M	X, 5	0	IV*	800	0	69	0.62	N	940, 44	29.25	1.33	6.48
13	65	F	N,0	0	IV*	1000	0	61	0.61	N	160, 11	-	0.67	5.30
14	61	F	X,1	0	IV	1600	0	81	0.64	N	20, 3	5.75	1.17	6.22
15	64	M	N, 0	1	III	400	0	81	0.68	N	140, 5	-	1.17	6.67

16	62	F	N,0	0	IV*	1600	4	49	0.51	N	0, 0	2.5	1.83	6.02
Mean (SD)	58 (9)	-	-	-	-	862 (324)	0.62 (1.05)	78 (13.4)	0.65 (0.07)	-	258 (255), 12 (11)	2.37 (0;5.3) <sup>#</sup>	1.31 (0.92)	5.66 (1.20)

**Table I:** Demographic and Clinical Characteristics.

**LEGEND:** GINA: Global initiative for asthma; ICS: inhaled corticosteroid; FeNO: fraction of nitric oxide; FEV<sub>1</sub>: Forced expiratory volume in one second; FVC: Forced vital capacity; LLN: Lower limit of normal; ACQ-6: 6 point Juniper asthma control questionnaire; AQLQ: Juniper asthma quality of life questionnaire. a: post bronchodilator, based on Global Lung Initiative (GLI) equations; \*meets the criteria for severe asthma [15]; #median (Q1;Q3).

**Table II:** Physiological and Oxygen-Enhanced MRI whole lung median biomarkers pre and post flutiform.

	Pre FP/FORM	Post FP/FORM	Change (Post-Pre)	p-value
<b>Clinical physiological markers</b>				
<b>FEV<sub>1</sub> (L)<sup>#</sup></b>	2.03 (0.52)	2.29 (0.67)	0.26 (0.26)	<b>0.001</b>
<b>FVC (L)<sup>#</sup></b>	3.31 (0.73)	3.51 (0.91)	0.27 (0.44)	<b>0.028</b>
<b>FEV<sub>1</sub>/FVC<sup>#</sup></b>	0.61 (0.07)	0.65 (0.07)	0.03 (0.025)	<b>&lt;0.0001</b>
<b>LCISF<sub>6</sub><sup>#</sup></b>	8.95 (2.37)	8.60 (1.80)	-0.34 (1.4)	0.337
<b>Scond<sup>#</sup></b>	0.064 (0.038)	0.049 (0.033)	-0.015 (0.039)	0.133
<b>Sacin<sup>#</sup></b>	0.477 (0.234)	0.402 (0.192)	-0.075 (0.18)	0.106
<b>OE-MRI markers (whole lung median values)</b>				
<b>Primary outcome measures</b>				
T <sub>vent</sub> <sup>a</sup> (s) <sup>Δ</sup>	53.3 (47.6, 60.2)	50.0 (37.2, 55.9)	<b>-2.76 (-7.94, 0.31)</b>	<b>0.051</b>
T <sub>down</sub> (min) <sup>Δ</sup>	1.29 (1.17, 1.69)	1.27 (1.08, 1.43)	-0.16 (-0.77, 0.18)	0.171
<b>Secondary outcome measures</b>				
ΔPO <sub>2</sub> <sup>MAX</sup> (mmHg) <sup>Δ</sup>	375 (325, 398)	323 (244, 382)	-35.94 (-74.92, 4.96)	<b>0.006</b>

$T_{up}$ (minutes) <sup>Δ</sup>	0.76 (0.62, 1.25)	0.76 (0.56, 0.88)	-0.18 (-0.44, 0.07)	<b>0.058</b>
$K_{ox}^a$ (ml O <sub>2</sub> /s/ml lung) <sup>Δ</sup>	0.67 (0.52, 0.73)	0.56 (0.41, 0.68)	-0.02 (-0.20, 0.02)	<b>0.065</b>
$E_{ox}F_B^a$ (ml blood/s/ml lung) <sup>Δ</sup>	22.5 (18.5, 29.7)	19.7 (18.1, 22.7)	-2.32 (-8.06, 1.52)	0.231
$V/Q$ (ratio) <sup>bΔ</sup>	0.10 (0.09, 0.12)	0.09 (0.07, 0.11)	-0.02 (-0.02, 0.00)	<b>0.019</b>
Ventilation (ml O <sub>2</sub> /min/ml lung) <sup>bΔ</sup>	0.65 (0.47, 0.78)	0.61 (0.49, 0.75)	-0.02 (-0.21, 0.14)	0.342
Perfusion (ml blood/min/ml lung) <sup>bΔ</sup>	5.63 (3.69, 6.99)	5.89 (4.67, 6.73)	0.62 (-0.63, 2.13)	0.211

**LEGEND:** Values expressed as median (Q1-Q3). p-value derived from #: paired t test and Δ: Wilcoxon paired rank test. **a:** parameters derived from the McGrath *et al* three compartment oxygen conduction-diffusion model [7]. **b:** Naish et al, two compartment ventilation perfusion model derived parameters [8].