



## **Appendix**

**This appendix was part of the submitted manuscript and has been peer reviewed. It is posted as supplied by the authors.**

Appendix to: Pilcher J, Richards M, Eastlake L, et al High flow or titrated oxygen for obese medical inpatients: a randomised crossover trial. *Med J Aust* 2017; 207: 430-433. doi: 10.5694/mja17.00270.

**SUPPLEMENTARY MATERIAL**

**HIGH FLOW VERSUS TITRATED OXYGEN IN OBESE MEDICAL INPATIENTS:  
RANDOMISED CONTROLLED TRIAL**

**Table 1: Mixed linear model differences for transcutaneous carbon dioxide tension (PtCO<sub>2</sub>), heart rate, respiratory rate, and oxygen saturation**

Outcome measure	Difference between high concentration and titrated oxygen therapy (95% CI)	P
PtCO <sub>2</sub> (mmHg)		
10 min	2.8 (1.8 to 3.8)	< 0.001
20 min	3.0 (1.8 to 4.3)	< 0.001
30 min	3.0 (-1.7 to 4.3)	< 0.001
40 min	3.0 (1.6 to 4.4)	< 0.001
50 min	3.6 (1.6 to 5.6)	0.001
60 min	3.2 (1.3 to 5.2)	0.002
Heart rate (beats per minute)		
10 min	-5.3 (-8.8 to -1.8)	0.004
20 min	-5.4 (-9.3 to -1.4)	0.009
30 min	-3.5 (-7.7 to 0.7)	0.10
40 min	-6.5 (-10.9 to -2.1)	0.005
50 min	-7.2 (-10.3 to -4.1)	< 0.001
60 min	-4.8 (-8.5 to -1.2)	0.01
Respiratory rate (breaths per minute)		
10 min	-0.5 (-2.3 to 1.3)	0.60
20 min	-0.7 (-2.1 to 0.8)	0.35
30 min	-0.3 (-1.9 to 1.4)	0.74
40 min	-0.8 (-3.0 to 1.5)	0.50
50 min	-0.9 (-3.1 to 1.2)	0.39
60 min	-0.7 (-2.3 to 0.9)	0.38
Oxygen saturation (%)		
10 min	3.7 (2.9 to 4.5)	< 0.001
20 min	3.1 (2.2 to 4.0)	< 0.001
30 min	3.4 (2.6 to 4.2)	< 0.001
40 min	3.6 (-2.5 to 4.6)	< 0.001
50 min	3.0 (2.2 to 3.9)	< 0.001
60 min	3.4 (2.6 to 4.3)	< 0.001

PtCO<sub>2</sub>: Transcutaneous carbon dioxide tension.

**Table 2: Mean data for PtCO<sub>2</sub>, SpO<sub>2</sub>, heart rate and respiratory rate at each time point**

Variable	Mean (SD)	
	High concentration	Titrated
<b>PtCO<sub>2</sub> (mmHg)</b>		
0	41.7 (5.7)	41.8 (5.9)
10	44.3 (6.5)	41.6 (6.2)
20	44.7 (6.6)	41.8 (6.5)
30	44.8 (6.3)	41.9 (6.4)
40	44.9 (6.4)	42.0 (6.4)
50	44.9 (6.9)	41.4 (6.4)
60	44.4 (7.1)	41.3 (6.2)
<b>SpO<sub>2</sub> (%)</b>		
0	96.2 (2.5)*	96.0 (3.1)
10	99.5 (0.8)	95.6 (3.1)
20	99.4 (0.8)	96.1 (2.9)
30	99.4 (0.8)	95.8 (2.5)
40	99.4 (0.7)	95.7 (3.5)
50	99.4 (0.9)	96.2 (2.8)
60	99.5 (0.9)	95.9 (2.9)
<b>Heart Rate (beats per minute)</b>		
0	85.8 (14.4)	85.8 (15.4)
10	82.6 (14.6)	87.9 (14.1)
20	82.5 (15.1)	88.0 (14.5)
30	83.4 (16.5)	86.9 (14.4)
40	82.1 (16.1)	88.7 (15.0)
50	81.7 (15.5)	89.0 (15.6)
60	83.4 (14.8)	88.3 (14.7)
<b>Respiratory Rate (breaths per minute)</b>		
0	18.3 (4.3)	18.0 (3.5)
10	18.7 (4.6)	19.0 (3.5)
20	18.0 (4.1)	18.5 (2.8)
30	19.0 (2.7)	19.1 (3.6)
40	19.0 (2.7)	19.6 (5.0)
50	19.4 (3.8)	20.2 (4.2)
60	19.8 (3.5)	20.4 (3.5)

N=22 for all unless stated; \* N=21

SpO<sub>2</sub>: Oxygen saturation, PtCO<sub>2</sub>: Transcutaneous carbon dioxide tension.

**Table 3. Admission diagnosis and transcutaneous carbon dioxide tension (PtCO<sub>2</sub>) for participants with an increase in PtCO<sub>2</sub> from baseline of at least 4 mmHg at at least one measurement timepoint**

Admission diagnosis	BMI (kg/m <sup>2</sup> )	Baseline value before intervention		Change in PtCO <sub>2</sub> from baseline					
		PtCO <sub>2</sub> , mmHg	Oxygen saturation	10 min	20 min	30 min	40 min	50 min	60 min
<b>Patients undergoing titrated oxygen therapy</b>									
Cellulitis*	45.5	51	98%	1	2	4	4	4	4
Diabetes**	53.2	43	96%	3	4	4	4	5	5
<b>Patients undergoing high concentration oxygen therapy</b>									
Cellulitis*	45.5	46	97%	3	3	3	4	6	5
Cellulitis	52.3	44	99%	2	4	5	4	3	4
Lower respiratory tract infection	41.0	43	94%	6	9	8	9	7	5
Asthma	62.4	48	NA	1	2	2	4	3	4
Asthma	51.7	43	98%	3	5	6	4	5	4
Cellulitis	56.0	38	97%	3	3	4	4	3	4
Cellulitis	45.2	47	96%	3	2	2	3	4	3
Asthma	56.6	40	98%	4	4	3	2	3	3
Diabetes**	53.2	41	97%	4	5	5	6	6	6
Testicular infarction	59.5	33	94%	6	6	5	6	6	5
Asthma	49.2	43	98%	1	1	2	4	5	2
Heart failure	47.7	57	92%	6	6	6	5	8	7
Asthma	55.1	31	98%	2	4	8	8	8	3
Lower respiratory tract infection	40.0	44	93%	6	7	3	3	3	4

BMI = body mass index; NA = not available; PtCO<sub>2</sub>: Transcutaneous carbon dioxide tension. Data points for the final five participants in the table, recorded by the SenTec, were available to one decimal place, but were rounded to the nearest whole number for this table. \* Same participant; \*\* Same participant.

**Table 4: Data description and comparison of paired proportions for increase in Ptco<sub>2</sub> ≥ 4mmHg from baseline**

**10 minutes**

High concentration	Titrated		
	< 4 mmHg	≥ 4 mmHg	N/22 (%) ≥ 4 mmHg
< 4 mmHg	16	0	
≥ 4 mmHg	6	0	6 (27.3)
N/22 ≥ 4 mmHg		0	
Difference (95% CI)		Unable to estimate	

**20 minutes**

High concentration	Titrated		
	< 4 mmHg	≥ 4 mmHg	N/22 (%) ≥ 4 mmHg
< 4 mmHg	13	0	
≥ 4 mmHg	8	1	9 (40.9)
N/22 ≥ 4 mmHg		1 (4.5)	
Difference (95% CI)		36.4 (16.3 to 56.5)	<i>P</i> < 0.001

**30 minutes**

High concentration	Titrated		
	< 4 mmHg	≥ 4 mmHg	N/22 (%) ≥ 4 mmHg
< 4 mmHg	13	1	
≥ 4 mmHg	7	1	8 (36.4)
N/22 ≥ 4 mmHg		2 (9.1)	
Difference (95% CI)		27.3 (4.8 to 49.8)	<i>P</i> = 0.034

**40 minutes**

High concentration	Titrated		
	< 4 mmHg	≥ 4 mmHg	N/22 (%) ≥ 4 mmHg
< 4 mmHg	12	0	
≥ 4 mmHg	8	2	10 (45.5)
N/22 ≥ 4 mmHg		2 (9.1)	
Difference (95% CI)		36.4 (16.3 to 56.5)	<i>P</i> = 0.005

### **50 minutes**

High concentration	Titrated		
	< 4 mmHg	≥ 4 mmHg	N/22 (%) ≥ 4 mmHg
< 4 mmHg	13	0	
≥ 4 mmHg	7	2	9 (40.9)
N/22 ≥ 4 mmHg		2 (9.1)	
Difference (95% CI)		31.8 (12.4 to 51.3)	
		<i>P</i> = 0.008	

### **60 minutes**

High concentration	Titrated		
	< 4 mmHg	≥ 4 mmHg	N/22 (%) ≥ 4 mmHg
< 4 mmHg	13	0	
≥ 4 mmHg	7	2	9 (40.9)
N/22 ≥ 4 mmHg		2 (9.1)	
Difference (95% CI)		31.8 (12.4 to 51.3)	
		<i>P</i> = 0.008	

### **Any time point**

High concentration	Titrated		
	< 4 mmHg	≥ 4 mmHg	N/22 (%) ≥ 4 mmHg
< 4 mmHg	8	0	
≥ 4 mmHg	12	2	14 (63.6)
N/22 ≥ 4 mmHg		2 (9.1)	
Difference (95% CI)		54.5 (33.7 to 75.4)	
		<i>P</i> < 0.001	

Ptco<sub>2</sub>: Transcutaneous carbon dioxide tension.

Notes:

TOSCA data available to 0dp (4mmHg and above used as the cut off) and Sentec data available to 1dp (4.0mmHg and above used as the cut off).

Reported difference is for high concentration oxygen minus titrated oxygen.